

Annual Report

**to the
President
and the
Congress**



William S. Cohen
Secretary of Defense



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TABLE OF CONTENTS

MESSAGE OF THE SECRETARY OF DEFENSE

PART I: Strategy

CHAPTER 1 - THE DEFENSE STRATEGY AND THE NATIONAL SECURITY STRATEGY

PART II: Today's Armed Forces

CHAPTER 2 - U.S. FORCES

CHAPTER 3 - CONVENTIONAL FORCES

CHAPTER 4 - SPECIAL OPERATIONS FORCES

CHAPTER 5 - STRATEGIC NUCLEAR FORCES

CHAPTER 6 - MISSILE DEFENSES

CHAPTER 7 - SPACE FORCES

CHAPTER 8 - COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS,
INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

CHAPTER 9 - TOTAL FORCE INTEGRATION

CHAPTER 10 - PERSONNEL

CHAPTER 11 - READINESS

CHAPTER 12 - QUALITY OF LIFE

PART III: Transforming U.S. Armed Forces for the 21st Century

CHAPTER 13 - THE REVOLUTION IN MILITARY AFFAIRS AND JOINT VISION 2010

CHAPTER 14 - NEW OPERATIONAL CONCEPTS

CHAPTER 15 - IMPLEMENTATION

PART IV: Transforming the Department of Defense for the 21st Century

CHAPTER 16 - DEFENSE REFORM

CHAPTER 17 - FINANCIAL MANAGEMENT REFORM

CHAPTER 18 - ACQUISITION REFORM

CHAPTER 19 - INFRASTRUCTURE

CHAPTER 20 - INDUSTRIAL CAPABILITIES AND INTERNATIONAL PROGRAMS

PART V: The FY 1999 Defense Budget and Future Years Defense Program

CHAPTER 21 - THE FY 1999 DEFENSE BUDGET AND FUTURE YEARS DEFENSE
PROGRAM

PART VI: Statutory Reports

Report of the Secretary of the Army

Report of the Secretary of the Navy

Report of the Secretary of the Air Force

Report of the Chairman of the Reserve Forces Policy Board

APPENDICES

A - DoD Organizational Charts

B - Budget Tables

C - Personnel Tables

D - Force Structure Tables

E - Goldwater-Nichols Act Implementation Report

F - Defense Acquisition Workforce Improvement Report

G - Personnel Readiness Factors by Race and Gender (Text only)

H - National Security and the Law of the Sea Convention (Not included)

I - Freedom of Navigation (Not included)

J - Government Performance and Results Act (Not included)

K - Information Technology Management Goals (Not included)

L - Glossary (Not included)

MESSAGE OF THE SECRETARY OF DEFENSE

Having inherited the defense structure that won the Cold War and Desert Storm, the Clinton Administration intends to leave as its legacy a defense strategy, a military, and a Defense Department that have been transformed to meet the new challenges of a new century.

Our strategy will ensure that America continues to lead a world of accelerating change by shaping the emerging security environment to reduce threats and to promote our interests and by responding to crises that threaten our interests. We will execute the strategy with superior military forces that fully exploit advances in technology by employing new operational concepts and organizational structures. And we will support our forces with a Department that is as lean, agile, and focused as our warfighters.

Toward this end, the Department of Defense last year conducted perhaps the most fundamental and comprehensive review ever conducted of defense posture, policy, and programs. The Quadrennial Defense Review (QDR) examined the national security threats, risks, and opportunities facing the United States today and out to 2015. Based on this analysis, we designed a defense strategy to implement the defense requirements of the President's *National Security Strategy for a New Century*. Our defense strategy has three central elements:

- Shape the international security environment in ways favorable to U.S. interests by promoting regional stability, reducing threats, preventing conflicts, and deterring aggression and coercion on a day-to-day basis.
- Respond to the full spectrum of crises that threaten U.S. interests by deterring aggression and coercion in a crisis, conducting smaller-scale contingency operations, and fighting and winning major theater wars.
- Prepare now for an uncertain future through a focused modernization effort, development of new operational concepts and organizations to fully exploit new technologies, programs to ensure high quality personnel at all levels, and efforts to hedge against threats that are unlikely but which would have disproportionate security implications such as the emergence of a regional great power before 2015.

This is not mere rhetoric. It is the basis for what our defense planners and military forces do every day. Since the QDR was undertaken:

- We have shaped the international security environment by maintaining significant overseas force deployments and enhancing options for future forward presence; acting to enlarge NATO and to enhance the Partnership for Peace; establishing the NATO–Russia Founding Act and the NATO–Ukraine Charter; implementing the revised U.S.–Japan Guidelines for Defense Cooperation; reaching agreement with the Republic of Korea on the long-term, post-unification need to sustain the alliance; initiating a trilateral U.S.–Japanese–South Korean security dialogue; establishing a defense dimension to the ASEAN Regional Forum; establishing Defense Consultative Talks and enhanced

military-to-military ties with China; and normalizing defense cooperation with Latin American democracies.

- We have responded to crises around the globe, containing Saddam Hussein; participating in the NATO Stabilization Force in Bosnia; evacuating noncombatants from west Africa and from Albania; and fighting fires in Indonesia and delivering emergency humanitarian assistance to China.
- We have accelerated preparations for the future by conducting warfighting experiments to test new systems and operational concepts and by greatly enhancing our efforts to defend against asymmetric threats—such as chemical, biological, and information attacks—through exercises, new programs, additional resources, organizational change, and outreach to other governmental and private sector organizations facing similar threats.

As a result of the QDR process, the Department's plans and programs were changed to reflect and carry out this strategy. And as a result of the Defense Reform Initiative, undertaken as a follow-on to the QDR, the Department's organizational structure and business practices also are being changed to reflect and carry out this strategy.

Finally, the Department of Defense budget for FY 1999 and future years, which I am now presenting to the Congress and the American people, is based upon and designed to meet this strategy:

- To meet the strategy's requirement to shape the international environment, this budget funds the deployment of about 100,000 troops in the Asia-Pacific and European theaters, as well as continuous carrier and amphibious task force deployments; supports NATO enlargement and the enhanced Partnership for Peace; and funds such efforts as the Cooperative Threat Reduction program.
- To be able to respond to the full spectrum of crises as required by the strategy, this budget supports the necessary force structure and maintains those forces in a high state of readiness. To ensure this high state of readiness in both the near term and the long term, it also streamlines support and base structure to free DoD resources for Operation and Maintenance and acquisition accounts. In this regard, two additional rounds of base realignment and closure are essential.
- To fulfill the strategy's requirement to prepare now for the future, this budget meets the QDR's modernization funding goals, including exceeding the QDR's target of \$60 billion in FY 2001; implements *Joint Vision 2010*, including accelerating programs such as the Force XXI digitization; devotes additional resources and programs to meet asymmetrical threats; and pursues programs to ensure the continued high quality of personnel, who take as long or longer to develop into key leadership positions at various levels as it takes to develop and deploy major weapon systems.

It is critical to note that successfully executing this strategy requires that resources be reallocated from overhead and support activities to our fighting forces. Failure to do so will threaten the readiness of our forces today and in the future. It also threatens our ability to maintain an adequate force structure because, one way or another, we must ensure that we are ready to respond. If we are not permitted to pay for readiness by cutting unneeded spending, then we will pay for it by cutting needed but lower priority spending—knowing full well that this would entail greater risk. This is not an option that I, nor in my view the American people, find acceptable.

Given the strong encouragement Congress has given to our reform effort in the abstract, I trust that we will continue to receive support now that concrete decisions have been made.

America begins the new millennium as the world's sole superpower, the indispensable nation. The responsibilities are heavy and the choices difficult. But with those responsibilities and choices come enormous opportunities and benefits for our nation and our people.

Our defense strategy and the National Security Strategy it supports will enable us to seize those opportunities and reap those benefits if we have the right assets to execute our strategy. Having the right assets means much more than receiving the requested topline—it also means spending those resources on the right programs and having sufficient flexibility to be able to wisely manage those resources in a complex and fluid environment.

This budget charts the path for ensuring that our defense enterprise and military forces are fully modern, in every sense, and fully capable of executing the strategy in order to protect and promote America's interests in a challenging and changing world.

/signed/

William S. Cohen

Chapter 1

THE DEFENSE STRATEGY AND THE NATIONAL SECURITY STRATEGY

Since the founding of the Republic, the United States—as a nation—has embraced several fundamental and enduring goals: to maintain the sovereignty, political freedom, and independence of the United States with its values, institutions, and territory intact; to protect the lives and personal safety of Americans, both at home and abroad; and to provide for the well-being and prosperity of the nation and its people.

Achieving these basic goals in an increasingly interdependent world requires fostering an international environment in which critical regions are stable, at peace, and free from domination by hostile powers; in which the global economy and free trade are growing; in which democratic norms and respect for human rights are widely accepted; in which the spread of nuclear, biological, and chemical (NBC) and other potentially destabilizing technologies is minimized; and in which the international community is willing and able to prevent and, if necessary, respond to calamitous events. The United States seeks to play a leadership role in the international community, working closely and cooperatively with nations that share its values and goals, and influencing those that can affect U.S. national well-being.

THE SECURITY ENVIRONMENT

As the 21st century approaches, the United States faces a dynamic and uncertain security environment. On the positive side of the ledger, the United States is in a period of strategic opportunity. The threat of global war has receded and the nation's core values of representative democracy and market economics are embraced in many parts of the world, creating new opportunities to promote peace, prosperity, and enhanced cooperation among nations. The sustained dynamism of the global economy is transforming commerce, culture, and global interactions. The United States' alliances, such as NATO, the U.S.-Japan alliance, and the U.S.-Republic of Korea alliance, which have been so critical to U.S. security, are adapting successfully to meet today's challenges and provide the foundation for a more stable and prosperous world. Former adversaries like Russia and other former members of the Warsaw Pact now cooperate with the United States across a range of security issues. In fact, many in the world see the United States as the security partner of choice.

Projected Security Challenges

Despite these positive signs, the world remains a complex, dynamic, and dangerous place. While there is great uncertainty about how the security environment will evolve, the United States can anticipate several important trends.

- Large-scale, cross-border aggression. Some states will continue to threaten the territorial sovereignty of their neighbors. In Southwest Asia, both Iraq and Iran continue to pose threats to the region and to the free flow of oil from the region. In East Asia, North Korea still poses a highly unpredictable threat, due to the continued forward positioning of its offensive military capabilities on South Korea's border and the

enormous pressures imposed by increasingly dire economic and humanitarian conditions. Elsewhere in the region, sovereignty issues and several territorial disputes remain potential sources of conflict.

- **Failed states.** The U.S. intelligence community expects that some nation-states will fail between now and 2015, creating instability, internal conflict, and humanitarian crises. As in the former Yugoslavia, and as today in countries ranging from Albania to the former Zaire, governments will lose their ability to maintain public order or provide for the needs of their people, creating the conditions for civil unrest, famine, massive flows of migrants across international borders, aggressive actions by neighboring states, and even mass killings.
- **Transnational Dangers.** The variety of sub-state and supra-state actors that can affect the security environment will continue to grow in number and capability. Violent, religiously-motivated terrorist organizations have eclipsed more traditional, politically-motivated movements. The latter often refrained from mass casualty operations for fear of alienating their constituencies and actors who could advance their agendas or for lack of material and technical skill. Religious zealots rarely exhibit such restraint and actively seek to maximize carnage. Also of concern are entrenched ethnic- and nationalist-motivated terrorist organizations, as well as the relatively new phenomenon of ad hoc terrorist groups domestically and abroad. Over the next 15 years, terrorists will become even more sophisticated in their targeting, propaganda, and political action operations. Terrorist state sponsors like Iran will continue to provide vital support to a disparate mix of terrorist groups and movements. The illegal drug trade and other forms of international organized crime, including piracy and the illegal trade in weapons and strategic materials, will also persist, undermining the legitimacy of friendly governments, disrupting key regions and sea lanes, and threatening the safety of U.S. citizens at home and abroad. These transnational challenges penetrate national borders and threaten citizens' well-being, sometimes through terrorist means. Finally, environmental disasters, uncontrolled flows of migrants, and other human emergencies will sporadically destabilize regions of the world.
- **Flow of potentially dangerous technologies.** The proliferation of advanced weapons and technologies—many of which can have military uses—will continue despite the best efforts of the international community. Of particular concern are the spread of nuclear, biological, and chemical weapons and their means of delivery; information operations capabilities; advanced conventional and evolving advanced technology weapons; stealth capabilities; unmanned aerial vehicles; and capabilities to access or deny access to space. The spread of these technologies could destabilize some regions and increase the number of potential adversaries with significant military capabilities, devolving from nation-states, to organized sub-state actors, to individuals. In particular, the nexus of such lethal knowledge and the emergence of terrorist movements dedicated to massive casualties represents a new paradigm for national security. Zealotry creates the will to carry out mass casualty terrorist attacks; proliferation provides the means.

Implications for U.S. Security

The foremost regional danger to U.S. security is the continuing threat that hostile states with significant military power pose to allies and friends in key regions. Between now and 2015, it is reasonable to assume that more than one such aspiring regional power will have both the motivation and the means to challenge U.S. interests militarily. The United States will also continue to face the challenges associated with failed or failing states, in some cases within regions where the United States has vital or important interests. In addition, transnational challenges—including terrorism, illegal drug flows, international organized crime, and migrant flows—are likely to increase through 2015, at times directly affecting U.S. citizens and interests both at home and abroad.

Complicating all of these challenges is the increasing likelihood that U.S. dominance in the conventional military arena is encouraging adversaries to seek asymmetric means for attacking U.S. forces and interests overseas and Americans at home. That is, both state and non-state adversaries are likely to seek advantage over the United States by using unconventional approaches to circumvent or undermine its strengths, while exploiting its vulnerabilities. Strategically, an aggressor may seek to avoid direct confrontation with the United States, using instead terrorism, NBC threats, information warfare, or environmental sabotage to achieve its goals. Regional adversaries who face direct military confrontation with the United States could also employ asymmetric means to delay or deny U.S. access to critical facilities; disrupt command, control, communications, computers, and intelligence networks; attack other critical DoD infrastructure (e.g., logistics, financial services, space systems, etc.); deter allies and potential coalition partners from supporting U.S. intervention; or inflict higher than expected U.S. casualties in an attempt to weaken U.S. national resolve. Further, the United States faces particular vulnerabilities associated with its technologically superior capabilities (e.g., space-based assets; command, control, communications, and computers; and intelligence, surveillance, and reconnaissance) that an opponent could attempt to exploit (e.g., attacking the U.S. reliance on commercial communications). Thus, the United States must adapt its strategy to deal with the asymmetric capabilities that future regional adversaries are likely to bring to bear, from fielding new capabilities to transforming how U.S. forces will operate in future contingencies.

Another direct outgrowth of the trend toward asymmetric strategies is the potential that adversaries will increasingly target the United States. The proliferation of advanced information and military technology increases the likelihood that a growing array of actors could attack the United States, using information warfare (attacks on U.S. infrastructure through computer-based information networks) or NBC weapons. Together with the continued threat of illegal drugs, organized crime, and migrant flows, and the threat inherent in the remaining strategic nuclear arsenals of other countries, direct threats to the United States are significant, albeit dramatically smaller in scale than during the Cold War.

Additional Security Concerns

Wild Card Scenarios. In addition to the above trends that the Department projects as likely is the possibility for unpredictable wild card scenarios that could seriously challenge U.S. interests at home and abroad. Such scenarios range from the unanticipated emergence of new technological

threats, to the loss of U.S. access to critical facilities and lines of communication in key regions, to the takeover of friendly regimes by hostile parties. While the probability of individual wild cards may be low, their consequences may be disproportionately high. Therefore, the United States must maintain military capabilities with sufficient flexibility to deal with such unexpected events.

Absence of a Global Peer Competitor. The security environment between now and 2015 will also likely be marked by the absence of a global peer competitor able to challenge the United States militarily around the world as the Soviet Union did during the Cold War. Furthermore, it is likely that no regional power or coalition will amass sufficient conventional military strength in the next 10 to 15 years to defeat U.S. and allied forces, once the full military potential of the United States and its coalition partners are mobilized and deployed to the region of conflict. The United States is the world's only superpower today, and it is expected to remain so through at least 2015.

In the period beyond 2015, there is the possibility that a regional great power or global peer competitor may emerge. China and Russia are seen by some as having the potential to be such competitors, though their respective futures are quite uncertain. China has the potential to assert its military power in Asia. The United States will continue to engage China, seeking to foster cooperation in areas where the two nations' interests overlap and influence it to make a positive contribution to regional stability and to act as a responsible member of the international community. China is likely to continue to face a number of internal challenges, including feeding its population, further developing its economic infrastructure, reforming the state economy through privatization, and resolving the tension between a modern market economy and authoritarian political system. These challenges may slow the pace of its military modernization.

Russia's future will depend in large measure on its ability to develop its economy, which in turn is dependent upon a stable political environment. The United States has undertaken extensive efforts, successful in many cases, to build a partnership with Russia across political, economic, and security fields. Russia's agreement with NATO will assist in peacefully integrating it into a broader European security architecture. These arrangements may ultimately alter Russian attitudes towards NATO and western security structures and shape a stable European security environment.

The Imperative of Engagement

Finally, it is important to note that this projection of the security environment rests on two fundamental assumptions: that the United States will remain politically and militarily engaged in the world over the next 15 to 20 years and that it will maintain military superiority over current and potential rivals. If the United States were to withdraw from its international commitments, relinquish its diplomatic leadership, or lose its military superiority, the world would become an even more dangerous place and the threats to the United States, its allies, friends, and interests would be even more severe.

THE PRESIDENT'S NATIONAL SECURITY STRATEGY

To meet the challenges and opportunities presented by this security environment, the Administration has developed a National Security Strategy concomitant with U.S. global interests. The United States will remain engaged abroad while supporting efforts to enlarge the community of secure, free-market, and democratic nations and create new partners in peace and prosperity. While the United States will retain the capability to act unilaterally, this strategy emphasizes coalition operations as essential to securing basic U.S. national goals, protecting and promoting U.S. interests, and creating preferred international conditions. Indeed, the nature of the challenges the nation faces demands cooperative, multinational approaches that distribute the burden of responsibility among like-minded states. For example, to effectively curb the proliferation of NBC weapons, the United States must garner the cooperation of other nations that have access to NBC technology and materials, as it is doing now with NATO and other allies and friends. Therefore, it is imperative that the United States strives to build close, cooperative relations with the world's most influential countries.

Maintaining a strong military and the willingness to use it in defense of national and common interests remain essential to a strategy of engagement as the United States approaches the 21st century. Today, the United States has unparalleled military capabilities. As the only nation in the world able to project overwhelming military power worldwide to conduct large-scale, effective joint military operations far beyond its borders, the United States is in a unique position. It is the only country in the world that can organize effective military responses to large-scale regional threats—the cornerstone of many mutually beneficial alliances and security partnerships and the foundation of stability in key regions of the world. To sustain this position of leadership, the United States must maintain ready and versatile forces capable of conducting a wide range of military activities and operations—from deterring and defeating large-scale aggression, to participating in smaller-scale contingencies, to dealing with asymmetric threats like terrorism.

Nevertheless, both U.S. national interests and limited resources argue for the selective use of U.S. forces. Decisions about whether and when to use military forces should be guided, first and foremost, by the U.S. national interests at stake—be they vital, important, or humanitarian in nature—and by whether the costs and risks of a particular military involvement are commensurate with those interests. When the interests at stake are vital—that is, they are of broad, overriding importance to the survival, security, and vitality of the nation—the United States will do whatever it takes to defend them, including when necessary, the unilateral use of military power. U.S. vital national interests include:

- Protecting the sovereignty, territory, and population of the United States.
- Preventing the emergence of hostile regional coalitions or hegemons.
- Ensuring uninhibited access to key markets, energy supplies, and strategic resources.
- Deterring and, if necessary, defeating aggression against U.S. allies and friends.

- Ensuring freedom of the seas, airways, and space, and the security of vital lines of communication.

In other cases, the interests at stake may be important but not vital—that is, they do not affect the nation’s survival—but do significantly affect the national well-being and the character of the world in which Americans live. In these cases, military forces should be used only if they advance U.S. interests, are likely to accomplish their objectives, and if other means are inadequate to accomplish U.S. goals. Such uses of force should be both selective and limited, reflecting the relative saliency of the U.S. interests involved.

When the interests at stake are primarily humanitarian in nature, the U.S. military is generally not the best means of addressing a crisis. In some situations, however, use of the military’s unique capabilities may be both necessary and appropriate: when a humanitarian catastrophe dwarfs the ability of civilian relief agencies to respond or when the need for immediate relief is urgent and only the U.S. military has the ability to jump-start the longer-term response to the disaster. In such cases, if the United States decides to commit military forces to assist in the situation, the military mission should be clearly defined, the risk to American troops should be minimal, and substantial U.S. military involvement should be confined to the initial period of providing relief until broader international assistance efforts get under way.

In all cases where the commitment of U.S. forces is considered, determining whether the associated costs and risks are commensurate with the U.S. interests at stake should be the central calculus of U.S. decisions. Such decisions should also depend on the United States’ ability to identify a clear mission, the desired end state of the situation, and the exit strategy for forces committed.

THE DEFENSE STRATEGY

To support the imperative of engagement set forth in the National Security Strategy, the Department of Defense has laid out a strategy and resultant defense program—set forth in the May 1997 *Report of the Quadrennial Defense Review*—that harness U.S. leadership to promote the nation’s interests throughout the 1997-2015 period. The strategy requires DoD to help shape the international security environment in ways favorable to U.S. interests, respond to the full spectrum of crises when directed, and prepare now to meet the challenges of an uncertain future. These three elements—shaping, responding, and preparing—define the essence of U.S. defense strategy between now and 2015.

Shaping the International Environment

In addition to other instruments of national power like diplomacy and economic trade and investment, the Department of Defense has an essential role to play in shaping the international security environment in ways that promote and protect U.S. national interests. DoD efforts help to build coalitions, promote regional stability, prevent or reduce conflicts and threats, and deter aggression and coercion on a day-to-day basis in many key regions of the world. To do so, the Department employs its forces permanently stationed abroad, rotationally deployed overseas, and deployed temporarily, and undertakes exercises, combined training, and military-to-military

interactions. Moreover, the Department plays an important role in international arms cooperation and management of the U.S. military assistance program. Through Foreign Military Sales, Foreign Military Financing, International Military Education and Training, Presidentially-directed drawdowns of defense assets, and transfers of Excess Defense Articles, the United States provides its friends and allies with equipment, services, and training for legitimate self-defense and participation in multinational security efforts. DoD's role in shaping the international environment is closely integrated with diplomatic efforts. On a daily basis, U.S. diplomatic and military representatives work together towards U.S. objectives in all regions of the world. In times of crisis, diplomacy is a critical force multiplier when the United States seeks and works with coalition partners and requires access to foreign bases and facilities. Conversely, diplomacy is frequently enhanced when it is supported by the potential for a military response.

Promoting Regional Stability. In regions where the United States has vital and important interests, the U.S. military helps bolster the security of key allies and friends and works to adapt and strengthen core alliances and coalitions to meet the challenges of an evolving security environment. This engagement forms bilateral and multilateral relationships that increase military openness, enhance cooperation, and advance regional conflict prevention and resolution mechanisms. For instance, transfers of U.S. defense equipment and training strengthen security partners' ability to fight alongside U.S. forces in coalition efforts. In addition, the U.S. military often serves as a preferred means of engagement with countries that are neither staunch friends nor confirmed foes. These contacts build constructive security relationships and help to promote the development of democratic institutions today, in an effort to keep these countries from becoming adversaries tomorrow. Through both example and enforcement, U.S. forces encourage adherence to the international norms and regimes that help provide the foundation for peace and stability around the globe, such as nonproliferation and other arms control agreements that support U.S. national security objectives, the development of appropriate conflict prevention and conflict resolution mechanisms, freedom of navigation, and respect for human rights and the rule of law. Promoting regional stability places a premium on building close working relationships with other U.S. government agencies, coalition partners, and nongovernmental organizations.

Preventing or Reducing Conflicts and Threats. U.S. military forces and other DoD resources can be critical to efforts to prevent or reduce threats and conflicts. Their role in conflict prevention is a key rationale for the U.S. commitment to maintain forces overseas, conduct peacetime engagement activities, and fund various policy initiatives. Such preventive measures include focused efforts to:

- Actually reduce or eliminate NBC capabilities, as has been done with the U.S.-North Korean Agreed Framework and the Cooperative Threat Reduction program with Russia, Ukraine, Belarus, Moldova, and Kazakhstan.
- Discourage arms races and the proliferation of NBC weapons, as is being done by DoD efforts to control exports of proliferation-related equipment and technologies and monitor and support arms control agreements such as the Nuclear Non-Proliferation Treaty and the Missile Technology Control Regime.

- Prevent and deter future terrorism and reduce U.S. vulnerability to terrorist acts through DoD efforts to enhance intelligence collection capabilities and protect DoD personnel and critical infrastructure.
- Deter the production and flow of illegal drugs into the United States, using DoD manpower and assets in the Joint Interagency Task Forces—overseas and in international air and sea space contiguous to the U.S. borders—to directly assist law enforcement agencies seize over 100 metric tons of cocaine each year.
- Lessen the conditions for conflict, as has the deployment of U.S. forces to Macedonia.

Relatively small and timely investments in such targeted prevention measures can yield disproportionate benefits, often mitigating the need for a more substantial and costly U.S. response later.

Deterring Aggression and Coercion. The third aspect of the military's key role in shaping the international security environment is deterring aggression and coercion in key regions of the world on a day-to-day basis through the peacetime deployment of U.S. military forces abroad. The United States' ability to deter potential adversaries in peacetime rests on several factors:

- A demonstrated will and ability to uphold U.S. security commitments when and where they are challenged.
- A declaratory policy that effectively communicates U.S. commitments and the costs to potential adversaries who might challenge these commitments.
- Conventional warfighting capabilities that are credible across the full spectrum of military operations. This credibility is evidenced by U.S. forces and equipment strategically stationed or deployed forward, rapidly deployable power-projection forces, the U.S. ability to gain timely access to critical infrastructure overseas, and the demonstrated ability to form and lead effective military coalitions.

U.S. nuclear posture also contributes substantially to the ability to deter aggression in peacetime. The primary role of U.S. nuclear forces in the current and projected security environment is to deter aggression against the United States, its forces abroad, and its allies and friends. Although the prominence of nuclear weapons in the nation's defense posture has diminished since the end of the Cold War, nuclear weapons remain important as one of a range of responses available to deal with threats or use of NBC weapons against U.S. interests. They serve as a hedge against the uncertain futures of potentially hostile nuclear powers and as a means of upholding U.S. security commitments to allies.

In this context, the United States must retain sufficient strategic nuclear forces and its capability to redeploy theater nuclear systems to deter any hostile foreign leadership with access to nuclear weapons from acting against U.S. vital interests and to convince such a leadership that seeking a nuclear advantage would be futile. Thus, for the foreseeable future, the United States will continue to need a reliable and flexible nuclear deterrent—survivable against the most aggressive

attack, under highly confident, constitutional command and control, and safeguarded against both accidental and unauthorized use. The Department believes these goals can be achieved at lower force levels and continues to take the lead in examining new arms reduction opportunities. The Department is poised to begin mutual early deactivations once the Russian government has ratified the START II treaty and to negotiating further strategic nuclear reductions in a START III context, as called for in the Helsinki Joint Statement.

In addition, the United States also forward stations theater nuclear forces in Europe. Nuclear forces based in Europe and committed to NATO provide an essential political and military link between the European and North American members of the Alliance. In that regard, a credible Alliance nuclear posture continues to require widespread participation by European allies in collective defense planning for nuclear roles, peacetime basing of nuclear forces on their territories, and command, control, and consultation arrangements.

Responding to the Full Spectrum of Crises

Despite the Department's best efforts to shape the international security environment, the U.S. military will, at times, be called upon to respond to crises in order to protect national interests, demonstrate U.S. resolve, and reaffirm the nation's role as global leader. Therefore, U.S. forces must also be able to execute the full spectrum of military operations, from deterring an adversary's aggression or coercion in crisis and conducting concurrent smaller-scale contingency operations, to fighting and winning major theater wars.

Although the United States will retain the capabilities to protect its interests unilaterally, there are often advantages to acting in concert with like-minded nations when responding to crises. Acting in coalition or alliance with other nations, rather than alone, generally strengthens the political legitimacy of a course of action and brings additional resources to bear, ensuring that the United States need not shoulder the political, military, and financial burdens alone. But building and maintaining effective coalitions also present significant challenges, from policy coordination at the strategic level to interoperability among diverse military forces at the tactical level. As U.S. forces incorporate new technologies and operational concepts at a pace faster than that of any other military, careful design and collaboration will be needed to ensure the United States and its allies and partners meet new interoperability challenges. Because coalitions will continue to present both important political benefits and not insignificant military challenges, U.S. forces must plan, train, and prepare to respond to the full spectrum of crises in coalition with the forces of other nations.

Detering Aggression and Coercion in Crisis. In many cases, the first stage of responding to a crisis consists of efforts to deter an adversary so that the situation does not require a greater response. Deterrence in a crisis generally involves signaling the United States' commitment to a particular country or expressing its national interest by enhancing U.S. warfighting capability in the theater. The U.S. ability to respond rapidly and substantially as a crisis develops can have a significant deterrent effect. The readiness levels of deployable forces may be increased, forces deployed in the area may be moved closer to the crisis and forces from the United States may be rapidly deployed to the area. The United States may also choose to make additional declaratory statements to communicate its intentions and the costs of aggression or coercion to an adversary.

In some cases, the nation may choose to employ U.S. forces in a limited manner (e.g., to enforce sanctions or conduct limited strikes) to underline this message and deter further adventurism.

Conducting Smaller-Scale Contingency (SSC) Operations. In general, the United States, along with others in the international community, will seek to prevent and contain localized conflicts and crises before they require a military response. If, however, such efforts do not succeed, swift intervention by military forces may be the best way to contain, resolve, or mitigate the consequences of a conflict that could otherwise become far more costly and deadly. These operations encompass the full range of joint military operations beyond peacetime engagement activities but short of major theater warfare. They include show-of-force operations, interventions, limited strikes, noncombatant evacuation operations, no-fly zone enforcement, maritime sanctions enforcement, counterterrorism operations, peace operations, foreign humanitarian assistance, and military support to civilian authorities.

Selective participation in SSC operations can serve a variety of U.S. interests. For example, U.S. forces are sometimes called upon to conduct noncombatant evacuations, protecting U.S. citizens caught in harm's way. The United States might also choose to deploy forces to an intervention or peacekeeping operation in order to support democracy where it is threatened or to restore stability in a critical region. In addition, when rogue states defy the community of nations and threaten common interests, the United States may use its military capabilities—for instance, through maritime sanctions enforcement or limited strikes—to help enforce the international community's will and deter further coercion. And when natural or man-made disaster strikes at home or abroad, U.S. values and interests might call for the use of unique military assets to jump-start the response, enabling other elements of the U.S. government or international community to initiate longer-term relief efforts.

Based on recent experience and intelligence projections, the demand for SSC operations is expected to remain high over the next 15 to 20 years. U.S. participation in SSC operations must be selective, depending largely on the interests at stake and the risk of major aggression elsewhere. However, these operations will still likely pose the most frequent challenge for U.S. forces through 2015 and may require significant commitments of forces, both active and reserve.

Fighting and Winning Major Theater Wars (MTW). At the high end of the possible crisis continuum is fighting and winning major theater wars. This mission is the most stressing requirement for the U.S. military. To protect American interests around the globe, U.S. forces must continue to be able to overmatch the military power of regional states with interests hostile to the United States. Such states are often capable of fielding sizable military forces that can cause serious imbalances in military power within regions important to the United States. Allies and friendly states often find it difficult to match the power of a potentially aggressive neighbor. To deter aggression, prevent coercion of allied or friendly governments, and defeat aggression should it occur, the Department must prepare U.S. forces to confront this scale of threat far from home, in concert with allies and friends, but unilaterally if necessary. Toward this end, the United States must have jointly trained and interoperable forces that can deploy quickly from a posture of global engagement—across great distances to supplement forward-stationed and forward-deployed U.S. forces—to assist a threatened nation, rapidly stop an enemy invasion, and defeat an aggressor, even in an environment of NBC weapons threat or use.

As a global power with worldwide interests, it is imperative that the United States, now and for the foreseeable future, be able to deter and defeat large-scale, cross-border aggression in two distant theaters in overlapping time frames, preferably in concert with regional allies. Maintaining this core capability is central to credibly deterring opportunism—that is, to avoiding a situation in which an aggressor in one region might be tempted to take advantage when U.S. forces are heavily committed elsewhere—and to ensuring that the United States has sufficient military capabilities to deter or defeat aggression by an adversary that is larger, or under circumstances that are more difficult, than expected. This is particularly important in a highly dynamic and uncertain security environment. One can never know with certainty when or where the next major theater war will occur, who the next adversary will be, how an enemy will fight, who will join the United States in a coalition, or precisely what demands will be placed on U.S. forces. Indeed, history has repeatedly shown the unpredictability of such matters. A force sized, equipped, and sustained for deterring and defeating aggression in more than one theater enhances the United States' ability to cope with the unpredictable and unexpected. Such a capability is the essential quality of a superpower and is vital to the credibility of the overall U.S. national security strategy. It also supports the Department's continued engagement in shaping the international environment to reduce the chances that such threats will develop in the first place.

If the United States were to forego its ability to defeat aggression in more than one theater at a time, its standing as a global power, as the security partner of choice, and as the leader of the international community would be called into question. Indeed, some allies would undoubtedly read a one-war capability as a signal that the United States, if heavily engaged elsewhere, would no longer be able to help defend their interests. Such a capability could also inhibit the United States from responding to a crisis promptly enough, or even at all, for fear of committing the bulk of U.S. forces and making itself vulnerable in other regions. This fact is also unlikely to escape the attention of potential adversaries. A one-theater war capacity would risk undermining both deterrence and the credibility of U.S. security commitments in key regions of the world. This, in turn, could cause allies and friends to adopt more divergent defense policies and postures, thereby weakening the web of alliances and coalitions on which the United States relies to protect its interests abroad.

In this dynamic, uncertain security environment, the United States must continually reassess the environment, the defense strategy, and the associated military requirements. If the security environment were to change dramatically and threats of large-scale aggression were to grow or diminish significantly, it would be both prudent and appropriate for the United States to review and reappraise its warfighting requirements.

Preparing Now for an Uncertain Future

The fundamental challenge confronting the Department of Defense is simple, but daunting. U.S. forces must meet the demands of a dangerous world by shaping and responding throughout the next 15 years. To do so, the Department must meet its requirements to shape and respond in the near term, while at the same time it must transform U.S. combat capabilities and support structures to be able to shape and respond effectively in the face of future challenges.

To meet this challenge, the Department must prepare now to meet the security challenges of an unpredictable future. As the nation moves into the next century, it is imperative that it maintain its military superiority in the face of evolving, as well as discontinuous, threats and challenges. Without such superiority, the United States' ability to exert global leadership and to create international conditions conducive to the achievement of its national goals would be in doubt.

To maintain this superiority, the United States must achieve a new level of proficiency in its ability to conduct joint and combined operations. This proficiency can only be achieved through a unified effort by all elements of the Department toward the common goal of full spectrum dominance envisioned in *Joint Vision 2010*, the Chairman of the Joint Chiefs of Staff's blueprint for future military operations. Implementing *Joint Vision 2010* requires developing the doctrine, education, training, organization, and materiel to support truly integrated joint operations. Achieving this new level of proficiency also requires improving the U.S. military's methods for integrating its forces and capabilities with those of its allies and coalition partners.

The Department's commitment to preparing now for an uncertain future has four main parts:

- Pursue a focused modernization effort in order to replace aging systems and incorporate cutting-edge technologies into the force to ensure continued U.S. military superiority over time.
- Continue to exploit the Revolution in Military Affairs (RMA) in order to improve the U.S. military's ability to perform near-term missions and meet future challenges.
- Exploit the Revolution in Business Affairs to radically reengineer DoD infrastructure and support activities.
- Insure or hedge against unlikely, but significant, future threats in order to manage risk in a resource-constrained environment and better position the Department to respond in a timely and effective manner to new threats as they emerge.

Pursue a Focused Modernization Effort. Fielding modern and capable forces in the future requires aggressive action today. Just as U.S. forces won the Gulf War with weapons that were developed many years before, tomorrow's forces will fight with weapons that are developed today and fielded over the next several years. Today, the Department is witnessing a gradual aging of the overall force. Many weapons systems and platforms purchased in the 1970s and 1980s will reach the end of their useful lives over the next decade or so. It is essential that the Department increase procurement spending now so that it can ensure tomorrow's forces are every bit as modern and capable as today's. Sustained, adequate spending on the modernization of U.S. forces will be essential to ensuring that tomorrow's forces continue to dominate across the full spectrum of military operations.

Exploit the Revolution in Military Affairs. The U.S. military's modernization effort is directly linked to the broader challenge of transforming its forces to retain military superiority in the face of changes in the security environment and in the art of warfare. Just as earlier technological revolutions have affected the nature of conflict, so too will the technological change that is so

evident today. This transformation involves much more than the acquisition of new military systems. It means harnessing new technologies to give U.S. forces greater military capabilities through advanced concepts, doctrine, and organizations so that they can dominate any future battlefield, including one involving asymmetric counters. In the next several years, DoD will continue to strengthen both the culture and the capability to develop and exploit new concepts and technologies in order to make U.S. military forces more responsive to an uncertain world. Part III describes the Department's RMA activities in detail.

Exploit the Revolution in Business Affairs. A Revolution in Business Affairs also has begun. Efforts to reengineer the Department's infrastructure and business practices must parallel the work being done to exploit the Revolution in Military Affairs if the nation is to afford both adequate investment in preparations for the future, especially a more robust modernization program, and capabilities sufficient to support an ambitious shaping and responding strategy through 2015. Measures are aimed at shortening cycle times, particularly for the procurement of mature systems; enhancing program stability; conserving scarce resources; ensuring that acquired capabilities will support mission outcomes; ensuring that critical infrastructures deliver the right services to the right users at the right time; increasing efficiencies; and assuring management focus on core competencies, while freeing resources for investment in high-priority areas.

These measures will require changes in political and public thinking about the infrastructure that supports flexible U.S. forces. That thinking must be open to new solutions and focused on the bottom-line support for U.S. forces. The Quadrennial Defense Review itself reviewed a large number of options and proposed a number of steps in this area, but much more fundamental work must be done to radically reengineer the Department's institutions. To build the forces envisioned in *Joint Vision 2010*, additional programs will need to be developed in the years beyond the Future Years Defense Program. To afford those programs, the Department will need both the vision and the will to shrink and make dramatically more efficient its supporting infrastructure. Efforts to transform the Department are covered in more detail in Part IV.

Insurance Policies. The fourth element of preparing for an uncertain future is taking prudent steps today to position DoD to respond more effectively to unlikely, but significant, future threats, such as the early emergence of a regional great power or a wild card scenario. Such steps provide a hedge against the possibility that unanticipated threats will emerge. The Department should focus these efforts on threats that, although unlikely, would have highly negative consequences that would be very expensive to counter. Although such insurance is certainly not free, in an uncertain, resource-constrained environment, it is a relatively inexpensive way to manage the risk of being unprepared to meet a new threat, developing the wrong capabilities, or producing a capability too early and having it become obsolete by the time it is needed. Such an approach can also provide an opportunity to delay or forego costly investments in future capabilities the United States may not need.

Among the necessary hedging steps are maintaining a broad research and development (R&D) effort; use of Advanced Concept Technology Demonstrations; contact with industries specializing in new technologies; and cooperation with allies who may develop new approaches to resolving problems. An additional approach is to develop new capabilities through carefully

tailored R&D and acquisition programs. For example, in missile defense, the United States has focused on R&D efforts that position it to deploy a credible national missile defense against very limited attacks within three years of a deployment decision. Applying such an approach more broadly against new threats will require ensuring that U.S. forces have the necessary intelligence capabilities for long-term strategic indications and warning, designing a process for validating such insurance requirements across the Department, and developing an insurance program profile and process that can be integrated into overall acquisition processes. Finally, R&D programs can be designed to adopt and adapt commercial technologies to military needs.

The Department's activities in all of these areas are only the initial steps in a continuing process. Preparing now for an uncertain future has no real end point. It must become a central component of the DoD culture and a continuing focus of the Department's efforts.

REGIONAL APPLICATIONS OF THE STRATEGY

In each region of the world, the Department of Defense undertakes activities in an effort to secure U.S. national security interests. In addition to those universal vital U.S. interests stated earlier, each region presents its own unique opportunities and challenges. The Department's strategies for dealing with these various regional challenges are critical to its overall effort to shape the international environment and remain prepared to respond to the full range of crises. Indeed, how the United States uses force and its forces sends a clear signal to friends and foes throughout the world about its interests, influence, and values.

Europe

U.S. Defense Objectives. U.S. defense efforts in Europe are aimed at achieving a peaceful, stable region where an enlarged NATO, through U.S. leadership, remains the preeminent security organization for promoting stability and security. Further, the United States seeks positive and cooperative Russian-NATO and Ukrainian-NATO relations and strengthened relations with Central and Eastern European nations outside of NATO. The United States desires a region in which all parties peacefully resolve their religious, political, and ethnic tensions through existing security structures and mechanisms. Finally, along with the United States, European nations should be successfully countering drug trafficking, terrorism, and the proliferation of NBC weapons and associated delivery systems.

U.S. Regional Defense Posture and Activities. The most visible sign of U.S. interest in European security is the approximately 100,000 American servicemen and women forward-stationed on the continent and the continuous presence of U.S. naval forces in the Mediterranean. Along with the many routine deployments of U.S.-based forces, these units ensure that the United States maintains an active and prominent role in NATO and in outreach to NATO's partners in the region. European-based U.S. forces are also often the first forces to respond to emerging crises in Europe, Africa, and the Middle East.

DoD activities to strengthen European security extend far beyond the presence or use of American military forces. The United States is intimately involved in the twin processes of NATO adaptation and NATO enlargement. Recognizing recent changes in the international

security environment, the former seeks to move the alliance away from a static forward defense posture toward more capable and mobile reaction forces that can project power for crisis management operations. To maintain NATO's military effectiveness in the new security environment, the Alliance has also undertaken efforts to counter the military risks posed by NBC proliferation. Such activities are crucial to maintaining NATO's relevance as a security institution and avoiding the renationalization of European security policies. NATO enlargement acknowledges the end of the Cold War and seeks to reinforce democratic reforms and stability throughout Europe by enlarging the circle of European nations bound by common interests to a common defense.

The Department will continue to support programs necessary to implement NATO enlargement, including the NATO common funded budgets, Partnership for Peace, and related bilateral projects aimed at outreach, democratic reform, and stability in Central and Eastern Europe.

The New Independent States

U.S. Defense Objectives. Through its various programs and activities with the New Independent States, the United States seeks to ensure that Russia, Ukraine, and the other nations of the region become stable market democracies that are cooperative partners in promoting regional stability and arms control in Europe and other regions. Integral to this goal is U.S. support of efforts to secure or eliminate any Soviet NBC weapons, weapons materials, and associated delivery systems remaining in the other New Independent States. The United States also seeks to deter potential strategic nuclear threats against its citizens and territory. The United States desires Russia to play a constructive role in European affairs, in partnership with NATO, and to maintain strong relations with an independent Ukraine. The United States further seeks a peaceful resolution to the ethnic and regional tensions in the New Independent States, as well as successful counters to drug trafficking, terrorism, and international organized crime.

U.S. Regional Defense and Activities. While the United States does not forward station or routinely deploy forces in the New Independent States, the Department of Defense contributes substantially to overarching U.S. security objectives in the region. In its bilateral foreign military interactions with all the New Independent States, the Department seeks to impart the principles of civilian leadership, defense transparency, and military reform and restructuring. Military interactions also seek to overcome the mutual distrust and suspicion that are a legacy of the Cold War. These bilateral efforts are complemented by multinational efforts, including those conducted through the Partnership for Peace program, the Organization for Security and Cooperation in Europe, and other organizations. The Department will continue to broaden military and civilian defense contacts, support the ongoing enhanced security for and dismantlement of Russian nuclear weapons, facilitate reductions in chemical weapons, and conduct combined training and exercises to strengthen interoperability with NATO in order to improve the New Independent States' capabilities for multinational operations.

East Asia and the Pacific Rim

U.S. Defense Objectives. The United States seeks a stable and economically prosperous East Asia that embraces democratic reform and market economics. Central to achieving this goal are

the United States' strong alliance relationships within the region, especially with Japan, Australia, and the Republic of Korea (ROK). In addition, it is critical to continue to engage China so that it contributes to regional stability and acts as a responsible member of the international community. The United States desires the peaceful resolution of the conflict on the Korean peninsula and peaceful unification, in accordance with the wishes of the Korean people, as well as the peaceful resolution of the region's other disputes, including that between Taiwan and the People's Republic of China. The issue of accounting for personnel who remain missing as a result of the war in Vietnam remains a high national priority. Successful counters to terrorism, drug trafficking, and NBC proliferation are major U.S. goals for the region. Finally, the United States seeks the fullest possible accounting for missing U.S. personnel in Asia.

U.S. Regional Defense and Activities. The United States is committed to maintaining its current level of military capability in East Asia and the Pacific Rim. This capability allows the United States to play a key role as security guarantor and regional balancer. The United States will continue a forward presence policy, in cooperation with its allies, that reflects its current interests and adjusts over time to meet the changing demands of the security environment. Today, this calls for stationing or deploying approximately 100,000 U.S. military personnel in the region. Of these personnel, almost half are stationed in Japan and close to 40 percent are in the Republic of Korea. Additionally, the United States will seek to continue and build upon bilateral and multilateral exercises with key states in the region, including the Republic of Korea, Japan, Thailand, the Philippines, and Australia.

The most significant near-term danger in the region is the continuing military threat posed by the Democratic People's Republic of Korea (DPRK). Due to the forward positioning of its offensive military capabilities, its possession of chemical and biological weapons (CBW) and their means of delivery and the proximity of Seoul to the Demilitarized Zone, the North Korean threat to ROK security remains formidable. The pressures imposed by increasingly dire economic conditions in the DPRK make this threat all the more unpredictable. The United States remains fully committed to its treaty obligations to assist the ROK to defend against North Korean aggression. The United States also seeks a Korean peninsula free of NBC weapons—a goal shared with the ROK and other allies and friends in the region. The U.S.-North Korean Agreed Framework advances this vital U.S. nonproliferation objective by halting activity at key nuclear production and processing facilities and, when fully implemented, eliminating North Korea's existing nuclear weapons program. The Department is also working with its Pacific allies to enhance the collective capabilities to deter and defeat CBW use.

The United States' security alliance with Japan is the linchpin of its security policy in Asia and is key to many U.S. global objectives. The United States is working to strengthen its bilateral relationship with Japan by expanding the areas of cooperation between the two nations. U.S. efforts to build on strong alliances with other nations in the region, especially Australia, buttress the U.S. goal of ensuring stability in Southeast Asia and the South Pacific, an area of growing economic and political importance. The continued strengthening of U.S. security dialogues and confidence-building with the members of the Association of Southeast Asian Nations (ASEAN) through the ASEAN Regional Forum is one of many ways in which the United States is working to enhance political, military, and economic ties with friends and allies in Southeast Asia. The Asia-Pacific Center for Security Studies is a key U.S. initiative to further understanding and

cooperation by providing an academic forum for military and civilian decision makers from the United States and Asia to exchange ideas and explore regional security challenges.

Because of China's critical importance in the Asia-Pacific region, the United States is working to bring China more deeply into the international community. Specifically, the United States engages China in order to promote regional stability and economic prosperity while securing China's adherence to international standards on weapons nonproliferation, international trade, and human rights. The United States also seeks greater transparency in China's defense program, including its planning and procurement processes, and will continue to engage China in dialogue aimed at fostering cooperation and confidence-building. Military exchange programs, port visits, professional seminars, and field/at-sea training events contribute to this dialogue and are aimed at building lasting relationships that will foster cooperation and build confidence among key U.S. and Chinese leaders.

The Middle East and South Asia

U.S. Defense Objectives. The United States seeks a Middle East and South Asia region at peace, where access to strategic natural resources at stable prices is unhindered and free markets are expanding. The region cannot be stable until there is a just, lasting, and comprehensive peace between Arabs and Israelis and a peaceful resolution to India-Pakistan disputes. Nor can stability be achieved until the region's rogue states—Iraq, Iran, and Libya—abide by international norms and no longer threaten regional security. The threat or use of chemical and biological weapons by the region's rogue states must be deterred, further proliferation of NBC technologies thwarted, and terrorism successfully countered. The United States must continue working with regional allies and improving U.S. force capabilities to ensure that U.S.-led coalition forces have the ability to fight and win in an NBC environment.

U.S. Regional Defense and Activities. Since the Gulf War, the United States has undertaken a number of steps to enhance its military posture in the region. While the United States has limited forces stationed long term in the region, it does maintain a sufficient level of presence through rotational and temporarily deployed forces. An average of 15,000 U.S. military personnel, as well as prepositioned critical materiel, are in the region at any time to help deter aggression and promote stability. These forces conduct a variety of missions, including deterring aggression, enforcing sanctions, ensuring free access to resources, and working with regional partners to improve interoperability and their self-defense capabilities. The close military relationships developed with friends throughout the Middle East and South Asia region, complemented by U.S. security assistance programs, contribute to an environment that allows regional states to more readily and effectively support U.S. crisis deployments. This contribution is integral to U.S. deterrence efforts.

While the United States cannot impose solutions on the region's disputes, its unique military and political position demands that it play an active role in promoting regional stability and advancing the cause of peace. In conjunction with diplomatic efforts, the U.S. military will continue to use military-to-military contacts as a means for promoting transparency, enhancing the professionalism of regional armed forces, and demonstrating the value of support for human rights and democratic values. The United States will also encourage participation by regional

parties, where appropriate, in peace operations to help resolve international conflicts and promote potential regional cooperation.

The Americas

U.S. Defense Objectives. The United States desires all members of its hemispheric community to be peaceful, democratic partners in economic prosperity. These nations should exhibit a strong commitment to civilian control of their armed forces, constructive civil-military relations, respect for human rights, and restraint in acquisition of arms and military budgets. They should increasingly focus on international peacekeeping, support for counternarcotics, and humanitarian assistance. The United States also believes that the peaceful resolution of the region's territorial disputes is particularly important. Transparency of military holdings and expenditures and the widespread use of confidence- and security-building measures directly and positively affect this goal. The United States also seeks to maintain the neutrality of the Panama Canal and freedom of navigation along the region's sea lines of communication. Finally, successful counters to the region's drug and arms trafficking, terrorism, NBC weapons proliferation, organized crime, and refugee flows are all central to U.S. territorial security and integrity.

U.S. Regional Defense Posture and Activities. Over 50,000 active duty and reserve personnel from the United States pass through the Caribbean and Latin America every year to engage in exercises, nation assistance, instruction in demining operations, and other activities. The United States is currently altering its permanent military presence in Latin America. In 1997 the headquarters of the United States Southern Command completed its move to Florida. In addition, the Department is participating in negotiations on the establishment of a Multinational Counterdrug Center in Panama, including U.S. military support requirements, following the 1999 transfer of the Canal from the United States to Panama.

The Department expends significant energy and time in encouraging the increasing acceptance by militaries in the region of their appropriate role in a constitutional democracy. One highlight of U.S. defense-to-defense efforts in this regard is the ongoing Defense Ministerial of the Americas. Now in its third iteration, the Defense Ministerial of the Americas brings together the defense ministers from the hemisphere's democracies to discuss common concerns, enhancing transparency, reducing suspicions, and promoting an appropriate role for the military in a democratic society.

Transnational threats are particularly troublesome in the Americas. Because drug trafficking and associated criminal activity threaten the United States and its interests in the region, DoD will continue to support other agencies in trying to stop the flow of drugs, both at the source and in transit, and will encourage and assist other nations committed to anti-drug efforts. In addition, when directed by the President, the Department will assist other U.S. government agencies in stemming refugee flows when they threaten U.S. interests, including its territorial sovereignty.

Sub-Saharan Africa

U.S. Defense Objectives. The United States seeks a Sub-Saharan Africa where terrorism, organized crime, narcotics trafficking, disease, environmental degradation, and the influence of

pariah states no longer threaten the region's nations or others. Africa should be a region at peace, fully integrated into the world economy, where the spread of democracy and respect for human rights have produced a level of stability that allows African states to resolve conflict peacefully and satisfy the basic human needs of their citizens.

U.S. Regional Defense Posture and Activities. Although at present the United States has no permanent military presence in Sub-Saharan Africa, it promotes stability by gaining and maintaining informal access through engagement activities, forming positive relationships with key institutions, and conducting exercises with the region's militaries. For example, the African Crisis Response Initiative (ACRI) is a U.S. training effort aimed at creating partnerships with both regional countries and allies and friends outside the region to train fully interoperable, highly effective, rapidly-deployable African peacekeeping units capable of operating jointly. Three battalions in Uganda, Senegal, and Malawi have successfully completed training, and ACRI will train additional units in the coming year. In addition, through the President's Front Line States initiative, the United States is providing defensive, nonlethal military assistance to help a number of African countries resist Sudanese-backed insurgencies and contain that nation's sponsorship of international terrorism. Finally, the United States is enhancing its bilateral military relationship with South Africa through the U.S.-South African Binational Commission's defense committee, with the larger goal of enhancing stability through mutually-beneficial engagement. These shaping activities, in addition to enhancing the security of the nations and citizens involved, provide both basing opportunities for conducting noncombatant evacuation operations and humanitarian operations and a foundation for countering state-sponsored terrorism, narcotics trafficking, and the proliferation of conventional weapons, fissile materials, and related technology. The United States must continue to work with the continent's nations to help secure U.S. interests.

STRATEGIC PLANNING DOD CORPORATE-LEVEL GOALS

In order to ensure the Department's ability to execute the defense strategy articulated above, and consistent with the Government Performance and Results Act (GPRA), DoD has established six critical corporate-level goals.

- Goal 1. Shape the international environment through DoD engagement programs and activities.
 - Support friends and allies by sustaining and adapting security relationships.
 - Enhance coalition capabilities.
 - Promote regional stability.
 - Prevent or reduce threats and conflict.
- Goal 2. Shape the international environment and respond to the full spectrum of crises by providing appropriately sized, positioned, and mobile forces.

- Support U.S. regional security objectives.
 - Deter hostile actors/activities in peacetime and in times of crisis.
 - Conduct multiple, concurrent smaller-scale contingency operations, if required.
 - Fight and win two nearly simultaneous major theater wars, if required.
- Goal 3. Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities.
 - Goal 4. Prepare now for an uncertain future by exploiting the Revolution in Military Affairs to transform U.S. forces for the future.
 - Goal 5. Maintain highly ready joint forces to perform the full spectrum of military activities.
 - Maintain high personnel and unit readiness.
 - Recruit and retain well-qualified military and civilian personnel.
 - Provide equal opportunity and a high quality of life.
 - Improve force management procedures throughout DoD.
 - Goal 6. Fundamentally reengineer the Department and achieve a 21st century infrastructure by reducing costs while maintaining required military capabilities across all DoD mission areas.

A summary of the Department's performance plan for meeting these goals is at Appendix J.

CONCLUSION

The defense strategy laid out above, and detailed in the *Report of the Quadrennial Defense Review*, provides a path for the United States to protect and promote its national interests in the current and projected security environment. The United States must remain engaged as a global leader and harness the unmatched capabilities of its armed forces to shape the international security environment in favorable ways, respond to the full spectrum of crises when it is in U.S. interests to do so, and prepare now to meet the challenges of an uncertain future. This three-pronged strategy and the military missions inherent in it provide a common foundation for the Department's programs and activities.

Chapter 2

U.S. FORCES

In order to meet the near-term requirements of shaping and responding, U.S. forces must have a broad range of unmatched capabilities. U.S. forces should be sized and shaped not only to meet current threats but also to succeed in a broad range of anticipated missions and operational environments. That is, the U.S. military must be a capabilities-based force that gives national leaders a range of viable options for promoting and protecting U.S. interests in peacetime, crisis, and war.

FORCE PLANNING: SHAPING THE SECURITY ENVIRONMENT

U.S. military engagement around the world is both a key means of shaping the international security environment and an important foundation of U.S. ability to respond to crises. The demand for U.S. forces is very high, but manpower and other resources are limited. The challenge to the Department is to prioritize its peacetime activities to ensure that efforts are concentrated on those that are of greatest importance without sacrificing warfighting capabilities. Those priorities vary by region and situation according to the national security interests involved—be they vital, important, or humanitarian—and by the extent to which the application of DoD resources can significantly advance those interests.

Accordingly, each regional commander in chief (CINC), in concert with the Services, will annually develop a Theater Engagement Plan that links planned engagement activities to prioritized regional objectives. The Theater Engagement Plan will be a comprehensive five-year plan of CINC engagement activities that will be incorporated in the Department's deliberate planning system. Through the Theater Engagement Plan, each CINC will formally present his theater's peacetime engagement strategy and identify engagement requirements for approval by the Chairman of the Joint Chiefs of Staff (CJCS) as part of a globally-integrated family of engagement plans. CJCS will then forward the family of engagement plans to the Secretary of Defense for review. This process will enhance the Department's effectiveness in understanding and articulating, from a global perspective, the CINCs' engagement activities and the associated resource requirements and tempo considerations.

FORCE PLANNING: RESPONDING TO CRISES

Smaller-Scale Contingency Operations

U.S. forces must be multimission capable, and they must be trained, equipped, and managed with multiple mission responsibilities in mind. They must also be capable of operating effectively in the face of asymmetric challenges like terrorism, information operations, and the threat or use of nuclear, biological, or chemical (NBC) weapons. Furthermore, U.S. forces must be able to withdraw from smaller-scale contingency (SSC) operations, reconstitute, and then deploy to a major theater war within required timelines. Although in some cases this may pose significant operational, diplomatic, and political challenges, the ability to transition between peacetime operations and warfighting remains a fundamental requirement for virtually every U.S. military unit.

Over time, sustained commitment to multiple concurrent SSCs will certainly stress U.S. forces—for example, by creating tempo and budgetary strains on selected units—in ways that will need to be carefully managed. SSC operations will also put a premium on the ability of the U.S. military to work effectively with other U.S. government agencies, nongovernmental organizations, and a variety of coalition partners. SSC operations will require that the U.S. government, including DoD and other agencies, continuously and deliberately reassess both the challenges encountered in such operations and the capabilities required to meet these challenges.

Major Theater War

At least three particularly challenging requirements associated with fighting and winning major theater wars merit special attention. The first is being able to rapidly defeat initial enemy advances short of their objectives in two theaters in close succession, one followed almost immediately by another. Maintaining this capability is absolutely critical to the United States' ability to seize the initiative in both theaters and to minimize the amount of territory the coalition must regain from the enemies. Failure to halt an enemy invasion rapidly can make the subsequent campaign to evict enemy forces from captured territory much more difficult, lengthy, and costly. It could also weaken coalition support, undermine U.S. credibility, and increase the risk of conflict elsewhere. By the same token, a force that is clearly capable of defeating aggression promptly should serve as a robust deterrent by denying would-be aggressors the prospect of success. Thus, the Department must ensure that the appropriate forces and infrastructure are ready and available to project sufficient power to rapidly defeat the initial advance of enemy forces in the early stages of a major conflict.

The threat or use of chemical and biological weapons (CBW) is a likely condition of future warfare, including in the early stages of war to disrupt U.S. operations and logistics. These weapons may be delivered by ballistic missiles, cruise missiles, aircraft, special operations forces, or other means. This requires that U.S. forces continue to improve their capabilities to locate and destroy such weapons, including hard and/or deeply buried facilities, preferably before such weapons can be used, and to defend against and manage the consequences of CBW if they are used. But capability enhancements alone are not enough. Equally important is continuing to adapt U.S. doctrine, operational concepts, training, and exercises to take full account of the threat posed by CBW as well as other likely asymmetric threats. Moreover, given that the United States will most likely conduct future operations in coalition with others, the country must also encourage its friends and allies to train and equip their forces for effective operations in CBW environments.

Finally, U.S. forces will transition to fighting major theater wars from a posture of global engagement—that is, from substantial levels of peacetime engagement overseas as well as multiple concurrent SSC operations. In the event of one major theater war, the United States would need to be extremely selective in making any additional commitments to either engagement activities or SSC operations. The United States would likely also choose to begin disengaging from those activities and operations not deemed to involve vital U.S. interests in order to better posture its forces to deter the possible outbreak of a second war.

In the event of two such conflicts, U.S. forces would be withdrawn from peacetime engagement activities and SSC operations as quickly as possible to be readied for war. The risks associated with disengaging from a range of peacetime activities and operations in order to deploy the appropriate forces to the conflicts could be mitigated, at least in part, by replacing withdrawing forces with an increased commitment of reserve component forces, coalition or allied forces, host nation capabilities, contractor support, or some combination thereof. Ultimately, the United States must accept a degree of risk associated with withdrawing from SSCs and engagement activities in order to reduce the greater risk it would incur if the nation failed to respond adequately to major theater wars. In this regard, the Department needs to better understand the potential of and mechanisms required for force substitution.

Because both the nature of the threats the United States faces and the way in which it will choose to fight future conflicts are changing, the forces and capabilities required to uphold this two-theater element of the strategy will differ from the major regional conflict building blocks developed in the 1993 Bottom-Up Review. Specifically, the accelerating incorporation of new technologies and operational concepts into the force calls for a reexamination of the forces and capabilities required for fighting and winning major theater wars. As U.S. and enemy forces change in effectiveness, these force requirements will change. The Department also needs to better understand the requirements associated with deterring, defeating, and defending against adversaries willing to use CBW and other asymmetric means. Furthermore, the changing security environment requires that the United States reassess the role of strategic reserves, the degree to which it relies on both allies and Reserve component forces in major theater wars, the degree to which it swings forces between theaters, and the impact of such factors on the timing of various phases of the campaigns, particularly counteroffensives.

In sum, for the foreseeable future, U.S. forces must be sufficient in size, versatility, and responsiveness in order to transition from a posture of global engagement to fight and win, in concert with regional allies, two major theater wars that occur at roughly the same time. In this context, they must also be able to defeat the initial enemy advance in two distant theaters in close succession and to fight and win in situations where CBW and other asymmetric approaches are employed.

CHARACTERISTICS OF A FULL SPECTRUM FORCE

The number and variety of military challenges the United States will likely face in the next 15 to 20 years require a force of sufficient size and capability to defeat large enemy conventional forces, deter aggression and coercion, and conduct the full range of smaller-scale contingencies and shaping activities, all in the face of asymmetric challenges. U.S. forces, both active and reserve, must be multimission capable, proficient in their core warfighting competencies, and able to transition from peacetime activities and operations to enhanced deterrence in crisis to war. This standard applies not only to the force as a whole, but also to individual units. Such full-spectrum forces require a balanced mix of overseas presence and power projection capabilities.

Overseas Presence

Maintaining a substantial overseas presence posture is vital to both the shaping and responding elements of the defense strategy. Specifically, overseas presence promotes regional stability by giving form and substance to U.S. bilateral and multilateral security commitments and helps prevent the development of power vacuums and instability. It contributes to deterrence by demonstrating the country's determination and capability to defend U.S., allied, and friendly interests in critical regions and better positions the United States to respond rapidly to crises. U.S. presence posture enhances the effectiveness of coalition operations across the spectrum of conflict by promoting joint and combined training, encouraging responsibility sharing on the part of friends and allies, and facilitating regional integration.

U.S. forces and infrastructure overseas visibly support the defense strategy. To optimize the United States' overseas presence posture, the Department must continually assess this posture to ensure it effectively and efficiently contributes to achieving U.S. national security objectives in various regions of the world. This means defining the right mix of permanently stationed forces, rotationally deployed forces, temporarily deployed forces and infrastructure, in each region and globally, to conduct the full range of military operations.

Power Projection

Equally essential to the shaping and responding elements of the strategy is being able to rapidly move and concentrate U.S. military power in distant corners of the globe. Effective and efficient global power projection is the key to the flexibility demanded of U.S. forces and ultimately provides national leaders with more options in responding to potential crises and conflicts. Being able to project power allows the United States to shape, deter, and respond even when it has no permanent presence or limited infrastructure in a region. If necessary, it allows the United States to forcibly enter a theater or to create and protect forward operating bases.

While the United States must pursue the cooperation of other governments in allowing U.S. forces access to critical infrastructure, it cannot assume that cooperation will always be timely or forthcoming. Accordingly, the United States must be able to establish a military lodgement on foreign territory through a forced entry. A joint forced entry capability ensures the United States will have access to vital seaports, air bases, and other critical facilities.

Critical Enablers

Critical to power projection and to the U.S. military's unique ability to shape the international security environment and respond to the full spectrum of crises are a host of capabilities and assets that enable the worldwide application of U.S. military power. These critical enablers include:

- Quality people, superbly led by commanders. Soldiers, sailors, airmen, and Marines are the bedrock of the U.S. military. They will be the deciding factor in all future operations. The Department's strong commitment to the quality of life of all its people remains unchanged.

- A globally vigilant intelligence system. Early strategic warning of crises and detection of threats is critical in an environment complicated by more actors and more sophisticated technology. Equally important is the capability to meet the global needs of U.S. forces deployed in times of threat or crisis.
- Global communications that allow for the timely exchange of information, data, decisions, and orders, while negating an adversary's ability to interfere in U.S. information operations. Because information systems may be threatened by a variety of adversaries, information systems security must be an integral part of planning for the acquisition of new systems as well as the operation or upgrade of existing systems.
- Superiority in space. Global command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR), navigation support, and meteorological forecasting rely on space-based assets. To maintain the current U.S. advantage in space even as more users develop capabilities and access, the United States must focus sufficient intelligence efforts on monitoring foreign use of space-based assets and develop the capabilities required to protect U.S. systems and prevent hostile use of space by an adversary.
- Control of the seas and airspace. The United States must be able to project military power across great distances and protect its interests around the world. A robust and effective strategic lift capability is critical to this ability. Preserving the U.S. military's global mobility system is a top priority of the defense strategy and requires not only the daily diplomacy necessary to ensure U.S. access, but also the ability to quickly establish sea and air superiority anywhere along U.S. strategic lines of communication.

Without these critical enablers, the United States military could not execute its defense strategy.

Capabilities to Respond to Asymmetric Threats

To be a truly full-spectrum force, the U.S. military must be able to defeat even the most innovative adversaries. Those who oppose the United States will increasingly rely on unconventional strategies and tactics to offset U.S. superiority. The Department's ability to adapt effectively to adversaries' asymmetric threats—such as information operations, NBC weapons use, and terrorism—is critical to maintaining U.S. preeminence into the next century.

INFORMATION OPERATIONS

The increasing availability of technology and sophistication of potential adversaries demands a commitment to improving the U.S. military's ability to operate in the face of information threats. Defense against hostile information operations will require unprecedented cooperation among Services, defense agencies, commercial enterprises, and U.S. allies. In addition, the United States' ability to protect information must extend to those elements of the civilian infrastructure that support national security requirements.

In recent years, the Department has focused its information operations development efforts on tactical support to warfighting. The Department must now expand these efforts to the full range of potential national security missions, for both peacetime and war. The Department has emphasized policy responsibility for information operations which will aid in the development of integrated requirements and help guide decisions on future information operation capabilities. Such capabilities developed in the military and intelligence communities must be fully integrated into military planning and operations.

COUNTERPROLIFERATION ACTIVITIES

DoD's extensive counterproliferation and export control efforts are designed to slow the spread of technologies that can threaten the security of U.S. forces and infrastructure and undermine regional stability. Further, the Department has progressed substantially toward fully integrating considerations of NBC weapons use against U.S. forces into its military planning, acquisition, intelligence, and international cooperation activities. These include efforts to embed counterproliferation in all aspects of the planning and programming process; adapt military doctrine and operational plans to deal with NBC weapons in regional contingencies; mature acquisition programs to ensure that U.S. forces will be adequately trained and equipped to operate effectively in contingencies involving NBC threats; reallocate intelligence resources to provide better information about adversary NBC capabilities and how they are likely to be used; and undertake multilateral and bilateral cooperative efforts with U.S. allies and friends to develop a common defense response to the military risks posed by NBC proliferation. The Quadrennial Defense Review underscored the need for these efforts; accordingly, the Secretary of Defense increased planned spending on counterproliferation by \$1 billion over the next five years.

There are two key challenges that the Department must meet as part of its strategy to ensure future counterproliferation preparedness: the Department must institutionalize counterproliferation as an organizing principle in every facet of military activity, from logistics to maneuver and strike warfare, and internationalize those same efforts to ensure U.S. allies and potential coalition partners train, equip, and prepare their forces to operate with U.S. forces under NBC conditions.

To advance the institutionalization of counterproliferation, the Joint Staff and CINCs are developing a joint counter-NBC weapons operational concept that integrates both offensive and defensive measures. This strategy will serve as the basis for refining existing doctrine so that it more fully integrates all aspects of counter-NBC operations. In addition, the Services and CINCs are placing greater emphasis on regular individual, unit, joint, and combined training and exercises that incorporate realistic NBC threats. There is also a need for new training standards for specialized units, such as logistics and medical units, and larger formations to improve their ability to perform complex tasks under prolonged NBC conditions. Finally, many counterproliferation-related capabilities must be available prior to or very early in a conflict. The Services are developing capability packages that provide for early deployment or pre-positioning of NBC defense and theater missile defense capabilities and personnel into theaters of operations. The timing necessary for the arrival of such capabilities should in part determine whether or not those capabilities reside in active or reserve components.

Unless properly prepared to deal with NBC threats or attacks, allies and friends may present vulnerabilities for a U.S.-led coalition. In particular, potential coalition partners cannot depend on U.S. forces to provide passive and active defense capabilities to counter NBC threats. U.S. counterproliferation cooperation with its NATO allies, through the Senior Defense Group on Proliferation, provides a template for improving the preparedness of long-standing allies and other countries that may choose to act in concert with the United States in future military coalitions. Similar efforts with allies in Southwest Asia and Asia-Pacific should continue to ensure that potential coalition partners for major theater wars have effective plans for CBW defense of populations and forces.

Further information on DoD's counterproliferation program can be found in two DoD publications *Proliferation: Threat and Response* and *Report on Activities and Programs for Countering Proliferation and NBC Terrorism*. These and other counterproliferation documents are available on the Internet.

FORCE PROTECTION AND COMBATING TERRORISM

The terrorist threat has changed markedly in recent years, due primarily to five factors: changing terrorist motivations; the proliferation of technologies of mass destruction; increased access to information, information technologies, and mass media; a perception that the United States is unwilling to accept casualties; and the accelerated centralization of vital components of the national infrastructure.

DoD divides its response to terrorism into two categories. Antiterrorism refers to defensive measures used to reduce the vulnerability of individuals and property to terrorist acts. Counterterrorism refers to offensive measures taken to prevent, deter, and respond to terrorism. Both fall under the rubric of combating terrorism. Force protection is the umbrella security program involving the coordinated efforts of key U.S. departments and agencies designed to protect military and civilian personnel, their family members, and U.S. property.

DoD has initiated a wide range of actions designed to enhance antiterrorism, requiring threat and force protection to be constantly evaluated and empowering commanders with increased resources and flexibility to be fully responsive to changes in the threat. In response to terrorist attacks in Saudi Arabia, the Joint Staff established a Deputy Directorate for Combating Terrorism under the Director of Operations. The Directorate is charged with meeting the nation's security challenges as they relate to combating terrorism now and into the next century. Building on Secretary of Defense guidance, the reports and recommendations from regional commanders in chief, and the findings of the Downing Report, U.S. forces in Southwest Asia have implemented extraordinary measures to increase their force protection posture. The Department has established programs to expand these protection measures worldwide where appropriate. At all levels, the Department has developed and carried out new policies, processes, and programs designed to integrate force protection into the culture and institutional fabric of the United States military.

Because intelligence represents the first line of defense, DoD has implemented procedures to improve its collection and use of terrorism-related intelligence, getting the needed product into

the hands of the local commander as rapidly as possible. The Defense Intelligence Agency (DIA) is engaged in an aggressive long-term collection and analytic effort designed to provide information that can help local commanders detect, deter, and prevent terrorist attack. Close working relationships between DIA and other members of the national intelligence community are being strengthened, and intelligence exchanges with U.S. friends and allies have been increased.

DoD is also taking steps to improve force protection. These include giving local commanders operational control over force protection; formalizing cooperation with host nations through a series of memorandums of understanding; sustaining funding levels of force protection programs, particularly in the area of antiterrorism; making the Chairman of the Joint Chiefs of Staff the focal point for force protection activities, including initiatives to standardize antiterrorism and force protection training for deploying forces; and realigning certain force protection responsibilities from the Department of State to the Department of Defense. In addition, all DoD components are conducting vulnerability assessments to identify and reduce terrorist risks to DoD personnel. Antiterrorism has been made a special interest item for inspectors general throughout the Department, and the Defense Federal Acquisitions Regulations will be changed to ensure antiterrorism readiness of DoD contractors.

DoD's counterterrorism capabilities provide the offensive means to deter, defeat, and respond vigorously to all forms of terrorist attack against U.S. interests, wherever they may occur. The Department has significantly increased the resources allocated to these sensitive activities, and efforts are under way to maximize readiness so that U.S. counterterrorism forces are trained and equipped to meet any future forms of terrorism. U.S. counterterrorism forces receive the most advanced and diverse training available and continually exercise to maintain proficiency and to develop new skills. They regularly train with their foreign counterparts to maximize coordination and effectiveness. They also engage with counterpart organizations in a variety of exchange programs which not only hone their skills, but also contribute to the development of mutual confidence and trust.

CONCLUSION

The United States must size, shape, and manage its forces effectively if they are to be capable of meeting the fundamental challenge of the defense strategy—maintaining the near-term capabilities required to support the shape and respond elements of the strategy while simultaneously undergoing the transformation required to prepare now for the future. For shaping, this means that DoD must continue its efforts to support regional security objectives efficiently and within resource constraints. For responding, it means that U.S. forces must be capable of operating across the spectrum of conflict—meeting the particular challenges posed by smaller-scale contingency operations and major theater wars—and in the face of asymmetric threats. The forces and force policies needed to fulfill the missions described here are detailed in the remainder of this section.

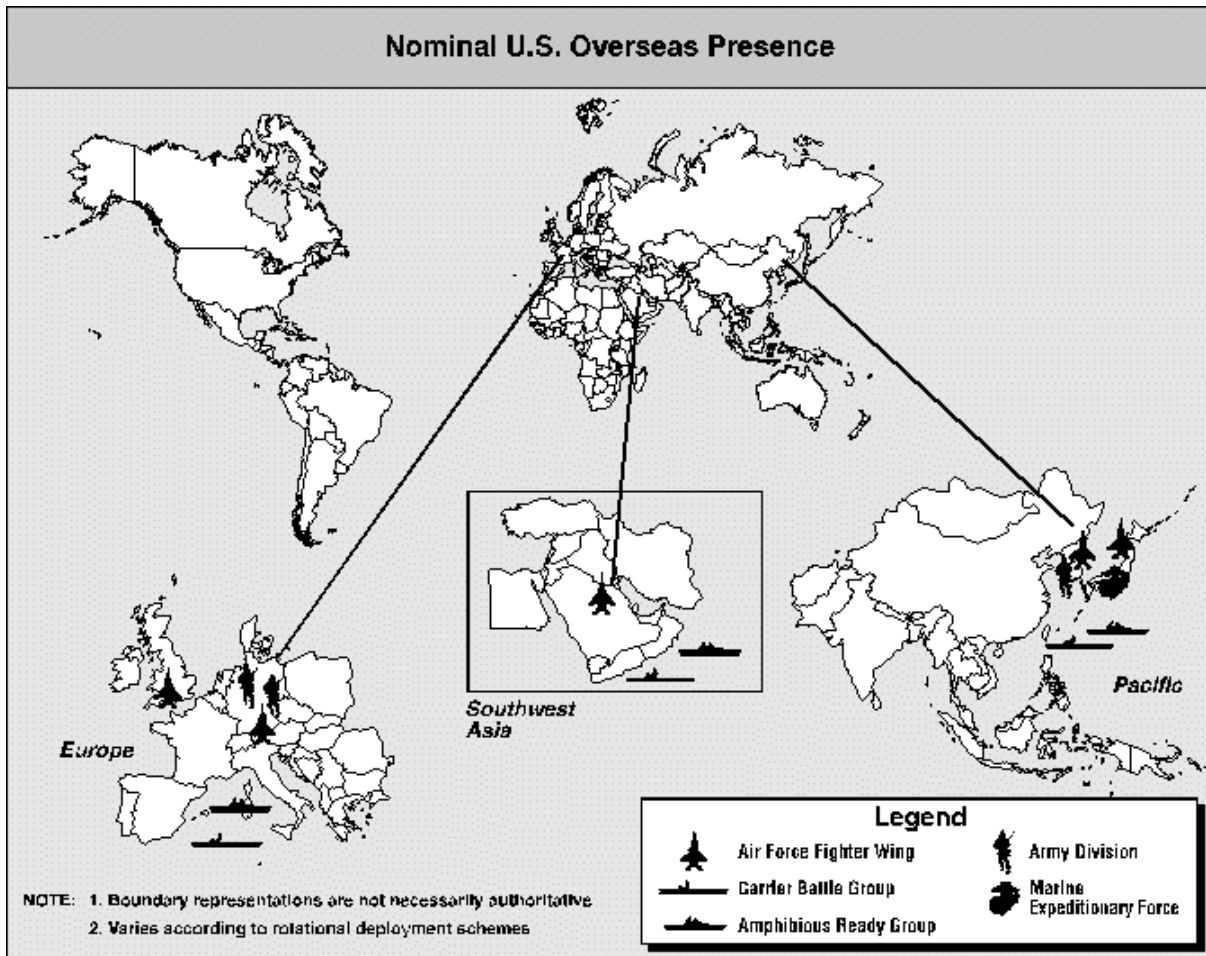
Chapter 3 CONVENTIONAL FORCES

The May 1997 *Report of the Quadrennial Defense Review* (QDR) defined the defense strategy that U.S. conventional forces must support. Conventional forces, which form the bulk of the nation's armed forces, consist of combat and support elements from all four Services, excluding units dedicated to special operations and nuclear deterrence. It is primarily these forces that provide the United States with the capabilities to shape the international environment and respond to the full range of crises. Specifically, conventional forces conduct forward presence missions, engage in a range of smaller-scale contingencies, and conduct combat operations up to and including major theater wars.

The major categories of conventional forces are land, naval, aviation, and mobility forces. The QDR not only detailed the size of the forces needed to support the defense strategy, but also underscored the Department's commitment to the modernization of U.S. forces. Accordingly, the FY 1999 President's Budget and associated Future Years Defense Program (FYDP) provide the resources needed to sustain and modernize the nation's forces in both the near and far terms. This chapter describes the capabilities needed to execute conventional force missions and the investments vital to maintaining and enhancing those capabilities.

The QDR reaffirmed the continuing need to deploy forces routinely abroad in order to shape the international environment in ways favorable to U.S. interests. The Government Performance and Results Act (GPRA) Corporate-Level Goal 2, discussed in Appendix J, reflects the importance of this need. Historically, forward deployments have been concentrated in Europe, the Pacific, and Southwest Asia. These deployments currently include:

- Pacific—One Army mechanized division, one Marine expeditionary force, two Air Force fighter wing-equivalents, one Navy carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit. Additionally, forward-based forces in the Pacific region include one light infantry division in Hawaii and one fighter wing-equivalent in Alaska.
- Europe—Forward elements of one Army armored and one Army mechanized infantry division, two Air Force fighter wing-equivalents, one carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit.



- Southwest Asia—One Air Force fighter wing-equivalent, one carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit.

In addition to these routine deployments, all four Services periodically deploy forces to forward locations, as needs arise. Such deployments, involving both active and reserve component units, contribute substantially to overseas presence, as does the prepositioning of U.S. equipment and materiel abroad. The following chart shows the current location of major U.S. conventional force elements.

THREATS

Potential regional aggressors possess a range of technological capabilities that could pose significant dangers to U.S. military operations. These threats, which are likely to expand in the future as a result of the proliferation of modern military technology, include increasingly capable air-, sea-, and land-based weapons. To ensure quick and decisive victory with minimum casualties, U.S. forces must maintain a substantial advantage over potential adversaries capable of employing advanced weapon systems. U.S. forces simultaneously must be prepared to face the potential challenges of asymmetric threats, such as the use of nuclear, biological, and chemical (NBC) weapons, terrorism, and information warfare.

Aviation Threats

Near-term threats remain below levels that would put U.S. air superiority at significant risk in a regional conflict. On the other hand, both in the near and longer term, adversaries are expected to pose significant surface-to-air threats that could restrict the rapid application of U.S. air power against key ground targets at the outset of a war.

While the chief potential regional adversaries—Iraq, Iran, and North Korea—have done little in recent years to augment their capabilities against U.S. air forces, they—or other possible future adversaries—may be able to exploit a wide range of advanced air-to-air and surface-to-air technologies and systems that are already available in the international marketplace. Such systems have fallen into the hands of aggressors in years past and may do so again in the future. Aviation systems and weaponry currently being offered for sale include fighter aircraft, air-to-air missiles, and air defense systems. Properly employed, these systems could pose a difficult challenge to many existing U.S. weapon systems in combat. The further proliferation of advanced weapon systems could drive up U.S. losses in a future conflict, making continued improvement in U.S. capabilities imperative.

Given the current U.S. preeminence in air-to-air capability, potential adversaries are likely to emphasize ground-based air defenses and the hardening and camouflage of ground targets. Several rogue states are making serious efforts to move important military and industrial facilities underground. The secrecy surrounding these projects compounds the difficulty of planning the neutralization of such targets in wartime. Enemy use of decoy targets also can work effectively to dilute or confuse air attacks, if not countered by the adoption of sophisticated, multisensor information-gathering and targeting systems. Finally, the use of unconventional approaches, such as the dispersal of troops or weapons in densely populated urban areas, can limit the application of strike systems like missiles and air-delivered bombs.

Maritime Threats

More than 90 different types of antiship cruise missiles (ASCMs) are currently available worldwide. Their continuing rapid proliferation—more than 75 countries possess ASCMs—especially in the Middle Eastern and Asian markets, has been the result of aggressive sales efforts by missile-producing countries. Cruise missiles are not considered strategic weapons; hence, limits on technology levels are virtually nonexistent. These missiles pose a significant threat to naval forces operating in littoral (or coastal) regions. Current cruise missiles are largely subsonic. Future missiles, however, will have longer ranges, supersonic speed, stealthy designs, advanced seekers, and onboard digital computers. Projected technological advances point toward improvements in the capabilities of missiles to maneuver in flight and to process homing data with more sophisticated algorithms, thus making countermeasures increasingly difficult.

More than 150 types of naval mines are in the inventories of some 50 countries around the globe. Old-fashioned moored contact mines were used as recently as the Gulf War; these systems are easily manufactured by lesser-developed nations. Mines that rest on the ocean floor and explode upon sensing sounds or magnetic fields are the most difficult to detect and counter. Propelled

rising mines that lurk near the bottom of the sea and detach to rise vertically represent one of today's most serious threats to ships and submarines.

Relative to the 1980s, the emerging antisubmarine warfare (ASW) challenge is characterized by a smaller number of quieter and more lethal submarines operating in littoral regions. Although projected Chinese and Russian submarine force levels are declining, antisubmarine warfare will remain a daunting challenge as these countries modernize their remaining forces. Potential adversaries such as Iran, operating a handful of advanced diesel submarines in the complex acoustic environment of the littorals, could delay or disrupt operations to the point that achieving strategic objectives could be impeded.

Ground Threats

The United States and its allies still face the threat of coercion and large-scale, cross-border aggression by hostile states with significant military power. Several types of highly capable weapon systems are becoming both available and affordable for regimes that are either unstable or hostile to U.S. interests. These systems include lightweight antiaircraft and antitank missiles, tactical ballistic missiles with improved guidance and payload technologies, modern battle tanks incorporating day-and-night optics and active defense systems that redirect or destroy incoming projectiles, advanced antitank guided missiles capable of top attacks against tank turrets, and advanced artillery munitions.

Increasingly capable and violent terrorist groups, drug cartels, and international crime organizations directly threaten the lives of American citizens and undermine U.S. policies and alliances. Although irregular forces will be unable to match the combat power of heavy U.S. weaponry, these forces could still pose difficult challenges to U.S. forces. The proliferation of modern light arms, a fighting style that could necessitate operations in dense urban environments, and the ability of indigenous forces to conceal themselves within civil populations could negate some of the advantages of U.S. heavy weaponry.

Nuclear, Biological, and Chemical Weapons

NBC weapons delivered by theater ballistic missiles, cruise missiles, artillery, aircraft, special operations forces, or terrorists threaten U.S. security interests and U.S. military forces deployed throughout the world. More than 20 countries possess or are developing NBC weapons, and more than 20 nations have theater ballistic missiles. The warfighting assessments conducted for the QDR highlighted the significant challenge that the sustained use of NBC weapons could pose to U.S. conventional forces.

FORCE STRUCTURE

The QDR examined a broad range of alternative defense postures for both the near and far terms. The decisions on forces and modernization that emerged from the examination balanced the need to sustain a robust capability to meet current demands and threats with the need to transform U.S. forces to meet the uncertain challenges of the 21st century. The adjustments to conventional

forces and the modernization programs resulting from those decisions are discussed in the following sections. Key elements of the conventional force structure are shown in Table 1.

Aviation Forces

Aviation forces of the Air Force, Navy, and Marine Corps—composed of fighter/attack, conventional bomber, and specialized support aircraft—provide a versatile striking force capable of rapid employment worldwide. These forces can quickly gain and sustain air superiority over regional aggressors, permitting rapid air attacks on enemy targets while providing security to exploit the air for logistics, command and control, intelligence, and other functions. Fighter/attack aircraft, operating from both land bases and aircraft carriers, combat enemy fighters and attack ground and ship targets. Conventional bombers provide an intercontinental capability to strike surface targets on short notice. The specialized aircraft that support conventional operations perform such vital functions as airborne early warning and control, suppression of enemy air defenses, reconnaissance, surveillance, and combat rescue.

Beyond the aircraft examined here, the U.S. military operates a variety of transport planes, aerial-refueling aircraft, helicopters, and other support aircraft. Details on those systems are provided in the sections on mobility and land forces.

FIGHTER/ATTACK AIRCRAFT

The Air Force is capable of deploying seven to eight fighter wing-equivalents (FWEs) to a distant theater in a matter of days as an initial response to a major theater war, with additional wings following within the first month. These forces would operate from local bases where infrastructure exists and political agreements allow. Navy and Marine Corps air wings similarly can be employed in distant contingencies on very short notice; these forces provide a unique ability to carry out sustained combat operations independent of access to regional land bases.

During FY 1999, the aviation combat force structure will include 20 Air Force FWEs (72 aircraft each), 11 Navy carrier air wings (50 fighter/attack aircraft each), and four Marine aircraft wings, which are task organized and include varying numbers and types of aircraft. Tables 2, 3, and 4 illustrate the composition of Air Force, Navy, and Marine Corps air wings at the end of FY 1999.

To maintain its combat force structure and modernize its equipment while sustaining high readiness and supporting overseas operations, the Air Force will pursue several initiatives during FY 1999. These include organizational innovations, an expansion of outsourcing and privatization, and evolutionary implementation of other initiatives resulting from decisions made during the Quadrennial Defense Review. The savings to be accrued from implementing QDR initiatives will fund future Air Force modernization efforts.

The QDR considered a number of means to achieve further economies in force organization and operations. Definition and execution of the specific measures needed to achieve these economies will take place over the next few years. In particular, consolidation of existing aircraft squadrons into a smaller number of larger units is one way that force structure and readiness can be maintained at reduced cost. The FY 1999 President's Budget introduces some unit consolidations, and more are expected in the future.

The QDR also foresaw that the reserve components could provide a larger share of Air Force tactical air power. These units, once activated, have essentially equivalent combat capability to that of active forces for prosecuting a major theater war, although in peacetime they can sustain only a fraction of the overseas contingency deployments that active forces can accomplish. The FY 1999 budget begins the transition to a larger reserve component share, with full implementation awaiting further development of force structure and basing plans. At the same time, the Department is carefully reviewing all operational taskings to determine if there are less essential operations that might be curtailed or eliminated.

The QDR also called for a reduction in U.S.-based fighter squadrons dedicated to the air defense role from the six planned previously in FY 2000 to four. The FY 1999 budget supports six dedicated squadrons; details of the QDR-directed reduction to four squadrons will be decided once long-term force structure plans are further refined.

Table 1 Conventional Force Structure Summary			
	FY 1997	FY 1999	QDR
Army			
Active Corps	4	4	4
Divisions (Active/National Guard)	10/8	10/8	10/8
Active Armored Cavalry Regiments	2	2	2
Enhanced Separate Brigades (National Guard)	15	15	15
Separate Brigades (National Guard)	3	3	3
Navy			
Aircraft Carriers (Active/Reserve)	11/1	11/1	11/1
Air Wings (Active/Reserve)	10/1	10/1	10/1
Amphibious Ready Groups	12	12	12
Attack Submarines	73	57	50
Surface Combatants (Active/Reserve)	128	106/10	106/10
Air Force			
Active Fighter Wings	13	12.6	12+
Reserve Fighter Wings	7	7.6	8
Reserve Air Defense Squadrons	10	6	4
Bombers (Total Inventory)	202	186	187
Marine Corps			
Marine Expeditionary Forces	3	3	3
Divisions (Active/Reserve)	3/1	3/1	3/1
Air Wings (Active/Reserve)	3/1	3/1	3/1
Force Service Support Groups (Active/Reserve)	3/1	3/1	3/1

Table 2

**Composition of Air Force Wings, FY 1999
(Fighter/Attack Aircraft)**

Aircraft Type	Mission	Active FWEs	Reserve FWEs	Total FWEs
F-15A/B/C/D	Air superiority	3.4	0.6	4.0
F-15E	Multirole ^a	1.8	0	1.8
F-16C/D	Multirole ^b	6.3	5.6	11.9
F-117	Attack	0.5	0	0.5
A-10	Close air support	0.6	1.4	2.0
Total		12.6	7.6	20.2

Note: FWE quantities are based on the primary mission aircraft inventory (PMAI). PMAI denotes aircraft authorized to combat units for the performance of the units' basic missions; it excludes aircraft maintained for other purposes, such as training, testing, attrition replacements, and reconstitution reserves.

^a Oriented primarily to the air-to-ground role, but also can be used in air-to-air operations.

^b Can be used in the air-to-air or air-to-ground role.

Table 3

**Composition of Carrier Air Wings, FY 1999
(Fighter/Attack Aircraft)**

Wing Type	Aircraft Type (PMAI per Wing)	Number of Air Wings FY 1999
Active	F-14 (14), F/A-18 (36) ^a	10
Reserve	F-14 (14), F/A-18 (36) ^b	1
Total^c		468

^a Two air wings will maintain a 12-aircraft F-14 squadron in place of a third F/A-18 squadron until those squadrons transition to the F/A-18E in 2001 and 2002.

^b The reserve air wing includes 36 PMAI F/A-18s, operated by two Naval Reserve squadrons (24 aircraft) and one Marine Corps Reserve squadron (12 aircraft).

^c Total PMAI shown consists only of Navy F-14s and F/A-18s. The Marine Corps will provide sufficient active F/A-18 squadrons to ensure 36 F/A-18s per deployed carrier air wing. (Actual numbers based on operating tempo requirements of each Service as determined by the Department of the Navy Tactical Aircraft Consolidation Plan.)

Table 4				
Composition of Marine Aircraft Wings, FY 1999 (Fighter/Attack Aircraft)				
Aircraft Type	Mission	Active PMAI (Squadrons)	Reserve PMAI (Squadrons)	Total PMAI (Squadrons)
F/A-18 A/C	Multirole	8	4	12
F/A-18D	Multirole	6	0	6
AV-8B	Close air support	7	0	7
Total				25

CONVENTIONAL BOMBERS

In a major theater war, bombers would deliver large quantities of unguided general-purpose bombs and cluster munitions against area targets, such as ground units, airfields, and rail yards. Bomber forces also would play a key role in delivering precision-guided munitions (including cruise missiles) against point targets, such as command and control facilities and air defense sites. The ability of these forces to have an immediate impact on a conflict by slowing the advance of enemy forces, suppressing enemy air defenses, and inflicting massive damage on an enemy's strategic infrastructure will expand dramatically over the next 10 years as increasingly capable munitions are deployed. The more advanced weapons now entering the inventory or in development will enable bombers to bring a wider range of targets under attack, while taking better advantage of the bombers' large payload. The rapid-response, long-range capability provided by bombers could make them the first major U.S. weapon system on the scene in a fast-developing crisis. For some remote inland targets, they could be the only weapons platform capable of providing a substantial response.

The Department has 94 B-52, 94 B-1, and 21 B-2 bombers. Of these, 44 B-52s and 48 B-1s are primary mission aircraft, meaning that they are fully funded in terms of operations and maintenance, load crews, and spare parts, and are ready for immediate deployment. All of the B-52s and B-1s in the inventory, including those in attrition reserve, will be kept in flyable condition and will receive planned modifications. The Department plans to reduce the B-52 inventory to 71 aircraft (44 primary mission) in FY 1999. B-1 primary mission aircraft will rise to 70 by 2001, when increasingly capable conventional weapons become available.

SPECIALIZED AVIATION FORCES

Specialized aviation forces contribute to all phases of military operations. Two of their most important missions are suppression of enemy air defenses and aerial reconnaissance and surveillance. Air defense suppression forces locate and neutralize enemy air defenses. Airborne reconnaissance and surveillance forces are a primary source of information on enemy air and surface forces and installations. They bridge the gap in coverage between ground- and space-based surveillance systems and the targeting systems on combat aircraft. Airborne reconnaissance systems fall into two categories: standoff systems, which operate outside the

range of enemy air defenses; and penetrating systems, which are employed within enemy air defense range. Table 5 summarizes the force levels programmed for the end of FY 1999.

Table 5	
Specialized Aviation Forces, FY 1999	
Electronic Warfare and Air Defense Suppression	
EA-6B	104
Airborne Reconnaissance and Surveillance Systems	
Standoff	
E-2C ^a	62
E-3 ^a	32
E-8 ^b	6
U-2 ^{b,c}	32
RC-135 S/U/V/W ^c	21
EP-3 ^c	12
ES-3 ^c	16
RC-12 ^c	42
Penetrating^b	
F-14 (TARPS)	47
F-16 (TARS)	24
F/A-18D (ATARS)	12
RC-7 ARL	6
Pioneer UAV Systems	9
MAE (Predator) UAV Systems	9
Tactical (Outrider) UAV Systems	3
Hunter UAV System	1
Note: Reflects PMAI totals.	
^a Performs airspace surveillance, early warning, and fighter control.	
^b Performs ground reconnaissance.	
^c Conducts signals intelligence.	

Naval Forces

The major elements of the maritime force structure are aircraft carriers, amphibious ships, attack submarines, surface combatants, mine warfare ships, and ballistic-missile submarines. The naval inventory also includes ships that perform various support and logistics functions. The maritime force structure will reach 315 ships by the end of FY 1999 and then stabilize at slightly above 300 ships after FY 2000.

The demands associated with maintaining overseas presence play a significant role in determining the naval force structure. QDR analyses concluded that a force of 12 carriers is needed to satisfy current policy, while accommodating scheduling constraints. Similar assessments showed that nine amphibious ready groups (ARGs) could meet overseas presence

demands, but 12 are needed to support warfighting requirements. QDR analyses also concluded that a force of 116 surface combatants will be adequate to meet both peacetime presence and warfighting needs.

Table 6	
Naval Force Levels, FY 1999	
Ballistic-Missile Submarines	18
Aircraft Carriers	11/1
Attack Submarines	57
Surface Combatants	106 / 10
Amphibious Ships	37 / 2
Mine Warfare Ships	11/5
Logistics Force Ships/Support Force	57
Total Battle Force Ships	315
Note: Entries with two numbers separated by a slash give active and reserve force counts.	

The FY 1999 budget funds 12 carrier battle groups (CVBGs), 12 amphibious ready groups, 116 surface combatants, and 57 attack submarines. Because of ongoing changes in the peacetime and crisis-response missions of the attack submarine force, the QDR called for a reduction in its size to a target of 50 submarines, which will be achieved in FY 2003.

CVBGs consist of a carrier, its embarked air wing, and various escorts. Each ARG comprises a large-deck amphibious assault ship, a transport dock ship, a dock landing ship, and an embarked Marine expeditionary unit (special operations capable), or MEU(SOC). The Navy deploys a CVBG and an ARG about three-fourths and four-fifths of the year, respectively, in the Mediterranean Sea; about three-fourths and one-half of the year, respectively, in the Indian Ocean; and on a nearly continuous basis in the western Pacific. During periods when neither a CVBG nor an ARG is present in a theater, one is located within a few days' transit time of the region.

The QDR called for some restructuring of naval reserve forces, resulting in net reductions of 4,100 personnel. These end-strength reductions reflect deactivations of four older reserve frigates, one submarine tender, and the SH-2 helicopter squadrons associated with the deactivated frigates.

The following sections describe the major elements of the naval force structure.

AIRCRAFT CARRIERS

In addition to providing extensive forward presence and crisis-response capabilities, aircraft carriers provide a unique forward base for littoral air operations and support facilities for joint force commanders. Operating independent of land-basing restrictions, carriers support joint

forces by engaging in attack, surveillance, air defense, and electronic warfare missions against targets at sea, in the air, or ashore.

At the end of FY 1999, the carrier force will consist of nine nuclear-powered vessels—eight of the Nimitz class (CVN-68) plus the Enterprise (CVN-65)—and three conventionally-powered ships. Since the Bottom-Up Review in 1993, the Department has routinely categorized the aircraft carrier force structure as consisting of 11 active carriers and one operational reserve/training carrier. In response to QDR analyses and a recent six-month deployment with an active air wing, DoD has reevaluated the concept of employing the John F. Kennedy (CV-67) primarily as an operational reserve/training carrier. As a result, this carrier has now been fully integrated into the active fleet's deployment schedule, while still functioning as a reserve and training asset when not operating in forward areas.

Two new Nimitz-class aircraft carriers will join the fleet over the next five years: the Harry S Truman (CVN-75) in FY 1998 and the Ronald Reagan (CVN-76) in FY 2003. When the Constellation (CV-64) retires in FY 2003, only two conventionally-powered carriers—the Kitty Hawk (CV-63), stationed in Japan, and the Kennedy (CV-67)—will remain in the active fleet. The projected retirement date for the Kitty Hawk is FY 2008, when CVN-77 enters service. The recent completion of an extensive overhaul will allow the Kennedy to remain in service for about 20 more years.

AMPHIBIOUS FORCES

Forward-deployed amphibious forces with embarked Marines typically operate in three-ship ARGs. ARGs provide over-the-horizon, high-speed force projection capabilities for warfighting missions, while also satisfying peacetime presence needs. They are a vital component of a balanced naval expeditionary force, providing the capability to project forces rapidly into littoral regions, utilizing both air and surface platforms.

The FY 1999 budget and associated FYDP maintain a 12-ARG force capable of supporting three forward-deployed Marine expeditionary units in peacetime and lifting the equivalent of 2.5 Marine expeditionary brigades in wartime. Consistent with these force structure needs, two Anchorage-class LSD-36s will be retired from service by FY 1999. The final new dock landing ship (LSD-41 cargo variant), used for transporting and launching amphibious craft and vehicles, will be delivered in FY 1998. By FY 2003, the amphibious force will consist of 39 active and two reserve ships, including two of the new San Antonio-class LPD-17 amphibious transport dock ships.

ATTACK SUBMARINES

In the midst of significant changes in mission requirements spawned by advances in technology and the threat, the Navy's attack submarine (SSN) force remains an important multimission component capable of conducting covert operations in forward regions. SSN missions include gathering surveillance data, communicating tactical information, controlling the surface and undersea battlespace, and delivering strike weapons or special operations forces ashore in contingencies. The QDR reinforced the ongoing shift in SSN missions from open-ocean

antisubmarine warfare and surveillance toward power projection, support of special operations forces, and littoral ASW, while making a modest reduction in force size by the end of the FYDP.

As directed by the QDR, the ongoing deactivation of older SSNs will decrease the force from 65 units in FY 1998 to 50 units in FY 2003. This force structure reflects continued deactivations of SSN-637 and older 688-class submarines, deliveries of the remaining two Seawolf-class (SSN-21) units through FY 2003, and subsequent deliveries of the New Attack Submarine (NSSN) class starting in FY 2004.

SURFACE COMBATANTS

The surface combatant force comprises modern cruisers and destroyers equipped with standoff strike weapons, anti-air missiles, guns, and multi-mission helicopters. These ships provide diverse capabilities to achieve battlespace dominance in the crowded and complex littoral warfare environment. Cruisers, destroyers, and frigates also protect carrier battle groups and amphibious ready groups, and provide peacetime presence in areas where full battle groups may not be available. These ships carry out maritime interception operations, such as those conducted in the Arabian Gulf and Red Sea; help enforce economic sanctions; and provide limited enforcement of no-fly zones with standoff anti-air capabilities, such as those required in the Adriatic Sea.

Consistent with current and projected needs, 15 active fleet destroyers and frigates are being deactivated to achieve the QDR objective of 116 total surface combatants in FY 1999. By FY 2003, the four FFG-7s remaining in the reserve force will be evenly divided between the two U.S. coasts, retaining sufficient flexibility to fulfill projected surface combatant needs. The reductions in the tempo of peacetime operations over the past few years will permit the revised surface combatant force structure to fulfill all currently anticipated peacetime and contingency needs, while conforming with the Navy's goal that service members spend no more than half their time away from home port.

COMBAT LOGISTICS FORCES

Combat logistics force (CLF) ships provide extensive at-sea replenishment for ships deployed in forward areas. The force includes station ships, which support in-theater operations, and shuttle ships, which ferry material continuously from shore to sea. In FY 1999 the station-ship force will consist primarily of eight AOE-1 and AOE-6-class fast combat support ships. The shuttle-ship force will be composed of a civilian-manned Military Sealift Command (MSC) fleet of 13 oilers, six dry stores ships, and seven ammunition ships. Consistent with QDR findings, submarine tenders will remain forward deployed in the western Pacific and the Mediterranean Sea. One U.S.-based unit, in excess of needs, will be deactivated by FY 1999. In addition, the Navy has recently accelerated the transition of the CLF to a richer mix of ships containing relatively more MSC and fewer active Navy vessels.

MARITIME PATROL AIRCRAFT

The maritime patrol aircraft (MPA) force, consisting of P-3C aircraft, provides support for forces ashore and naval task groups at sea. It conducts antisurface, antisubmarine, surveillance, and

mining operations. The FY 1999-2003 program continues a restructuring of the force to support the transition from open-ocean to littoral operations. By the end of FY 1999, there will be 240 P-3 aircraft in the inventory. Analyses conducted for the QDR called for a reduction in the number of reserve P-3 squadrons from eight (with eight aircraft each) to seven (operating six aircraft apiece). The resulting force of 12 active and seven reserve squadrons will be adequate to meet peacetime and warfighting needs.

LIGHT AIRBORNE MULTIPURPOSE SYSTEM HELICOPTERS

The Light Airborne Multipurpose System (LAMPS) MK III combines the SH-60B helicopter with a computer-integrated shipboard system, providing an airborne platform for deployment of sonobuoys, torpedoes, and antiship missiles. LAMPS also provides an elevated platform expanding the battlespace horizon with radar and electronic support measure capabilities. Embarked, fully integrated SH-60B LAMPS MK III helicopters make key contributions to both antisubmarine and antiship missions. The LAMPS MK I reserve squadrons are slated for deactivation in concert with the reduction in reserve frigates. The remaining four reserve FFG-7s will be newer vessels of the class that operate with the more capable SH-60B MK III system. At the end of FY 1999, there will be 155 SH-60B aircraft in the inventory.

Land Forces

The QDR validated a continuing requirement for the diverse mix of capabilities provided by the Army and the Marine Corps. The Army provides forces for sustained combat operations on land, as well as for power projection and forcible-entry operations. The Marine Corps, as an integral part of the nation's naval forces, provides expeditionary forces to project combat power ashore and to conduct forcible-entry operations in support of naval campaigns or as part of joint task forces. These diverse capabilities give military commanders a wide range of options for conducting ground missions. Operationally, a joint force commander employs land forces in close coordination with aviation and naval forces.

ARMY

The Army will continue to maintain four active corps headquarters, 10 active divisions (six heavy and four light), and two active armored cavalry regiments. Light forces—airborne, air assault, and light infantry divisions—are tailored for forcible-entry operations and for operations on restricted terrain, like mountains, jungles, and urban areas. Heavy forces—armored and mechanized divisions equipped with Abrams tanks, Bradley fighting vehicles, Apache attack helicopters, and the Paladin field artillery system—are trained and equipped for operations against armies employing modern tanks and armored fighting vehicles. Light and heavy forces can operate independently or in combination, providing the mix of combat power needed for specific contingencies. Depending on the geographic location of both the forces and the crisis, Army forces stationed overseas provide either an initial or a follow-on source of combat power for regional deployments. For major conflicts, the Army can dispatch a force of up to five divisions plus support elements to any region of the world within 75 days.

In FY 1999, the Army National Guard is authorized 357,000 soldiers, organized into 15 enhanced separate brigades, eight combat divisions, and three separate brigades. The Army Reserve is authorized 208,000 soldiers, assigned primarily to combat support and combat service support units.

Reductions in active and reserve end-strength, as well as in civilian personnel, recommended by the QDR are consistent with projected improvements in operational concepts, organizational arrangements, and an increased emphasis on privatization and outsourcing of support functions. The savings accrued from the reduction of 15,000 active-duty personnel by the end of FY 1999 will allow the Department to pursue a robust modernization program for its land forces while minimizing the near-term risk of reducing combat forces. The QDR also determined that it would be appropriate for the Army to reduce its reserve component structure. The Army National Guard will reduce its end-strength by 5,000 personnel in FY 1998, 5,000 in FY 1999, and 7,000 in FY 2000, and the Army Reserve will reduce its end-strength by 3,000 in FY 2000. The Total Army Analysis for FY 2007 (TAA 07) will identify additional adjustments to the support needed to sustain Army combat forces across the range of military operations. Pending the completion of TAA 07, the Army will work with the reserve components, including representatives of the Adjutants General, to develop possible options for reconfiguring appropriate reserve component units so that they mirror active units and are more relevant to national needs. Table 7 summarizes the Army force structure programmed for the end of FY 1999.

Table 7	
Army Force Structure and End-Strength, FY 1999	
Active Component	
Divisions	10
Separate brigades and armored cavalry regiments	2
End-strength ^{a</SUP>}	480,000
Army National Guard	
Divisions	8
Separate brigades and armored cavalry regiments ^b	18
End-strength ^a	357,000
Army Reserve End-Strength^a	208,000
^a Includes all functional areas of combat, combat support, and combat service support.	
^b Fifteen will be enhanced separate brigades.	

MARINE CORPS

The QDR reaffirmed the key role the Marine Corps plays in both peacetime and wartime operations and recommended modest changes in its force structure. The Marine Corps will reduce its active end-strength by 1,800, and its reserve force by 4,200, by FY 2003 as a result of an internal reconfiguration.

Marine units are employed as part of Marine Air-Ground Task Forces (MAGTFs) consisting of four elements: command, ground combat, air combat, and combat service support. A Marine expeditionary force (MEF) is the largest MAGTF organized for combat, comprising one or more divisions, aircraft wings, and force service support groups. The Corps has three MEFs in the active force, headquartered in California (I MEF), North Carolina (II MEF), and Okinawa (III MEF). Embarked on amphibious ships, Marine expeditionary units, consisting of about 2,000 Marines each, are task-organized and forward deployed continuously in or near regions of vital U.S. interest. These forces provide a swift and effective means of responding to fast-breaking crises and can remain on station for indefinite periods of time, ready to intervene or take action if needed. Table 8 summarizes the Marine Corps force structure programmed for the end of FY 1999.

Table 8	
Marine Corps Force Structure and End-Strength, FY 1999	
Active Component	
Divisions	3
Wings	3
Force service support groups	3
End-strength	172,200
Reserve Component	
Division	1
Wing	1
Force service support group	1
End-strength	40,018

Mobility Forces

Mobility forces—airlift, sealift, and land- and sea-based prepositioning—move military personnel and material to and from operating locations worldwide. These forces include transport aircraft, cargo ships, and ground transportation systems operated by the Defense Department and commercial carriers. By relying on commercial resources to augment military mobility systems, the Department maximizes the efficiency with which it can deploy and support forces abroad, while avoiding the prohibitive cost of maintaining military systems that duplicate capabilities readily attainable from the civil sector.

The Department conducted several major reviews in recent years to determine the mix of mobility forces needed to meet projected demands into the next century. Requirements for strategic mobility—the movement of resources between theaters—were defined in the 1995 *Mobility Requirements Study Bottom-Up Review Update*, or MRS BURU. A companion study, the 1996 *Intratheater Mobility Analysis*, identified transportation requirements within theaters. More recently, the QDR underscored the importance of strategic mobility in ensuring the rapid responsiveness of U.S. forces. The mobility needs identified in these studies will guide force structure and investment decisions in the years ahead.

Airlift—the most rapidly deployable mobility component—contributes to the movement of both troops and material. Sometimes employed in conjunction with prepositioning, it delivers the forces needed in the critical early days of combat operations. Based on the results of the MRS BURU, DoD has established an intertheater airlift objective of about 50 million ton-miles per day (MTM/D) of cargo capacity. To meet militarily-unique airlift requirements, an objective of 30 MTM/D for organic lift has been established. The Department will attain an organic strategic airlift capability of 26.5 MTM/D by FY 1999. When combined with the commercial capacity contributed by the Civil Reserve Air Fleet (CRAF), DoD will achieve its full 50 MTM/D airlift objective by FY 2005.

Sealift contributes primarily to the movement of combat equipment and delivers the bulk of the cargo needed to sustain deployed forces over time. DoD will attain a surge sealift capacity of 7.8 million square feet by FY 1999, toward the MRS BURU goal of 10 million square feet. Surge sealift capacity is provided by fast sealift ships, large medium-speed roll-on/roll-off (LMSR) vessels, and the Ready Reserve Force.

AIRLIFT FORCES

Military airlift forces provide a range of capabilities not available from civil aircraft. Features unique to military transport aircraft include the ability to air drop cargo and personnel; unload cargo rapidly, even at airfields lacking materiel-handling equipment; and carry outsize loads, such as Patriot missile systems, tanks, or helicopters. Of the cargo that must be airlifted in the early stages of a conflict, more than half is too large to be accommodated by even the biggest commercial cargo aircraft and thus must be transported by military air. The FY 1999 military airlift fleet consists of 37 C-17s, 135 C-141s, 104 C-5s, and 414 C-130s (all figures denote aircraft assigned for performance of their wartime missions). These aircraft are operated by active, Air National Guard, and Air Force Reserve squadrons.

Commercial aircraft augment military airlift forces in moving troops and standard-sized cargo. Through the CRAF, the Department gains access to commercial passenger and cargo planes in times of crisis. In return for their participation in CRAF, carriers are given preference for the Department's peacetime passenger and cargo business. CRAF forces are mobilized in three stages. Calling up Stage I aircraft provides DoD with access to about 9 percent of the passenger capacity in the long-range U.S. commercial fleet and 13 percent of the cargo capacity. With the addition of Stage II aircraft, those figures rise to 28 percent and 32 percent, respectively. Aircraft from Stage III bring the CRAF contribution, as a share of total U.S. long-range commercial aircraft capacity, to 53 percent for passengers and 75 percent for cargo.

SEALIFT FORCES

Sealift forces carry the full range of combat equipment and supplies needed to support military operations abroad. These forces include three primary types of ships: container ships, which primarily move supplies; roll-on/roll-off (RO/RO) vessels, which move combat equipment; and tankers, for transporting fuels. In addition, the inventory includes a number of breakbulk ships that can move both equipment and supplies.

Sealift capacity comes from three sources: government-owned ships maintained in reserve status, commercial ships under long-term charter to the Defense Department, and ships operating in commercial trade.

- The majority of government-owned ships are maintained in the Ready Reserve Force (RRF). This 88-ship fleet is composed primarily of RO/RO vessels (some of which temporarily support the afloat prepositioning program), breakbulk ships, and tankers. The RRF also includes two aviation support ships, each providing maintenance capabilities for a Marine aircraft wing. RRF ships are maintained at various levels of readiness. More than half are able to get under way in four to five days; the remainder can be readied for service in 10 to 20 days.
- Augmenting the Ready Reserve Force are eight fast sealift ships and two hospital ships manned by partial crews. The fast sealift ships can begin loading on four days' notice, while the hospital ships can be readied for deployment in five days.
- To support peacetime operations, the Department currently charters eight dry cargo ships and eight tankers from commercial operators. These ships transport military cargo to locations not normally served by commercial routes.
- The U.S.-flag commercial fleet contains 191 ships with military utility. These include 101 dry cargo ships, 88 tankers, and two passenger ships. Another 165 commercial vessels that could contribute to military missions—65 dry cargo ships, 85 tankers, and 15 passenger ships—are maintained in the effective U.S. control (EUSC) fleet. These ships are owned by U.S. companies or their foreign subsidiaries and are registered in nations whose laws do not preclude the ships' requisitioning for military operations.
- A number of the commercial vessels listed above could be made available to DoD in times of crisis under the Voluntary Intermodal Sealift Agreement (VISA), established by the Departments of Defense and Transportation with commercial cargo carriers in 1997. VISA provides access not only to commercial shipping capacity, but also to the intermodal capabilities of commercial carriers, such as rail, truck, and pier facilities. As with the CRAF program for airlift, VISA is structured to make sealift available in phases.

AERIAL-REFUELING FORCES

Aerial-refueling, or tanker, forces extend the range of airlift and combat aircraft by enabling these planes to be refueled in flight. The long-range tanker force consists of 472 KC-135 and 54 KC-10 Air Force primary mission aircraft. In addition to operating in the tanker role, both the KC-135 and KC-10 can be employed as a passenger or cargo transport, with the KC-10 possessing a significant capability to perform tanker and airlift missions simultaneously.

PREPOSITIONING PROGRAMS

The United States stores a variety of combat equipment and supplies at selected locations abroad. These stocks, maintained ashore and afloat, dramatically reduce both the time required to deploy

forces and the number of airlift sorties needed to move them. For instance, moving a heavy Army brigade with its 27,000 tons of equipment from the United States to an overseas location would take 20 to 30 days using a combination of airlift and sealift. By prepositioning the bulk of the brigade's equipment abroad, the intertheater transport requirement drops to about 2,000 tons, enabling the brigade to deploy in a week using only a small portion of the Department's total airlift fleet and allowing the remaining aircraft to be employed for other missions.

Land- and sea-based prepositioning provide complementary capabilities for supporting military operations. Land-based prepositioning enhances crisis responsiveness in specific theaters and is the most economical way of maintaining material abroad. Afloat prepositioning, while more expensive, provides the flexibility to relocate stocks quickly within and between theaters to meet the needs of particular operations.

LAND-BASED PREPOSITIONING

Land-based prepositioning programs are maintained in Europe, Southwest Asia, and the Pacific region. In Europe, the Army stockpiles equipment for three heavy brigades—two in central Europe and one in Italy. The Marine Corps stores equipment and 30 days of supplies for the lead echelon of a MEF in Norway. In addition, the Air Force maintains eight air base support sets—temporary shelters for early-arriving air base personnel—at a site in Luxembourg.

In Southwest Asia, the Army will stock equipment for two heavy armor brigades. The first brigade set was prepositioned in Kuwait in FY 1995. The second set—which includes equipment to support a division, brigade, and battalion headquarters—will be in place in Qatar by the end of FY 1998. The Air Force will maintain 46 air base operation sets in the region, consisting of shelters, materiel-handling equipment, aircraft-refueling trucks, and other gear. Many of the Air Force sets already in place are being used to support contingency operations.

In Korea, the Army has prepositioned equipment for a heavy armor brigade. The Air Force stores eight air base support sets at three locations in Korea; the prepositioned material supports surge billeting requirements.

SEA-BASED PREPOSITIONING

Sea-based prepositioning programs support the operations of all four Services. Of the 34 ships that the Department is using for afloat prepositioning, 24 have been chartered from the commercial fleet, three come from the Ready Reserve Force, one ship is a government-owned tanker, and six are large medium-speed roll-on/roll-off ships.

A total of seven chartered vessels, one RRF ship, and six LMSRs carry Army equipment and supplies. These ships, stationed in the Indian and Pacific Oceans, provide material for an armor brigade and selected combat support and combat service support units.

Marine Corps equipment and supplies are carried on 13 chartered vessels, known collectively as maritime prepositioning ships (MPS). These ships are organized into three squadrons, each

supporting the operation of a 17,300-person MAGTF for 30 days. The squadrons are stationed in the western Pacific, Indian Ocean, and Mediterranean Sea.

The sea-based prepositioning force also includes three chartered ships carrying Air Force munitions, such as precision-guided bombs and air-to-air missiles. The Navy also charters one ship to carry a fleet (ashore) hospital. The remaining ships—a government-owned tanker and two RRF ships specially equipped to transfer fuel directly to forces ashore—are maintained for use by U.S. forces.

Table 9 shows the FY 1999 inventories for key elements of the military mobility force structure.

Table 9	
Military Mobility Forces, FY 1999	
Airlift (Operational)^a	
C-17	37
C-141	135
C-5	104
C-130 ^b	434
Aerial Refueling (Operational)^a	
KC-135	472
KC-10 ^c	54
Sealift	
Ready Reserve Force Ships	88
Fast Sealift Ships	8
^a The inventory levels shown reflect primary mission aircraft. ^b Includes 20 aircraft operated by the Navy. ^c These aircraft also perform airlift missions.	

INVESTMENT

The military challenges that could emerge in the 21st century, coupled with the aging of key elements of the U.S. force structure, led the QDR to emphasize the need for a robust defense modernization program, which is also the rationale behind Government Performance and Results Act Corporate-Level Goal 3. The Department's program:

- Emphasizes the acquisition of advanced capabilities in support of *Joint Vision 2010*, including acceleration of selected high-payoff programs relative to the FY 1998 budget.
- Increases procurement funding to approximately \$60 billion a year by FY 2001.

- Sustains a substantial investment in science and technology programs holding the potential to revolutionize U.S. warfighting capabilities.

The QDR determined that a robust modernization program can be achieved and sustained only if the Department pursues fundamental reforms in the way it does business. Examples include:

- Privatizing and outsourcing support functions to the fullest extent possible.
- Aggressively pursuing infrastructure reductions, including base closures.
- Fully implementing acquisition reform initiatives.

The following sections describe key investment programs sustaining conventional forces funded by the FY 1999 President's Budget.

Aviation Forces

Aviation force modernization is an important part of the Department's overall investment program, constituting roughly 12 percent of the funding planned for FY 1999.

FIGHTER ATTACK AIRCRAFT

Joint Strike Fighter (JSF). The JSF is the Department's largest acquisition program and one of the most ambitious in concept. This project is intended to provide a family of aircraft for use by the Air Force, Navy, and Marine Corps, produced in variants configured to reflect each Service's specific needs. The JSF will replace the F-16 in the Air Force, the F/A-18C in the Navy, and the F/A-18C/D and AV-8B in the Marine Corps. Through substantial commonality across the three Service variants, JSF avoids the need for three separate development programs that would be prohibitively expensive to conduct in parallel. The Department will have to replace approximately 3,000 aging aircraft beginning about FY 2010 to sustain its planned force structure. The JSF program is designed to accomplish that goal, while significantly increasing individual aircraft capability.

Capitalizing on technology advances—including electronics, materials, and manufacturing processes—JSF is projected to combine substantial combat mission radius, high survivability against air defenses, and a substantial payload. Extensive analysis conducted thus far indicates that these qualities will make the JSF much more effective in the projected future environment than the aircraft it will replace. To reduce risk in the development process, JSF currently is in a concept demonstration phase that will continue into FY 2001. The demonstration phase involves two competing aircraft designs, one developed by Boeing and the other by Lockheed Martin. Flight testing will help refine aircraft propulsion integration and flight control design and also ensure suitability for shipboard operation. Successful completion of this phase will give greater confidence in the subsequent engineering and manufacturing development (EMD) phase, slated to begin in mid-FY 2001. Procurement of the aircraft is scheduled to commence in FY 2005.

Success in the JSF program depends both on technical engineering factors and on cost control. Meeting cost targets is essential if JSF is to be a mass-production aircraft that can sustain the force structure beyond FY 2010. The QDR found that careful DoD oversight of cost-benefit trade-offs in the JSF's design is essential to ensuring that modernization and force structure remain in balance over the long term. The JSF is not projected to match the unique capabilities of more specialized aircraft. It will, however, provide a superior combination of multirole capabilities within affordable limits. A thorough analysis of alternatives (AoA) will be conducted to confirm the aircraft's readiness for entry into the EMD phase in FY 2001. The JSF program involves uncertainty and risk, but these challenges can be met through thorough analysis and some prudent hedges against delay.

The JSF has attracted significant interest from friendly nations who are considering potential replacements for their current fleets of combat aircraft. For some of these nations, that interest has evolved into participation in the current concept demonstration phase of the JSF program. The United Kingdom is a full collaborative partner, planning to replace its Royal Navy Sea Harriers with the short takeoff and vertical landing (STOVL) variant of the JSF. Three other nations that have become associate partners—the Netherlands, Norway, and Denmark—are seeking to determine whether the JSF could meet their future strike-fighter requirements.

F-22. The F-22 will replace the F-15C/D in the air superiority role and will possess substantial air-to-ground capability as well. The F-22 is anticipated to have much greater effectiveness than the F-15 due to its much lower radar signature, highly integrated avionics systems (for situation awareness and targeting), and ability to cruise at supersonic speed. Well into its EMD program, the F-22 successfully conducted its first flight test in September 1997. A total of nine flight-test aircraft are being manufactured as part of the EMD effort, the second of which is scheduled to become available in mid-1998. Extensive flight testing at Edwards Air Force Base, California, will begin in May 1998 and will run through 2001. In addition to the nine flight-test aircraft, one aircraft will begin ground-site static (loadbearing) testing in 1998, while cyclic fatigue (lifetime) testing on another aircraft will commence in 1999. EMD work is progressing on schedule. Funds for the first two production aircraft are requested in FY 1999, leading to a gradual buildup in the production rate to 36 aircraft per year by FY 2004. Initial operational capability is slated for FY 2006.

The present acquisition plan will provide three wings of F-22 aircraft by about FY 2013. A derivative of the F-22 would be a candidate to replace the F-15E and F-117A in the long-range interdiction role. Development of such a future interdiction aircraft, if it is determined to be necessary, would not begin until after FY 2005, and would consider other potential designs as well as an F-22 derivative.

F-16s, A-10s, and F-15s. Recognizing the challenges inherent in operating existing F-16 aircraft to about a 30-year life and 8,000 flight hours, together with the moderate risk involved in JSF integration, the Department announced a program in 1996 to earmark 200 older Block 15 F-16s in inactive storage for potential reactivation. The first 100 aircraft have been identified, and the remaining 100 will be selected in FY 2000. Previous fighter aircraft have been operated for about 20 years and roughly 4,500 flying hours. The availability of these stored F-16 aircraft for

remanufacturing to replace operating aircraft that may need unanticipated repairs represents an affordable alternative to new production; it also provides a hedge against JSF schedule delays.

The Department also has decided to earmark 60 inactive A-10 aircraft for retention in secure storage for possible future reactivation. These aircraft are estimated to be sufficient in number to offset future peacetime attrition and sustain the present OA-10 and A-10 force structure into the 2020s, the current projected service life of the A-10.

The Department has decided to terminate production of the F-15E fighter/interdiction aircraft after acquisition of the five aircraft authorized in FY 1998. Previous plans had called for procuring three F-15Es in FY 1998 and three in FY 1999 to offset projected peacetime attrition through about the mid-2010s. In the absence of new foreign orders to help keep the production line open after FY 1998, however, procurement of a single additional aircraft in FY 1999 would be prohibitively expensive. When the Department considers replacements for the F-15E, potential candidates include a derivative of the F-22 or a version of the Joint Strike Fighter.

F/A-18. The F/A-18E/F is the Navy's principal fighter/attack aircraft acquisition program. The F/A-18E/F is intended to provide greatly improved survivability over earlier F/A-18 models, and much greater operational utility through increased weapon payloads and greater carrier recovery payloads. The new E/F version also is planned to increase carrier air-wing flexibility through its ability to refuel other strike-fighters in flight. The earlier F/A-18C/D model, while a very successful design, lacks the growth potential to keep pace with new technologies anticipated in future decades. The limited ability of F/A-18C/D aircraft to accommodate the newest electronic countermeasure systems effectively, and their serious carrier recovery payload limitations, make acquisition of an improved Navy fighter/attack aircraft essential.

For the longer term, the Navy plans to make the transition to JSF procurement as soon as possible. The Navy's acquisition objective for the F/A-18E/F has, accordingly, been reduced to between 548 and 785 aircraft, depending upon the pace that JSF production can achieve. The Navy thus will take fullest advantage of the JSF's anticipated significant improvements in survivability, avionics, and mission radius over the F/A-18E/F.

The F/A-18E/F continues in an intensive flight-test program as it nears the end of the previously planned EMD effort. While achieving excellent results in many aspects of EMD, several technical difficulties have emerged in the course of flight testing. Most of these challenges have been resolved and corrective measures promptly implemented. The Department expects that the Navy will identify the cause of the remaining problems and develop corrections without any substantial delays in the EMD program. In the meantime, previously contracted production of the initial lot of 12 FY 1997 aircraft and advance procurement for the FY 1998 aircraft are under way. Contracting for advance procurement items for the FY 1999 aircraft and full funding for 20 FY 1998 aircraft have been made contingent upon resolution of all significant technical problems—including the so-called wing-drop phenomenon—identified during flight testing accomplished thus far.

AV-8B. The AV-8B remanufacturing program continues, with seven aircraft delivered to date. Funds for 12 additional aircraft are requested in the FY 1999 budget. A total of 72 aircraft are slated to be remanufactured by the time this program ends in FY 2001.

CONVENTIONAL BOMBERS

B-52. Upgrade programs for the B-52 force will keep it capable of employing the latest munitions and communicating with other forces. B-52 aircraft will begin operating with the Joint Direct Attack Munition (JDAM), Wind-Corrected Munitions Dispenser (WCMD), and Sensor Fuzed Weapon in FY 1998. The Joint Standoff Weapon (JSOW) will be added in FY 2000 and the Joint Air-to-Surface Standoff Missile (JASSM) in FY 2001.

B-1. The B-1, which is dedicated exclusively to conventional missions, will be the backbone of the future bomber force. By the end of the decade, upgrades will give the B-1 an advanced navigation system and an improved communications system. Major enhancements to the onboard computers and electronic countermeasures system are scheduled to follow around FY 2002, although the ALE-50 towed decoy will be fielded on the aircraft in FY 1999. The B-1 can deliver the entire family of advanced cluster munitions (CBU-87/89/97); this increases its effectiveness against area targets and ground systems in low-threat environments. The JDAM will be fielded on the B-1 in FY 1999, followed by the WCMD, JSOW, and JASSM in FY 2002.

B-2. The B-2 is assigned both nuclear and conventional missions. The B-2's stealth features make it difficult to detect, especially at night and in adverse weather; its ability to penetrate heavy defenses is further enhanced when the B-2 is employed in conjunction with electronic warfare aircraft that conduct standoff jamming. Twenty of the planned 21 B-2s have been delivered to date. For additional details on this program, see the Strategic Nuclear Forces chapter.

SPECIALIZED FORCES

A wide range of improvements is under way in specialized aviation forces, particularly those that provide information on hostile force activities. Many of these information-gathering air vehicles—both manned and unmanned—emphasize detection and tracking of moving ground targets. The ability to locate enemy ground force movements is key both to the rapid application of air power and to the estimation of the enemy's tactical and strategic goals.

The Air Force E-8C Joint Surveillance Target Attack Radar System (JSTARS) is one of the most important of these programs. JSTARS consists of two elements: a powerful airborne radar mounted on a large transport-class aircraft and mobile ground stations that receive and process the aircraft radar data. Two JSTARS aircraft are budgeted for FY 1999, with total procurement set at 13 aircraft. In addition, DoD has initiated a major upgrade to U.S. E-8C aircraft radars and communications systems. The Department also continues to procure and upgrade the related ground stations operated by the Army, twenty of which will be procured in FY 1999.

Other U.S. air surveillance capabilities also are being improved. The Air Force high-altitude U-2 force, which provides moving-target intelligence as well as other information, is receiving a wide variety of improvements.

Detection and analysis of electronic signals is a key element of the air surveillance effort. Most of DoD's airborne signals intelligence systems—including Air Force RC-135 Rivet Joint aircraft, Navy EP-3s, and Army RC-7 Airborne Reconnaissance Low systems—will be improved to provide higher levels of interoperability, operational flexibility, and capability. The expansion of the RC-135 Rivet Joint fleet to 16 aircraft, to support continued high operating tempos, will be accomplished in FY 1999. The RC-135 Cobra Ball technical data-collection force is being increased to three aircraft to support ballistic missile defense efforts. Seven Air Force RC-135 Rivet Joint signals intelligence aircraft are being equipped with new engines, extending their projected service life. Installation of new terminals (called BGPHEs-ST) on surface ships to receive surveillance data from ES-3 signals intelligence aircraft continues in FY 1999.

Effective communications are essential to exploiting intelligence information. Significant communications upgrades are being incorporated into DoD's main airborne air surveillance and control platforms—Air Force E-3s and Navy E-2Cs—with both systems receiving new terminals for the Joint Tactical Information Distribution System and Tactical Intelligence Broadcast Service. In addition, Cooperative Engagement Capability subsystems are being installed in E-2Cs to improve targeting of missiles and aircraft. Installation of radar upgrades and new passive-emitter detection systems on E-3s will continue in FY 1999. The Air Force is providing funding for parallel improvements in NATO E-3s via the NATO AWACS Mid-Term Modernization Program. New E-2Cs are being produced at a rate of three per year, and both the E-3 and E-2C fleets are receiving reliability and maintainability improvements to keep them viable past the year 2010.

Significant investments continue in the development of unmanned aerial vehicles (UAVs), particularly in the area of real-time imaging sensors. The Department's highest priority for UAVs is a joint tactical system. The Outrider Advanced Concept Technology Demonstration (ACTD) has been undertaken to support development decisions. A military utility assessment of Outrider in 1997-1998 will help to determine the direction of follow-on activities. The FY 1999 budget includes funds that can be applied to either further development or low-rate production of a joint system for the Army, Navy, and Marine Corps. Meanwhile, a common interoperable ground system, called the Tactical Control System, is being developed to control all tactical UAVs and the Predator medium-altitude endurance UAV, as well as to provide some interoperability with the High-Altitude Endurance (HAE) UAV.

Predator was the first ACTD to move into acquisition. This medium-range vehicle, with real-time passive and active imagery sensors, is being fielded by the Air Force. Twelve systems are slated for procurement through FY 2002; these include ten combat-coded systems, one training system, and one research and development system. Each system will consist of four aerial vehicles, one ground control station, and one communications suite.

Two high-altitude endurance UAVs—Global Hawk and DarkStar—continue to mature. Procurement of both systems is expected after FY 2000.

AVIATION FORCE WEAPONS

Improvements are being made in air-to-air and air-to-ground weapons carried by combat aircraft. New air-to-air missile variants will be effective across a larger engagement area and will have increased lethality. New air-to-ground weapons with increased standoff range and improved accuracy will provide added benefits in combat operations, including:

- Neutralization or reduction of the effectiveness of enemy anti-aircraft systems. This will reduce aircraft losses and speed the follow-on use of direct attack weapons, which are usually less expensive than standoff munitions.
- The ability to attack highly defended targets from the outset of hostilities, without first having to destroy a series of peripheral defenses sequentially.
- The extension of the effective reach of precision weapons far beyond the combat radius of the delivery platform, and with less exposure.

Advanced Medium-Range Air-to-Air Missile (AMRAAM). The Navy and Air Force will continue to procure the AMRAAM throughout the program period. Performance is being enhanced in a number of areas, including kinematics and lethality.

AIM-9X. Designed to meet evolving short-range air-to-air missile requirements, the AIM-9X is an enhanced version of the AIM-9 Sidewinder missile. While retaining the AIM-9M motor, fuze, and warhead, the AIM-9X program replaces the AIM-9M seeker and airframe. Missile effectiveness will be enhanced by providing pilots with a new helmet-mounted sight that can align the missile's seeker head with targets well outside the aircraft radar's field of view. The combination of improved missile performance and the new helmet-mounted sight will recover an advantage in close-in combat that was lost several years ago when advanced new foreign systems, such as the Russian AA-11, were deployed. Affordability and growth potential are key tenets of this program. The AIM-9X entered engineering and manufacturing development in FY 1997; production is slated to begin in FY 2000.

Joint Air-to-Surface Standoff Missile (JASSM). The JASSM is a new long-range missile designed to have excellent autonomous navigation capability and an autonomous terminal seeker. JASSM's standoff capability will enable U.S. aviation forces to hold highly defended targets at risk while minimizing aircraft attrition. Achieving desired performance while maintaining low unit cost is an important goal in the system's development. This Air Force-led joint program is currently in the product-definition/risk-reduction phase; EMD will begin in late FY 1998 or early FY 1999 and low-rate production in FY 2000. The FY 1999 budget includes no Navy development funding for this system, pending completion of an analysis of alternatives that includes the Standoff Land-Attack Missile-Expanded Response Plus (SLAM-ER Plus, described below). The Navy is much less dependent on JASSM due to its significant planned inventory of SLAM-ER Plus and Tomahawk missiles. The Air Force, on the other hand, has only a limited inventory of conventional air-launched cruise missiles and needs more guided weapons with sufficient range for launch outside the envelope of highly effective, modern surface-to-air missile systems.

Joint Standoff Weapon (JSOW). JSOW is a new long-range glide weapon with excellent autonomous navigation ability. Capable of employment under adverse weather conditions, it is designed to provide an accurate standoff method of delivering tactical munitions at a relatively low cost. The baseline variant will carry combined-effect bomblets for use against area targets. To provide standoff antiarmor capability, a follow-on version will carry the BLU-108 payload derived from the Sensor Fuzed Weapon (described below). A third variant will provide a unitary warhead and a man-in-the-loop seeker for increased accuracy and target discrimination. EMD for both the BLU-108 and unitary variants began in FY 1996. The baseline version entered production in FY 1997; the BLU-108 and the unitary variant are slated to follow in FY 2000 and FY 2001, respectively.

Sensor Fuzed Weapon (SFW). Designed for top attacks on enemy armor, the SFW is a tactical munitions dispenser containing 10 BLU-108 submunitions, each with four Skeet warheads. This weapon is capable of achieving multiple kills against armored vehicles during day or night and under adverse weather conditions. The system entered full-rate production in FY 1996. Development of an improved BLU-108 submunition for SFW and JSOW began in FY 1996 as part of a preplanned product improvement (P³I) program; initial production funds are requested in FY 1999. At only a small increase in cost, the improved munition will be much more effective than earlier versions. Enhancements include the addition of an active sensor and a multimission warhead and expansion of the weapons pattern over the ground by more than 50 percent. These changes will reduce SFW's susceptibility to countermeasures and improve its soft-target lethality and coverage, while reducing the impact of target location errors.

Joint Direct Attack Munition (JDAM). The JDAM program provides existing general-purpose bombs with a tailkit incorporating an inertial navigation system (INS) that is coupled to satellite Global Positioning System (GPS) data. INS/GPS guidance will improve bombing accuracy from medium and high altitudes, permitting the delivery of these free-fall munitions in adverse weather. Low-rate production for the MK-84 warhead began in FY 1997. The Air Force and Navy are currently revising the design of the tailkit for both the MK-83 and BLU-109 warheads.

Standoff Land Attack Missile (SLAM). The Navy SLAM is a modified Harpoon antiship missile incorporating an AGM-65 Maverick imaging infrared seeker and a Walleye datalink for man-in-the-loop control. An upgraded version of the missile, designated SLAM-ER, provides an approximate 60 percent increase in range over the baseline SLAM system. This version also incorporates enhancements in survivability, anti-jam guidance capability, and hard-target penetration. The improvements in SLAM-ER's mission planning system will greatly enhance the weapon's ease of employment. SLAM-ER Plus, a variant further enhanced by an autonomous terminal seeker, will enter production in the fourth quarter of FY 1998. Approximately 300 SLAM/SLAM-ER missiles will be converted to the SLAM-ER Plus configuration between FY 1998 and FY 2003.

Wind-Corrected Munition Dispenser (WCMD). The WCMD is a modification kit for advanced cluster bomb dispensers that inertially guides the unit to compensate for high-altitude winds, thus improving delivery accuracy. This modification will be made to the CBU-87 (Combined Effects Munition), CBU-89 (Gator), and CBU-97 (SFW). Delivery of production units will begin in FY 1999.

Naval Forces

The FY 1999 budget and associated FYDP implement force structure and modernization initiatives developed during the Quadrennial Defense Review. These initiatives will sustain and improve naval warfighting capabilities into the early years of the next century. The average age of the fleet is currently within acceptable limits, and is projected to remain so for the foreseeable future. The shipbuilding program for FY 1999-2003 is summarized in Table 10. The programs funded in FY 1999-2003 exploit technology upgrades to counter emerging threats, while providing the mix of capabilities needed for the 21st century.

Table 10						
FY 1999-2003 Shipbuilding Program						
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FYDP Total
New Construction						
CVN-77 (Aircraft Carrier)	0	0	1	0	0	1
NSSN (Attack Submarine)	1	0	1	1	0	3
DDG-51 (Guided-Missile Destroyer)	3	3	3	3	3	15
LPD-17 (Amphibious Transport Dock)	1	2	2	2	2	9
ADC(X) (Dry Cargo Ship)	0	0	0	1	2	3
Oceanographic Ship	1	0	0	0	0	1
LMSR (Sealift Ship)	1	0	0	0	0	1
Service-Life Extensions (SLEPs) / Overhauls						
Carrier Refueling Overhaul	0	0	1	0	0	1
Cruiser Modernization	0	0	1	3	8	12
LCAC SLEP	0	2	2	3	5	12
TAE/TAFS SLEP	0	0	0	2	2	4

AIRCRAFT CARRIERS

The FY 1999-2003 program maintains a force of 12 routinely deployable aircraft carriers, consistent with forward presence, crisis-response, and warfighting objectives. The tenth, and final, Nimitz-class carrier (CVN-77) is fully funded in FY 2001, with advance procurement of nuclear-propulsion components programmed for FY 1999 and FY 2000. This funding profile represents an acceleration of one year relative to previous plans. The revised schedule will shorten the construction gap between CVN-76 and CVN-77, while yielding significant savings in construction costs.

The aircraft carrier modernization program needed beyond FY 2003 is currently undergoing extensive review. The first phase of a comprehensive study of future sea-based tactical aviation platforms, known as the CVX Analysis of Alternatives, was completed in 1997. The analysis examined several top-level trade-offs bearing on the characteristics of future aircraft carriers, including alternative air wing sizes and aircraft types (i.e., STOVL and conventional takeoff and landing designs). The assessment concluded that carrier designs supporting STOVL-only aircraft would not be practical. It also found that air wings containing fewer than 55 aircraft would be insufficient to conduct required missions. Phase II of the AoA, slated for completion in FY 1999, will address detailed design trade-offs, including propulsion alternatives.

The first CVX is planned for procurement in FY 2006. It will enter the fleet in FY 2013 as a replacement for the USS Enterprise (CVN-65). The FY 1999 budget and associated FYDP contain \$856 million to support carrier modernization planning beyond FY 2003.

AMPHIBIOUS SHIPS

Modernization programs for amphibious forces continue. Many of the ships currently in the force are nearing the end of their projected service lives and need to be replaced. The amphibious ship investment plan supports the goal of achieving a 36-ship force comprising 12 ARGs, each with three ships. New ships entering the fleet offer increased capabilities relative to the older vessels being retired, permitting the ships to be replaced on less than a one-for-one basis. The resulting amphibious force will, however, remain highly capable.

The key to recapitalizing the amphibious force is the new amphibious transport dock ship, the LPD-17. The planned 12-ship LPD-17 program will replace 27 ships of various classes in the active, reserve, and inactive reserve fleets that will reach retirement age early in the next century. Thus, beyond the FYDP, the LPD-17, along with newer LSDs, LHDs, and existing LHAs, will form the core of the modernized amphibious force. The FY 1999 budget and shipbuilding plan continue the LPD-17 program on schedule, with two ships funded annually starting in FY 2000. The LPD-17 is being built by a team of shipyards (Avondale and Bath Ironworks) and major defense contractors (including Hughes and Intergraph).

With the delivery of LHD-7 in FY 2001, the Navy will have 12 large-deck amphibious assault ships—five of the Tarawa (LHA-1) class and seven of the Wasp (LHD-1) class. These large multipurpose vessels, which constitute the principal elements of ARGs, can embark and support Marine ground forces using a combination of vertical- and short-takeoff and landing (V/STOL) aircraft, helicopters, and amphibious vehicles. The Tarawa-class ships were commissioned between FY 1976 and FY 1980 and will begin reaching the end of their projected 35-year lives in FY 2011. The Wasp-class ships entered the fleet in FY 1989 and have a projected 40-year service life.

The final LSD dock cargo landing ship (LSD-41 cargo variant), used for transporting and launching amphibious craft and vehicles, will be delivered in FY 1998. When the older, Anchorage-class LSD-36s are decommissioned between FY 1998 and FY 2008, the amphibious force will reach its steady-state objective of 12 modern LSDs to support the ARG force structure.

ATTACK SUBMARINES

The SSN force will continue to be highly capable and modern, averaging about 14 years of age through FY 2003. With the addition of three Seawolf (SSN-21) submarines by FY 2003 and deliveries of the New Attack Submarine (NSSN) beginning in FY 2004, the U.S. attack submarine force will remain for the foreseeable future the most technologically advanced in the world.

The NSSN, designed as a lower-cost follow-on to the Seawolf class, will provide an affordable replacement for Los Angeles-class submarines retiring after the turn of the century. The NSSN will incorporate technology improvements from the Seawolf program and will have enhanced capabilities for littoral operations. The lead ship was authorized in FY 1998; the FY 1999 budget and associated FYDP provide for procurement of three additional NSSNs through FY 2003. This procurement plan carries out the submarine acquisition strategy approved by Congress in FY 1998, which uses an innovative teaming arrangement between Electric Boat and Newport News shipyards. By taking advantage of specialization at each yard, this strategy will reduce costs, while maintaining the two existing nuclear-capable submarine-construction yards. Substantial progress has been made over the past year in integrating the two yards' efforts.

The baseline NSSN design incorporates advanced technologies to satisfy projected military requirements, and provides the flexibility to accept potential improvements that could further reduce life-cycle costs. Advanced technologies already incorporated in the program focus on improving communications connectivity, stealth, and combat system sensors and processors, as well as life-cycle affordability.

SURFACE COMBATANTS

The FY 1999 budget and FYDP provide for a force of 116 active and reserve surface combatants. The capabilities provided by continued deliveries of Arleigh Burke (DDG-51)-class guided-missile destroyers equipped with the Aegis weapon system more than offset the capabilities lost by deactivation of older surface combatants. The FY 1999-2003 shipbuilding program includes funds for 15 DDG-51-class destroyers, achieving the procurement objective of 57 of these ships. Twelve of the 15 DDG-51s will be procured under a multiyear acquisition strategy approved by Congress in the FY 1998 budget. The changes made to the shipbuilding program this year have achieved a stable procurement rate of three DDG-51s per year in FY 1999-2003. Advance procurement funds are programmed for FY 2001 to support the revised acquisition profile and a possible extension of the multiyear plan that was approved in FY 1998. With the addition of the ships funded during the FYDP, the fraction of Aegis-capable ships in the force will increase to 72 percent from 47 percent at the end of FY 1999.

The FY 1999 budget and FYDP fund an initiative to upgrade selected CG-47 Aegis cruisers at a relatively low cost. Plans call for 12 cruisers to be upgraded over the FYDP period, with the initial unit funded in FY 2001. The upgrades include capability improvements in area air defense, theater ballistic missile defense, and naval surface fire support.

The Navy's long-term surface combatant force requirements underwent an extensive review last year as part of the 21st Century Surface Combatant (SC-21) analysis of alternatives. Force structure requirements were assessed in terms of warfighting capability, forward-presence objectives, historical operating tempos, and possible future contingencies. The analysis evaluated the types of ships and capabilities needed as replacements for retiring DD-963s and FFG-7s. Results from the analysis supported a decision to proceed first with a new combatant emphasizing capabilities to conduct land attacks and provide fire support to ground combat forces. This combatant has been identified as a maritime fire support ship (MFSS), designated DD-21. The FYDP shifts funding for the lead DD-21 from FY 2003 to FY 2004, to allow more time to develop key technologies needed to reduce risk in the ship's design and development.

Congressional action on the FY 1998 budget reduced funding for the Arsenal Ship program substantially. The FY 1999 budget terminates the program. In addition to its use as a potential strike platform, the arsenal ship would have served as the maritime fire support ship demonstrator (MFSSD) for testing innovative concepts and new technologies that are being developed within the DD-21 program. The DD-21 program will now rely on land- and sea-based testing to reduce risks in developing these technologies on the DD-21. Funding previously earmarked for the MFSSD has been realigned to other priorities in the FY 1999 budget and FYDP, which include accelerating the planned Aegis cruiser modernization program and procurement of CVN-77.

COMBAT LOGISTICS

The shipbuilding plan includes procurement of three new ADC(X) dry-cargo ships over the FYDP period, one in FY 2002 and two in FY 2003. These ships will replace aging ammunition and dry cargo ships (TAEs and TAFSSs). The vessels will be procured through the Navy's ship construction account on a schedule that ensures adequate logistics support for peacetime and contingency operations.

P-3C MARITIME PATROL AIRCRAFT

Land-based maritime patrol aircraft (MPA) squadrons provide critical surveillance support for naval task groups at sea and ashore. Investment plans focus on service-life extensions and upgrades of existing aircraft. The service-life extension program will increase the operational life of P-3C aircraft to about 50 years, which will require additional fatigue testing and analysis. The primary P-3C modernization effort—the Antisurface Warfare Improvement Program (AIP)—was initiated in FY 1994. It utilizes commercial off-the-shelf technologies to enhance the surveillance, combat identification, and antiship mission capabilities of the MPA force. The FY 1999 budget reduces the upgrade objective from 48 to 42 aircraft—the number of AIP-configured P-3Cs now deemed adequate to support mission needs.

MINE COUNTERMEASURES

The Department is pursuing a robust mine warfare modernization program. The FY 1999 budget and associated FYDP add approximately \$130 million relative to last year's plan for mine countermeasures forces and associated programs. The FY 1999 program procures a total of 24

Shallow Water Influence Minehunting Systems (SWIMS); last year's budget did not fund this system. Funds also are provided to procure six (versus five) Remote Minehunting System (RMS) vehicles, and to integrate the RMS into the newest DDG-51 destroyers. Airborne mine countermeasures (AMCM) systems will be enhanced in the near term through the incorporation of a mine identification capability into the existing AQS-14 helicopter-towed minehunting sonar. For the longer term, the FY 1999 program funds a forward-deployed AMCM system that will improve performance and response time over the AQS-14, which must be transported to operating locations in times of crisis.

ANTISUBMARINE WARFARE

The emerging ASW challenge is characterized by harder-to-detect submarines operating in littoral regions. The ASW initiatives pursued over the FYDP period will ensure that a robust combined-forces ASW capability is maintained. The program adds funding to accelerate the procurement of TB-29 towed-array sonars for submarines, enhancing U.S. capabilities to detect hostile submarines in the difficult acoustic environment of the littorals.

WEAPON SYSTEMS

Tomahawk. The Tomahawk cruise missile enables surface combatants and submarines to launch attacks against land targets from long ranges in all types of weather. The FY 1999 budget includes funds to procure 114 remanufactured Tomahawk missiles—15 in the Block III configuration, which includes the Global Positioning System, and 99 in the Block IV (Phase I) Tomahawk Baseline Improvement Program configuration, providing improved terminal guidance and precision strike capabilities. Last year, the Department proposed initiating a major revision to the Tomahawk program, called the Tactical Tomahawk Initiative (TTI). Through design and construction techniques, the TTI would provide new-production missiles with enhanced capabilities at a lower unit cost than would be possible with remanufactured missiles. Although the TTI program has not been incorporated in the FY 1999 budget, it remains under active consideration and may be initiated later this year or as part of the FY 2000 budget.

Standard Missile. The Standard Missile (SM-2) is the Navy's primary ship-based anti-air weapon, with an operational range from a few miles to hundreds of miles. The FY 1999 budget continues procurement of the Block IIIB and Block IV Standard missiles. The Block IV version has a new separable booster and offers improvements in kinematic capability and performance over the Block III model.

Ship Self-Defense Systems. The FY 1999 budget continues production of the Rolling Airframe Missile (RAM) and begins production of the Evolved Sea Sparrow Missile (ESSM) for short-range ship self-defense. Near-term emphasis has shifted to procurement of RAM, based on a reevaluation of the threat and on affordability considerations. The Navy recently expanded the requirement for RAM to include aircraft carriers and Ticonderoga-class cruisers. Relative to previous plans, the FY 1999-2003 budget accelerates RAM procurement by 420 missiles and reduces ESSM purchases by 370 missiles. These missiles will be installed in a mix of existing and future ships.

Cooperative Engagement Capability (CEC). CEC integrates, in real time, detailed information on beyond-line-of-sight air targets gathered by numerous ships and aircraft. The FY 1999 budget begins low-rate production of CEC ship sets for installation on all Aegis-equipped surface combatants, aircraft carriers, and amphibious ship classes. The FY 1999 budget and associated FYDP also accelerate CEC installations on DDG-51-class destroyers and CVN-68-class aircraft carriers. In addition, the FY 1999 budget increases research and development funding for the airborne CEC element, to be installed on E-2C early warning aircraft, and provides for integrating CEC into other programs.

Light Airborne Multipurpose System (LAMPS). The FY 1999-2003 program funds an upgrade for SH-60B LAMPS helicopters that includes a service-life extension as well as significant capability enhancements. The upgraded helicopters, designated SH-60Rs, will incorporate a dipping sonar as well as surveillance and weapon improvements, permitting more effective and survivable operations in littoral environments. The Flight IIA version of the DDG-51 entered construction in FY 1994 and will be introduced in FY 2000. It will have the capability to support LAMPS operations.

Naval Surface Fire Support. The FY 1999-2003 program makes critical enhancements in the surface fire support capabilities of naval forces. It continues development of the Extended-Range Guided Munition (ERGM), designed for use with 5-inch guns. This advanced new munition will provide over-the-horizon fire support to naval expeditionary forces operating in the littoral. Other fire support initiatives funded in FY 1999-2003 include the Vertical Gun for Advanced Ships and the Navy Tactical Missile System, a variant of the Army Tactical Missile System. These systems were identified in the SC-21 analysis of alternatives as providing critical fire support capabilities for the next generation of surface combatants. In addition to these programs, the Navy is evaluating a new concept for a land-attack missile derived from the Standard system.

Land Forces

The *Report of the Quadrennial Defense Review* emphasized the need to modernize U.S. land forces, particularly the high-payoff programs associated with Army digitization. Digitization refers to the incorporation of state-of-the-art computers, software, and digital radios throughout the Army's force structure and in key warfighting platforms such as the M-1 Abrams tank and the M-2 Bradley fighting vehicle. Digitization will enable critical, time-sensitive information comprehensively characterizing friendly and enemy forces to be disseminated rapidly throughout the battlefield. Army digitization and other initiatives, such as Force XXI and the Army After Next, are identifying new concepts of land warfare with revolutionary implications for organization, structure, operations, and support. The advances planned and under test in information technology, weapons, and platform speeds, at both the tactical and operational levels, will ensure land power remains a decisive element of warfighting well into the 21st century.

Marine Corps modernization is driven by the concept of Operational Maneuver From the Sea. Executing this concept will require tactically adaptive, technologically agile forces able to rapidly reorganize and reorient across a broad range of missions in fluid operational environments. These concepts are currently being tested in the Hunter Warrior, Urban Warrior,

and Capable Warrior series of advanced warfighting experiments. The V-22 aircraft, the Advanced Amphibious Assault Vehicle, and the Marine Corps' version of the Joint Strike Fighter are priority programs during the FYDP period.

GROUND COMBAT SYSTEMS

Abrams Tank Upgrade. The Army is substantially upgrading its fleet of M1 Abrams main battle tanks. Three versions of the Abrams tank are currently in service—the original M1 model, dating from the early 1980s, and two newer versions, designated M1A1 and M1A2. The M1A1 series, produced from 1985 through 1993, replaced the M1's 105mm main gun with a 120mm gun and incorporated numerous other enhancements, including an improved suspension, a new turret, increased armor protection, and a nuclear-chemical-biological protection system.

The newer M1A2 series includes all of the M1A1 features plus a commander's independent thermal viewer, an independent commander's weapon station, position navigation equipment, and a digital data bus and radio interface unit providing a common picture among M1A2s on the battlefield. The M1A2 is capable of sharing information with other tanks and combat systems; an electronic applique, developed under the Army digitization initiative, will integrate existing Abrams tanks into the common digital architecture. The Army has procured 62 new tanks in the A2 configuration and converted 368 older M1s to M1A2s. An additional 580 M1s are being upgraded to A2s under a five-year contract awarded in FY 1996, with a total of 998 M1 upgrades planned.

In FY 1999, the Army will begin upgrading M1s to the M1A2 System Enhancement Program (SEP) configuration. The SEP embeds digitization capabilities inside the Abrams' electronic architecture, eliminating the requirement for electronic appliques. It also incorporates, as a major warfighting enhancement, a second-generation forward-looking infrared sensor. This sensor also will be added to older M1A2s starting in FY 2001. When the SEP enters production, the Army will have a total of 627 M1A2s, all of which will eventually be converted to the SEP configuration.

Bradley Fighting Vehicle Upgrade. The A3 upgrade to the Army's Bradley fighting vehicle system is a major component of the Army digitization initiative, designed both to complement the capabilities provided by the M1A2 SEP and to incorporate needed enhancements identified during the Gulf War. When equipped with upgraded Bradleys, mechanized infantry units will be able to share battlefield data with M1A2 SEP-equipped armor units. The digitization upgrades will improve both situational awareness and sustainability through automated fault reporting and diagnostics. The A3 upgrade will also increase the lethality of the Bradley by adding an improved fire control system and a commander's independent thermal viewer. Approximately 1,602 Bradley A2s will be remanufactured into A3s, including fire support and air defense derivatives. Engineering and manufacturing development of the A3 upgrade will continue through FY 1999; low-rate production began in FY 1997.

Crusader. This advanced new system will revolutionize Army field artillery operations. Fully automated, computerized, and designed for use on the digital battlefield, the Crusader offers substantial improvements in lethality, survivability, range, and mobility over existing artillery

systems. The Crusader consists of a self-propelled howitzer and an artillery resupply vehicle. It will replace the M109A6 Paladin self-propelled howitzer and M992 field artillery ammunition supply vehicle in both early-deploying and forward-deployed units. The Crusader will be in research and development during the FYDP period. Production is scheduled to begin in FY 2003, with the first operational unit equipped in FY 2005. Plans call for the procurement of 824 Crusader systems (824 self-propelled howitzers and 824 resupply vehicles) through FY 2011.

Advanced Amphibious Assault Vehicle (AAAV). The AAAV will replace the AAV7A1 amphibious assault vehicle, which dates from the early 1970s and is well beyond its originally intended service life. The AAAV will allow Marine forces to launch assaults from points over the horizon, move rapidly to the beach, and continue the attack inland in a seamless operation. It will also provide armor-protected transport and direct fire support to Marine infantry forces ashore. The AAAV will have much greater mobility in the water than the AAV7A1, and will have the speed and cross-country mobility to operate with the Marine Corps' M1A1 tanks. Development is continuing under a demonstration and validation contract awarded in 1996. Production is scheduled to begin in FY 2004, with a total of 1,013 vehicles planned for procurement. To bridge the gap until the AAAV's deployment, the Marine Corps is extending the service life of a portion of the existing AAV7 fleet. This program will equip the AAV7 with the engine and suspension of the Bradley fighting vehicle, and will replace many aging components, thereby increasing reliability and maintainability while reducing maintenance and repair costs.

Lightweight 155 Howitzer. This new towed cannon system will replace the M198 155mm howitzer used by Army and Marine forces. Substantially lighter than the M198, the LW155 will significantly enhance ship-to-shore mobility, while increasing the survivability and responsiveness of artillery support for ground operations. The system currently is in engineering and manufacturing development. A total of 799 howitzers are planned for procurement—526 for the Marine Corps and 273 for the Army. Marine Corps production is scheduled to begin in FY 2000, with initial operational capability achieved in FY 2002. Production of the Army's howitzers is scheduled to commence in FY 2004, and will include P³Is such as digital fire control and self-locating ability. The last 96 Marine Corps production howitzers will incorporate the P³I enhancements; the remaining 430 howitzers will be retrofitted with these improvements beginning in FY 2004.

AIRCRAFT

Comanche Helicopter. The Comanche is a key component of the Army modernization program. Designed for armed reconnaissance and incorporating the latest in stealth, sensors, weapons, and advanced flight capabilities, Comanche helicopters will be electronically integrated with other components of the digitized battlefield. They will replace obsolete Vietnam-era AH-1 and OH-58 attack and scout helicopters, providing the operational capabilities essential for a smaller, joint integrated force structure. Enhancements incorporated in the Comanche system will give these helicopters greater mobility, lethality, versatility, and survivability than predecessor systems, as well as low operating and support costs. The first flight test of a Comanche helicopter was conducted in 1996, and research and development will continue throughout the

FYDP period. Procurement is scheduled to begin in FY 2004, with a total of 1,292 helicopters planned for production through FY 2026.

V-22 Osprey. This tilt-rotor aircraft, being developed to replace the Marine Corps' aging fleet of CH-46E and CH-53D helicopters, represents a significant leap in technology for providing tactical mobility to ground combat forces. The V-22's combination of range, speed, and payload is a critical enabler for the modernized force, and its procurement rate has been accelerated to reach 30 aircraft per year in 2004. Consistent with the aircraft's demonstrated performance and greatly increased reliability and maintainability, the V-22 acquisition objective for the Marine Corps has been reduced from 425 aircraft to 360. Separate acquisition programs include 50 CV-22s modified for Air Force special operations and possibly some HV-22s for the Navy. Initial operational capability is slated for FY 2001.

Apache Longbow and Longbow Hellfire Missile. The remanufacture of the Apache system will provide ground commanders with a long-range helicopter capable of delivering massed, rapid fire in day or night and in adverse weather. Longbow's digitized target acquisition system can automatically detect and classify targets. The target acquisition system uses a millimeter-wave radar to direct a fire-and-forget version of the Longbow Hellfire missile. The fire-and-forget capability of the Longbow system provides an enhancement that is critical to the survivability and effectiveness of its launch platform. The first AH-64 Apache Longbow was completed in March 1997. The initial 232 aircraft in this program are being modified under a multiyear contract awarded in August 1996. Current plans call for 758 Apache helicopter conversions to the Longbow configuration through FY 2008, with the first unit fully equipped in July 1998 and initial operational capability achieved in October 1998. The Department plans to sign a multiyear contract for 10,397 Longbow Hellfire missiles in FY 1999, completing a buy of 12,905 missiles.

4BN/4BW (H-1 Helicopter) Upgrade. This program is making extensive improvements to the Marine Corps' aging fleets of UH-1N utility and AH-1W attack helicopters. Plans call for 280 aircraft—100 UH-1Ns and 180 AH-1Ws—to be remanufactured through FY 2013. The upgrades will significantly improve operational capability, reduce life-cycle costs (through reliability and maintainability enhancements), and extend the aircraft's service life. The program is currently in engineering and manufacturing development; procurement is slated to begin in FY 2002.

MISSILES AND MUNITIONS

Army Tactical Missile System (ATACMS). The ATACMS is a surface-to-surface guided missile capable of striking targets beyond the range of existing Army cannons and rockets. This advanced weapon and the Multiple-Launch Rocket System are fired by the M270 delivery platform. A total of 1,647 ATACMS Block I missiles have been procured to date. An improved version of the weapon, designated ATACMS Block IA, offering greater range and accuracy will enter service in February 1998; a total of 573 of these missiles are programmed for production. Two follow-on versions of ATACMS are scheduled for fielding after the turn of the century. Plans call for procurement of 1,206 ATACMS Block II missiles, carrying the Brilliant Antiarmor Submunition (BAT), and 600 extended-range ATACMS Block IIAs, to be fielded in FY 2004.

Brilliant Antiarmor Submunition. The BAT uses advanced acoustic and infrared sensors to seek, identify, attack, and destroy armored vehicles. ATACMS will deliver a single warhead carrying 13 BAT submunitions deep into enemy territory. The submunitions will autonomously disperse to attack their targets, allowing a many-on-many engagement. A preplanned product improvement program will add cold, stationary targets—including key multiple-launch rocket systems and Scud missile transporters—to the basic BAT target set through seeker and warhead enhancements. Together, the BAT and ATACMS systems will provide superior deep-strike capability to Army forces. BAT began developmental testing in FY 1996 and will enter low-rate production in December 1998.

Sense and Destroy Armor Munition (SADARM). This new top-attack submunition, delivered by 155mm artillery projectiles, is designed to destroy lightly-armored vehicles, primarily self-propelled artillery. Once dispensed from its warhead carrier, SADARM orients itself, then scans and detects its target using dual-mode millimeter-wave and infrared sensors. A fully-funded product improvement program will increase the submunition's field of view and lethality through incorporation of improved electronics and a combined-effects warhead. SADARM began low-rate production in FY 1995 and is scheduled for initial operational testing in FY 1998; a decision on full-rate production will be made in FY 1999. The product-improved version is scheduled for production in FY 2002. Current plans call for procurement of 50,000 projectiles through FY 2012.

Javelin. The Javelin is a new medium-range, man-portable weapon system designed for use by Army and Marine Corps forces. It incorporates increases in reliability, survivability, hit-and-kill probability, and range over the aging Dragon system, which it is slated to replace. The Javelin is a highly maneuverable, fire-and-forget missile with day-and-night capability and an advanced tandem warhead capable of defeating modern main battle tanks, including those with reactive armor. The system includes two major components: a reusable command launch unit (CLU) sight system and the missile, which is sealed in a disposable launch tube. Other enhancements incorporated in the design include the ability to fire the missile safely from covered fighting positions and to use the CLU sight separately for battlefield detection and surveillance. Javelin began full-rate production in May 1997; the Marine Corps plans to procure 2,553 missiles through FY 2001, while the Army will acquire 25,900 missiles through FY 2002.

Predator Short-Range Assault Weapon. This new shoulder-mounted fire-and-forget weapon will improve the Marine Corps' light antitank capability in the field. The program is currently in engineering and manufacturing development; initial procurement funds will be requested in FY 2000. A total of 18,190 Predator weapons are planned for production, with full operational capability slated for FY 2007.

SUPPORT SYSTEMS

Digitization. The Army has accelerated its plans to field advanced information technologies throughout the force. The Department plans to spend about \$3 billion per year for programs associated with Army digitization. Key initiatives include procurement of platforms with embedded (or built-in) digital information-exchange capability and provision of add-on capabilities, called applique sets, to critical systems that do not incorporate digital capabilities.

The use of appliques enables the Army to provide an interim digital capability for selected systems currently in the inventory, such as the M1A1, M2A2 Bradley, Paladin, Avenger, and Fox.

The core of the digitization initiative is command and control (C²) equipment and software. C² acquisitions include the improved Single-Channel Ground-Air Radio System, the Enhanced Precision Locating Reporting System, the Warfighter Information Network Terrestrial Transport System, and the Global Broadcast System. Software developments include the Force XXI Battle Command Brigade and Below, which will link maneuver elements of brigades and battalions; the Army Tactical Command and Control System (comprising the Maneuver Control System, All-Source Analysis System, Advanced Field Artillery Tactical Data System, Forward-Area Air Defense Command and Control System, and Combat Service Support Control System), connecting division and corps maneuver assets with intelligence, fire support, air defense, and logistics support elements; and the Global Command and Control System, which will link Army forces with other U.S. forces.

Force XXI is the Army's concept for modernizing its forces to meet the challenges of the 21st century. Digitization is a key component of Force XXI. The hardware and software composing digitization, and other doctrinal changes, are being evaluated in a series of Army warfighting experiments. Unit training with digitized equipment began at the squad level in September 1996 and continued through battalion- and brigade-level exercises, culminating in a live, brigade-level, force-on-force experiment at the National Training Center in March 1997. An initial operational test of brigade-level and lower maneuver units linked with all support systems is scheduled for late 1999. The knowledge gained from these and future experiments will guide the implementation of Army digitization and the overall Force XXI concept.

Family of Medium Tactical Vehicles (FMTV). The FMTV consists of a variety of tactical trucks incorporating a common cab and chassis as well as a common engine, transmission, fuel system, suspension, and steering system. The FMTV is designed for durability, reliability, and total mission capability, including off-road mobility. It offers improvements in performance as well as crew visibility, safety, and comfort relative to the 2 1/2- and 5-ton trucks it is slated to replace. These vehicles will average more than 30 years of age by the end of FY 2001. FMTV trucks will be produced in more than 14 versions, from standard cargo trucks to fuelers, wreckers, and expandable vans. The high degree of commonality among the different versions will reduce production and maintenance costs. Production began in FY 1991; by December 1998, the Army will have taken delivery of 10,743 FMTV trucks. Plans call for a total of 85,401 FMTVs to be acquired through FY 2015.

Army Tactical Vehicle Remanufacture. The Army has determined that some of its vehicle modernization needs can be met most cost-effectively by remanufacturing existing trucks. A total of 3,450 M44A2 2 1/2-ton trucks have been remanufactured to date, against an objective of 4,472. Five-ton trucks also are being modernized, with an initial increment of 1,522 vehicles slated for remanufacturing during FY 1999-2003. The remanufactured trucks have greater off-road mobility than existing systems, complementing the improvements offered by the FMTV. In addition, the remanufactured models incorporate engines compliant with the latest environmental standards as well as safety enhancements (such as seat belts) and other upgrades supporting night

and all-weather operations. Remanufactured vehicles will be fielded with units not slated to receive the FMTV series until late in the FMTV program life cycle.

Medium Tactical Vehicle Replacement (MTVR). Under this program, the Marine Corps plans to remanufacture 5-ton trucks used by combat, combat support, and combat service support units to move troops, equipment, and sustainment supplies. The current fleet will begin to reach the end of its service life in FY 1999. In upgrading the fleet, the remanufacturing program will emphasize modern, nondevelopmental off-road truck technologies. Planned enhancements include an environmentally-compliant engine, an independent suspension, a central tire inflation system, increased corrosion protection, increased payload capacity, and enhanced off-road capability. This program will be pursued under the same contract as the Army's 5-ton truck remanufacturing program, thereby achieving both cost and production efficiencies. A total of 7,360 Marine trucks will be remanufactured.

National Guard Redesign. The FY 1999-2003 program essentially invests all savings accrued from QDR-directed reductions in the Army National Guard to accelerating the redesign of selected remaining Guard combat units. The FY 1999 budget and associated FYDP add \$850 million for training and equipment procurement. This investment will accelerate the conversion of combat structure to combat support and service support structure, reducing the Army's shortfall in these critical areas. Further, the Army intends to broaden efforts to integrate active and Guard forces and is committed to modernizing the reserve force consistent with the first-to-fight principle.

Mobility Forces

The FY 1999 budget and associated FYDP continue an ambitious modernization program to replace obsolete mobility systems and achieve the force deployment goals established in the MRS BURU. As reaffirmed by the QDR, the ability to project military power allows the United States to respond rapidly to events in distant regions of the world, even in areas where it does not maintain a permanent presence or where infrastructure is limited. If necessary, power projection capabilities allow U.S. forces to fight their way into a hostile theater or to establish and protect forward operating bases.

A robust and effective strategic lift capability depends on more than just aircraft and ships. It requires a sufficient domestic and en route support infrastructure, the prepositioning of military equipment and stocks in strategic locations, and access to air and sea lines of communication.

AIRLIFT PROGRAMS

Airlift investments in coming years will focus on replacing the aging fleet of C-141 intertheater aircraft with state-of-the-art C-17s. The seven-year C-17 procurement contract, currently in its second year, will save more than \$1 billion compared with the cost of annual orders. The acquisition plan will result in the procurement of 120 C-17 aircraft by FY 2003, against a MRS BURU strategic airlift inventory objective of 120 aircraft, with the last delivery projected in FY 2005. The C-17 fleet has demonstrated outstanding reliability, achieving a 96 percent rate in

1997. C-17 aircraft have been employed successfully in Bosnia, where they have demonstrated their intratheater ability to deliver outsized cargo at austere airfields.

The KC-135 tanker force also is being upgraded. All 552 KC-135 aircraft will receive state-of-the-art avionics upgrades, which will allow a reduction in cockpit crew size from three to two persons. In addition, 45 KC-135s will be reconfigured to receive one of 33 multipoint refueling system sets, enhancing their ability to refuel Navy, Marine Corps, NATO, and other allied aircraft.

Reflecting the continuing emphasis on air safety, the Department is equipping passenger-carrying and other military aircraft with improved navigation and safety devices. Approximately \$1.5 billion has been programmed for this purpose over the FYDP period, including more than \$450 million in FY 1999. The FY 1999 funds will go primarily for GPS receivers, which allow aircrews to pinpoint their locations, and for Traffic Alert and Collision Avoidance Systems and Ground Proximity Warning Systems, which protect against mid-air and ground collisions, respectively.

To keep pace with the growing demand for air travel, civil aviation authorities are implementing additional airspace access criteria, known as Global Air Traffic Management (GATM). GATM is being introduced throughout the world in phases, the first of which went into effect in March 1997. Compliance with GATM criteria is necessary to preserve the worldwide deployment capability of U.S. forces, avoid delays, and improve airspace management. The FY 1999-2003 program includes more than \$1.5 billion for GATM-related avionics upgrades primarily for airlift aircraft, those affected most by the near-term requirements.

AFLOAT PREPOSITIONING PROGRAMS

Three ships are being added to the Maritime Prepositioning Force (MPF) supporting Marine Corps operations. The first of these ships, funded in FY 1995, will be delivered in FY 1999. The remaining ships, funded in FY 1997, will enter service early in the next decade. These ships will be assigned to the three existing MPF squadrons.

Eight large medium speed roll-on/roll-off ships are being procured for Army afloat prepositioning. These vessels, now under construction, will be fully deployed by FY 2001.

SEALIFT PROGRAMS

The MRS BURU validated a requirement for the acquisition of 19 LMSRs. Eight of these ships will be used for afloat prepositioning and 11 for transporting combat and support equipment of early-deploying Army divisions. The first five ships were purchased on the world market and sent to U.S. shipyards for conversion to military use; all of these ships will be on station in 1998. The 14 remaining LMSRs will be new vessels, constructed at U.S. shipyards. Thirteen of those ships have been funded through FY 1998, and the first is slated to enter service in March 1998. The FY 1999-2003 program includes more than \$265 million to complete the LMSR acquisitions.

At the direction of Congress, DoD is executing the National Defense Features (NDF) program to make commercial ships more militarily versatile. This program pays ship owners to make militarily-useful modifications to their vessels, such as strengthening decks to carry tanks or modifying tankers to refuel Navy ships at sea. The Department awarded the first ship-modification contract in FY 1997. The NDF program will provide sealift capability to complement the high-readiness vessels in the Ready Reserve Force, which remains the most effective source of shipping to meet mobility requirements.

INFRASTRUCTURE AND SUPPORT

Numerous airfields, ports, and other transportation facilities support the movement of U.S. military personnel and equipment to destinations worldwide. The Army's Strategic Mobility Program funds improvements to domestic rail, highway, port, and airfield facilities. In addition, DoD maintains airfield facilities overseas for refueling, maintenance, and other en route support. Today, DoD operates about half the number of overseas airfields that it did in 1990. Therefore, it has become increasingly important to keep these remaining facilities in good operating order, and in some cases to enhance their capability. Investments in the Global Transportation Network will improve command and control capabilities, facilitating the tracking of personnel and cargo and enhancing the utilization of transportation resources.

CONCLUSION

Today, U.S. conventional forces stand ready to support the U.S. defense strategy. Consistent with the findings of the QDR, the FY 1999 President's Budget and associated FYDP increase funding for operations and support in order to stem the historical migration of modernization funds to these accounts. This action, in conjunction with initiatives to reduce the cost of infrastructure substantially, will ensure that the modernization programs planned for FY 1999-2003 can be executed and that the QDR target of \$60 billion in annual procurement expenditures by FY 2001 can be achieved. The Department's modernization programs and associated operational initiatives for conventional forces emphasize and, where possible, accelerate the high-payoff programs that will ensure U.S. dominance over any potential threat well into the 21st century.

Chapter 4

SPECIAL OPERATIONS FORCES

Special operations forces (SOF) conduct worldwide special operations in peace and war in support of regional combatant commanders, American ambassadors, and the National Command Authorities. Special operations forces serve three strategic purposes that are increasingly important in the current and future international environment. First, they offer a range of options to decision makers confronting crises and conflicts below the threshold of war, such as terrorism, insurgency, and sabotage. Second, they are force multipliers for major conflicts, increasing the effectiveness and efficiency of the U.S. military effort. Finally, they are the forces of choice in situations requiring regional orientation and cultural and political sensitivity, including military-to-military contacts and noncombatant missions like humanitarian assistance, security assistance, and peacekeeping operations.

SOF ROLES AND MISSIONS

Special operations forces have a dual heritage. They are one of the nation's key penetration and strike forces, able to respond to specialized contingencies across the conflict spectrum with stealth, speed, and precision. They are also warrior-diplomats capable of influencing, advising, training, and conducting operations with foreign forces, officials, and populations. These two distinct missions are complementary, allowing SOF personnel to gain regional expertise and access that enhances their ability to react to any contingency in any region of the world. One of these two generic SOF roles is at the heart of each of the following special operations core missions:

- **Counterproliferation.** SOF are a principal part of DoD's counterproliferation capabilities. SOF provide DoD a ground force option short of a major theater war scenario to seize, recover, disable, render ineffective, or destroy weapons of mass destruction (WMD) and associated technology. Additionally, SOF skills may be used in support of diplomatic, arms control, and export control efforts.
- **Combating Terrorism.** Provide the DoD offensive (counterterrorism) and defensive (antiterrorism) capabilities and programs to detect, deter, and respond to all forms of terrorism.
- **Foreign Internal Defense.** Organize, train, advise, and assist legitimate host nation military and paramilitary forces to enable these forces to free and protect their societies from subversion, lawlessness, and insurgency.
- **Special Reconnaissance.** Conduct reconnaissance and surveillance actions to obtain or verify information concerning the capabilities, intentions, and activities of an actual or potential enemy or to secure data concerning characteristics of a particular area.
- **Direct Action.** Conduct short-duration strikes and other small-scale offensive actions to seize, destroy, capture, recover, or inflict damage on designated personnel or materiel.

- Psychological Operations (PSYOP). Induce or reinforce foreign attitudes and behavior favorable to the U.S. or friendly nation objectives by planning and conducting operations to convey information to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals.
- Civil Affairs (CA). Facilitate commanders in establishing, maintaining, or influencing relations between military forces and civil authorities, both governmental and nongovernmental, and the civilian population in a friendly, neutral, or hostile area of operations.
- Unconventional Warfare. Organize, train, equip, advise, and assist indigenous and surrogate forces in military and paramilitary operations, normally of long duration.
- Information Operations. Achieve information superiority by affecting adversary information, information-based processes, information systems, and computer-based networks while defending one's own information systems.

Collateral Activities. In the following areas, SOF share responsibility with other forces, as directed by the geographic combatant commanders:

- Coalition Support. Integrate coalition units into multinational military operations by training with coalition partners and providing communications.
- Humanitarian Assistance. Provide assistance of limited scope and duration to supplement or complement the efforts of host nation civil authorities or agencies to relieve or reduce the results of natural or man-made disasters.
- Security Assistance. Provide training assistance in support of legislated programs which provide U.S. defense articles, military training, and other defense-related services.
- Combat Search and Rescue. Penetrate air defense systems and conduct joint air, ground, or sea operations deep within hostile or denied territory at night or in adverse weather to recover personnel during wartime or contingency operations.
- Humanitarian Demining Operations. Reduce or eliminate the threat to noncombatants posed by mines and other explosive devices by training host nation personnel in their recognition, identification, marking, and safe destruction. Provide instruction in program management, medical, and mine awareness activities.
- Counterdrug Activities. Train host nation counterdrug forces to detect, monitor, and counter the production, trafficking, and use of illegal drugs.
- Special Activities. Plan and conduct actions abroad in support of national foreign policy objectives, subject to direction imposed by Executive Order and in conjunction with a

Presidential finding and congressional oversight, so that the role of the U.S. government is not apparent or acknowledged publicly.

- Peace Operations. Assist in peacekeeping operations, peace enforcement operations, and other military operations in support of diplomatic efforts to establish and maintain peace.

MAXIMIZING SOF's EFFECTIVENESS IN SUPPORT OF NATIONAL SECURITY AND DEFENSE STRATEGY

Special operations forces provide decision makers with increased options for achieving national security strategy objectives. To realize their full potential as strategic assets, SOF receive national level oversight to ensure full integration into planning for conventional operations and interagency planning. Skillful integration with conventional forces allows SOF to be a force and diplomatic multiplier in conventional operations. Optimization of SOF interoperability with conventional forces is DoD's goal to ensure that SOF is included in strategic planning, joint training, interagency exercises, and DoD educational curricula.

Special operations differ from traditional military operations in degree of political risk, often unconventional mode of employment, independence from friendly support, and dependence on detailed intelligence and indigenous assets. For these reasons, some SOF missions carry an exceptionally high degree of physical risk. Political sensitivities surrounding many SOF missions require close coordination at the interagency level between DoD and other U.S. government agencies.

Many of the skills in the special operations forces inventory are directly applicable to supporting friendly democratic regimes. With their linguistic ability and cross-cultural sensitivities, SOF can quickly establish an effective working rapport with foreign military and paramilitary forces and, when required, government officials. In this capacity, SOF is a force multiplier for U.S. ambassadors and country teams throughout the world. Specifically, SOF (especially civil affairs, psychological operations, and Special Forces) can assess appropriate host nation projects, conduct disaster or humanitarian assistance planning seminars, and assist interagency coordination, foreign liaison, and public information programs. This support for democratization assists friendly nations and supports mutual national interests.

MAJOR THEATER WARS

Special operations forces are force multipliers for U.S. commanders fighting and winning major theater wars. SOF operate at the operational and strategic levels of war throughout the buildup, warfighting, and post-hostility phases of conflict. They conduct strategic reconnaissance and direct action missions on high value targets deep in enemy rear areas in support of strategic and operational goals. They utilize their language, cultural, and regional skills to conduct coalition support, foreign internal defense, unconventional warfare, information operations, civil affairs, and psychological operations in support of theater and national objectives. During post-hostility operations, SOF provide crucial support in the transition from military forces to civil authorities, enhancing international and civil government efforts to restore or build stable institutions to

sustain the peace. Throughout the spectrum of warfare, SOF support national and theater objectives.

Smaller-Scale Contingencies

Special operations forces play an important role in smaller-scale contingencies due to their unique capabilities, such as language and cultural skills, as well as the special character of such operations. U.S. participation in smaller-scale contingency operations does not always focus on traditional military objectives. It is often driven by the requirement to establish or reestablish an environment conducive to regional or international stability. Terrorism, lawlessness, subversion, and insurgency may undermine support for U.S. presence, reduce U.S. access and influence, complicate the coordination of collective defense efforts, or lead to direct attacks on Americans, allies, or regimes friendly to the United States.

Counterterrorism

Special operations forces are DoD's offensive counterterrorism capability. They provide the means to deter or defeat terrorist attacks against U.S. interests, wherever they may occur. U.S. counterterrorism forces receive the most advanced and diverse training available and continually exercise to maintain proficiency and to develop new skills. They regularly train with foreign counterparts to maximize coordination effectiveness. They also engage with counterpart organizations in a variety of exchange programs which not only hone their skills, but also contribute to the development of mutual confidence and trust. In addition, SOF personnel have conducted assessments of force protection measures for all theater commanders in chief to ensure that U.S. forces have taken all appropriate measures to protect against possible terrorist incidents.

Special operation forces are a ground force option available to DoD short of major theater war plan execution. They can conduct a wide variety of operations to seize, recover, disable, render ineffective, or destroy nuclear, biological, and chemical weapons and associated technologies. Their unique capabilities allow surgical operations and strategic reconnaissance against targets too hardened or deep as to be accessible by any other DoD asset. These operations can be conducted in such a manner as to reduce the risk of collateral damage and contaminant release. When called upon in a domestic terrorist situation, SOF can augment law enforcement and other government agencies, applying highly developed, WMD-peculiar skills to assist in mitigation of a domestic WMD event.

CURRENT AND RECENT OPERATIONS

The sensitivity of special operations precludes a detailed discussion of many current operations in this report. However, examples of some recent and ongoing operations include the following:

- Special operations forces deployed on 3,061 training or operational missions to 144 countries in FY 1997.

- SOF conducted humanitarian demining and mine awareness training in 14 countries during 1997.
- In support of the African Crisis Response Initiative, SOF personnel conducted pre-deployment site surveys and mobile training team missions in Senegal, Uganda, and Malawi to identify, organize, equip, train, and prepare capable African forces to conduct peacekeeping or humanitarian operations within the continent of Africa.
- SOF provided PSYOP and CA support to the humanitarian assistance operation in central Africa. Additionally, SOF air assets provided the joint task force commander with near real-time information required to make critical assessments concerning refugee locations and movement.
- SOF participated in several noncombatant evacuations in the central Africa region, including those in Liberia and Zaire, and were postured in support of several others. In addition, SOF provided Combat Search and Rescue, Close Air Support, Special Tactics Teams, PSYOP, and Navy Sea, Air, Land (SEAL) units to the noncombatant evacuation of American citizens and third country nationals from Albania.
- SOF provided support to the Department of Justice for the conduct of four extraditions in 1997, resulting in the return of known and suspected terrorists from overseas to U.S. courts for trial.
- In response to the U.S./German air disaster off the coast of Namibia, in-country SOF personnel conducting training in Namibia provided the initial response, communications, and embassy liaison. Additionally, Special Operations Command, Europe deployed and commanded the joint task force which contributed search and rescue assistance.
- SOF continue to play a significant role in the U.S. Stabilization Force in Bosnia, providing civil affairs units for smooth coordination of military tasks with the civilian population, liaison teams to facilitate coordination and provide communications with non-English speaking units, psychological operations to provide factual information to increase cooperation, and aviation support for search and rescue, transport, and logistics.
- SOF continue to provide coalition support to the United States Central Command (USCENTCOM) in Kuwait by training with Kuwaiti Armed Forces, providing a forward presence that assists U.S. efforts to maintain regional stability. In addition, SOF units provide helicopter refueling support for Operations Northern Watch and Southern Watch.
- SOF continue to support the ongoing operations in Haiti by providing Ministerial Advisory Teams to the Haitian government.
- United States Special Operations Command (USSOCOM) provides United States Southern Command (USSOUTHCOM) with a trained and equipped SOF package needed to assist the joint task force and run the American portion of the Military Observer

Mission Ecuador Peru peacekeeping effort monitoring the status of the border dispute between Peru and Ecuador.

- SOF continue to support U.S. counterdrug operations in the USSOUTHCOM, United States Pacific Command, and USCENTCOM areas of responsibility. SOF trained and provided expert advice to host nation armed forces and police dedicated to the counterdrug mission, primarily through exercises, joint combined exchange training programs, planning, assistance, and training teams.
- Additionally, SOF supported the United States Atlantic Command by providing advice through training teams to drug law enforcement agencies.

FORCE STRUCTURE

Special operations forces are prepared to operate worldwide across a broad spectrum of conflict. SOF are organized into three Service components and a joint command. Approximately 44,000 active and Reserve component personnel from the Army, Navy, and Air Force are assigned to USSOCOM and the theater Special Operations Commands (SOCs). In actual operations, Service component units are normally employed as part of a joint force by the theater commanders in chief through the theater SOC. The SOC normally forms a joint special operations task force, which may be employed independently or in support of a larger joint task force. Psychological operations forces and civil affairs forces are normally constituted separately as a joint PSYOP and a joint civil military operations task force.

Army Special Operations Forces include Special Forces (Green Berets), Rangers, Special Operations Aviation (SOA), PSYOP, CA, signal, logistical, and headquarters units under the United States Army Special Operations Command. Army Special Forces are organized into five active and two Army National Guard groups. The Ranger Regiment consists of three active battalions, based at three locations in the United States. SOA consists of one regiment in the United States and one company in Panama. PSYOP forces are organized into three groups, one active and two United States Army Reserve (USAR). The SOF CA force structure consists of three USAR CA commands, nine USAR CA brigades, 24 USAR CA battalions, and one active duty CA battalion. Ninety-seven percent of the CA force is found in the USAR. Additionally, the U.S. Marine Corps has two CA Groups, and the U.S. Air Force is currently developing a CA capability within the Air National Guard.

Naval Special Warfare (NSW) forces support naval and joint special operations within the theater unified commands. NSW forces are organized into two Naval Special Warfare Groups (NSWG) and two Special Boat Squadrons (SBS). Each NSWG is composed of three SEAL teams with ten platoons and a SEAL Delivery Vehicle team. Each SBS is composed of a Special Boat Unit and Patrol Coastal ships that provide coastal patrol and interdiction as well as the surface mobility for NSW forces. Additionally, Naval Special Warfare Units are located outside of the continental United States to support NSW forces assigned to the theater SOCs or components of naval task forces. The Naval Special Warfare Center conducts basic and advanced training for NSW. They also conduct the initial assessment and training for SEALs and Combatant Craft Operators.

Air Force SOF are organized into one active Special Operations Wing, two active theater-oriented Special Operations Groups (one each in the Pacific and European Commands), one Air Force Reserve Special Operations Wing, one Air National Guard Special Operations Wing, and one active Special Tactics Group. Within these units are special operations squadrons, which perform a variety of special operations missions. These include long-range infiltration and exfiltration, aerial refueling, resupply, and combat weather missions deep within sensitive, denied, or enemy controlled territory. Other units are equipped to conduct psychological operations, surgical fire support, and terminal air traffic operations within the same environment. These aircraft and personnel are prepared to support both SOF and conventional forces. The Air Force also operates the USAF Special Operations School which is responsible for educating Air Force, Joint, and DoD personnel on many special operations related topics, and a flight test squadron which develops tactics for SOF aircraft and flight tests new equipment.

COMMAND RELATIONSHIPS

The DoD Reorganization Act of 1986, as amended by the National Defense Authorization Act of 1987, mandated unique relationships for command, control, and oversight of SOF. The Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (ASD(SO/LIC)) serves as the principal civilian advisor to the Secretary of Defense on special operations and low-intensity conflict, with oversight of special operations and low-intensity conflict-related policy and resources. The act also mandated the establishment of USSOCOM and assigned it several Service-like responsibilities, including programming, budgeting, and acquisition; training and education of SOF; and developing special operations strategy, doctrine, and tactics. The policy and resource oversight responsibilities of ASD(SO/LIC) and the Service-like responsibilities of USSOCOM create a relationship which is unique within the Department of Defense.

SOF MANDATES FOR THE FUTURE

SOF Vision 2020 is the United States Special Operations Command's framework for building and maintaining the necessary operational capabilities of future special operations forces. This vision incorporates SOF's two most fundamental strengths—quality people with unequaled skills and a broad-based technological edge—to ensure tomorrow's SOF are structured, trained, and equipped to counter diverse threats to national security. SOF Vision 2020 builds upon *Joint Vision 2010* concepts as they apply to SOF, while complementing Service road maps for the future to optimize the synergism between SOF and conventional forces. Constrained resources will continue to demand improved levels of effectiveness and efficiency.

Recognizing that the demand for forces to respond to diverse regional concerns will be greater than ever, the following concepts will continue to guide the SOF community:

- Ensure maximum flexibility consistent with full accountability. SOF missions are fluid, shaped by political context and tactical developments requiring modifications and expediencies. Adherence to rules of engagement and responsiveness to military and civilian authority are paramount.

- Encourage unorthodox approaches and unconventional techniques that bring flexible thinking and innovation in addressing unconventional security threats.
- Invest in science and technology to maintain technical superiority in weaponry, materiel, and delivery systems, while retaining the ability to use and instruct others in the use of low technology weapons and systems.
- Stress SOF utility for forward-basing, quick deployment, and adaptability to regional contingencies. The regional orientation of SOF is an essential ingredient of success.
- Continue to improve equipment, training, and facilities ensuring SOF maintains the capability to effectively respond to any contingency.
- Continue to integrate SOF with conventional forces and improve SOF interoperability with other U.S. government agencies.
- Design force structure to appropriately support the full range of SOF missions. As the sophistication of adversaries grows and the nature of SOF missions evolves, special operations activities may generate increased physical and technical requirements that demand greater specialization in training. The linguistic, cultural, and political needs of the training and advisory mission will increase as the regional security environment becomes more complex.
- Ensure appropriate missions are tasked to SOF. Special operations have key elements that distinguish them from conventional operations. The utility of SOF increasingly hinges upon regional knowledge, flexibility, political awareness, and discipline.

CONCLUSION

Special operations forces are particularly suited for many emerging missions which flow from the National Security Strategy. Many of these missions require traditional SOF capabilities, while others, such as counterproliferation and information operations, are relatively new. SOF face two major challenges: they must integrate—with conventional forces, other U.S. agencies, friendly foreign forces, and other international organizations (like the United Nations and Red Cross)—yet they must preserve the autonomy necessary to protect and encourage the unconventional approach that is the soul of special operations. SOF language capability, regional and cultural orientation, and expertise in civilian sector disciplines will continue to make them a peacetime force of choice that is mature, discrete, low profile, and effective. Because of its low-cost/high-payback ratio, SOF will continue to be called upon as the nation seeks to promote stability and thwart aggression.

In a world of increased global interaction, SOF will be a unique mechanism for extending U.S. influence, ideals, and values. Faced with an increasingly volatile world, reduced permanently forward-deployed conventional forces and bases, and diminishing resources, SOF will provide access and promote stability with an affordable, yet effective, force for implementing U.S. national strategies. When American interests are faced with unpredictable threats, SOF will

provide flexible and precise, lethal and nonlethal options to the National Command Authorities. SOF will provide core competencies not available anywhere else in the military.

Chapter 5

STRATEGIC NUCLEAR FORCES

The United States' nuclear forces and posture were carefully examined during the Quadrennial Defense Review (QDR). In evaluating the current and projected security environment, the QDR concluded that nuclear forces remain an important disincentive to nuclear, biological, and chemical proliferation and a hedge against the uncertain futures of existing nuclear powers, as well as a means of upholding U.S. security commitments to allies.

The QDR's work was an important input to a Presidential Decision Directive issued in November 1997. The directive describes in general terms the purposes of U.S. nuclear weapons and provides broad guidance for developing operational plans. This is the first change in Presidential guidance for nuclear weapons employment since 1981, although operational plans have been updated regularly since then with commensurate reductions in the national target list.

The new directive notes that nuclear weapons play a smaller role in the U.S. security posture today than they have at any point during the second half of the 20th century, but that nuclear weapons are still needed as a hedge against an uncertain future, as a guarantee of U.S. security commitments to allies, and as a disincentive to those who would contemplate developing or otherwise acquiring their own nuclear weapons. Accordingly, the United States will maintain survivable strategic nuclear forces of sufficient size and diversity to deter any hostile foreign leadership with access to nuclear weapons.

The new directive provides a large measure of continuity with previous nuclear weapons employment guidance, including in particular the following three principles:

- Deterrence is predicated on ensuring that potential adversaries accept that any use of nuclear weapons against the United States or its allies would not succeed.
- A wide range of nuclear retaliatory options will continue to be planned to ensure the United States is not left with an all-or-nothing response.
- The United States will not rely on a launch- on-warning nuclear retaliation strategy (although an adversary could never be sure the United States would not launch a counterattack before the adversary's nuclear weapons arrived).

The United States is confident that it can maintain the deterrent called for in the new Presidential directive at the levels envisioned for a future Strategic Arms Reduction Treaty (START III) as agreed to in the March 1997 Helsinki Accords.

START TREATIES

The START I treaty entered into force on December 5, 1994. Russia and the United States are working to achieve the final phase of nuclear force reductions mandated by that treaty by December 5, 2001 (see Table 11). The Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) was approved by the U.S. Senate in January 1996 but has not yet

entered into force, pending ratification by Russia. START II calls for further reductions in aggregate force levels, the elimination of multiple-warhead intercontinental ballistic missile (ICBM) launchers, the elimination of heavy ICBMs, and a limit on the number of submarine-launched ballistic missile (SLBM) warheads. The original START II treaty called for the final reduction phase to be completed no later than January 1, 2003.

At the conclusion of their March 1997 Helsinki meeting, President Clinton and Russian President Yeltsin issued a joint statement establishing parameters for future reductions in nuclear forces. The statement expressed the two leaders' intent to begin START III negotiations immediately upon START II's entry into force and to extend the deadline for elimination of strategic nuclear delivery vehicles under START II to December 31, 2007. The START III negotiations would consider further reductions in strategic nuclear warheads to an aggregate limit of 2,000-2,500 per nation by December 31, 2007.

To facilitate Russia's ratification of the START II treaty, U.S. Secretary of State Albright and Russian Foreign Minister Primakov signed a Joint Agreed Statement and a Protocol to the Treaty in New York in September 1997, extending the time period for implementation of START II until December 31, 2007. In addition, Secretary Albright and Foreign Minister Primakov signed and exchanged letters legally codifying the Helsinki Summit commitment to deactivate, by December 31, 2003, the U.S. and Russian strategic nuclear delivery vehicles that under START II will be eliminated. START II's entry into force will require Senate approval of the Protocol to the START II Treaty and its associated Joint Agreed Statement.

Since the establishment of the Cooperative Threat Reduction (CTR) program in 1991, the United States has been assisting Russia, Ukraine, Belarus, and Kazakhstan in implementing the nuclear force reductions required under the START I treaty. In anticipation of further reductions that would be mandated by the START II and III treaties, the United States has begun discussing with Russia additional CTR projects that would assist in accomplishing those reductions.

In the absence of a START II entry into force, the Department of Defense is taking steps to protect the option of maintaining a START I force level through FY 1999. Accordingly, the FY 1999 budget request includes an additional \$57 million, beyond what otherwise would have been requested, to sustain the option of continuing START I levels of strategic nuclear forces.

FORCE STRUCTURE AND CAPABILITIES

Until START II enters into force, the United States will protect options to maintain a strategic nuclear arsenal consisting of the following:

- 500 Minuteman III and 50 Peacekeeper ICBMs with multiple warheads.
- 18 Ohio-class ballistic-missile submarines (SSBNs), each carrying 24 SLBMs.
- At least 71 B-52 bombers, each equipped to carry up to 20 nuclear cruise missiles.
- 21 B-2 bombers, each equipped to carry up to 16 nuclear gravity bombs.

If START II is implemented with the Protocol to the Treaty, the U.S. arsenal will be modified by the end of the year 2007 as follows:

- The Peacekeeper force will be eliminated and each Minuteman III missile will be armed with only one warhead.
- Four SSBNs will be removed from strategic service.
- The number of bombers will not change, but the cruise-missile capacity of the B-52 fleet will be reduced to stay within treaty limits.

The strategic nuclear delivery vehicles that will be eliminated under START II must be deactivated by December 31, 2003. With the modifications outlined above, the United States will be in compliance with START II limits, which permit a total of no more than 3,500 deployed strategic nuclear warheads, of which only 1,750 can be carried on SLBMs.

There has been a major reduction in the U.S. strategic nuclear arsenal in recent years. Table 11 compares the U.S. arsenals in FY 1990 and FY 1998 with the final limits under the START I and II treaties. All force levels are for the ends of the years in question.

Land-Based Intercontinental Ballistic Missiles

By the end of FY 1998, the United States will have 500 Minuteman III ICBMs and 50 Peacekeeper missiles. As noted previously, if START II enters into force, the United States will modify all Minuteman III missiles to carry only one warhead each and will retire all Peacekeepers. As part of this transition, the Department may transfer the Mark 21 warhead from the Peacekeeper to the Minuteman force. Mark 21 warheads contain additional safety-enhancing features that further reduce the risk of an accidental nuclear explosion and minimize the risk of plutonium dispersal in the event of a fire.

The United States is not developing or producing any ICBMs and has no current plans to develop any new ICBMs. This makes it difficult to sustain the industrial base needed to maintain and modify strategic ballistic missiles. To help preserve key industrial technologies needed to sustain ICBMs and SLBMs, the budget provides funding to preserve a core of expertise in the areas of reentry vehicle and guidance system technology.

Sea-Based Ballistic Missiles

The final Ohio-class SSBN was commissioned in 1997, bringing the U.S. SSBN fleet total to 18 Ohio-class submarines. The first eight Ohio-class submarines carry the Trident I (C-4) missile; the final ten are equipped with the Trident II (D-5) missile. The SSBN fleet's survivability and effectiveness are enhanced through the D-5 missile's improved range, payload, and accuracy. The FY 1999 budget provides for continued procurement of D-5 missiles to support the conversion of four SSBNs from the C-4 to the D-5 missile system. The retrofits will be accomplished during regularly scheduled ship depot maintenance periods, beginning in FY 2000. Under current plans, if START II enters into force, four submarines will be removed from

strategic service, leaving 14 SSBNs armed with D-5s. These missiles, while capable of carrying eight warheads apiece, will be downloaded consistent with START II limits. No new SSBNs or SLBMs are under development.

Heavy Bombers

The U.S. bomber force currently consists of 94 B-1s, 94 B-52s, and 21 B-2s. Four of the B-2 bombers are being upgraded from a test to an operational configuration; the last of those aircraft will become operational in FY 2000. Both the B-2 and B-52 forces can be used for either nuclear or conventional missions. The B-1 force is now dedicated exclusively to conventional operations.

Table 11				
Reductions in U.S. Strategic Nuclear Arsenal, FY 1990 Through 2007				
	FY 1990	FY 1998	START I (Dec 5, 2001)	START II (Dec 31, 2007)
ICBMs	1,000	550	550	500
Attributed Warheads on ICBMs	2,450	2,000	Not over 2,000	500
SLBMs	568 ^a	432 ^b	432	336
Attributed Warheads on SLBMs	4,864 ^a	3,456 ^b	Not over 3,456	Not over 1,750
Ballistic-Missile Submarines	31 ^a	18 ^b	18	14
Attributed Warheads on Ballistic Missiles	7,314 ^a	5,456 ^b	Not over 4,900	Not over 2,250
Heavy Bombers	324 ^c	115 ^d	92 ^d	92 ^d

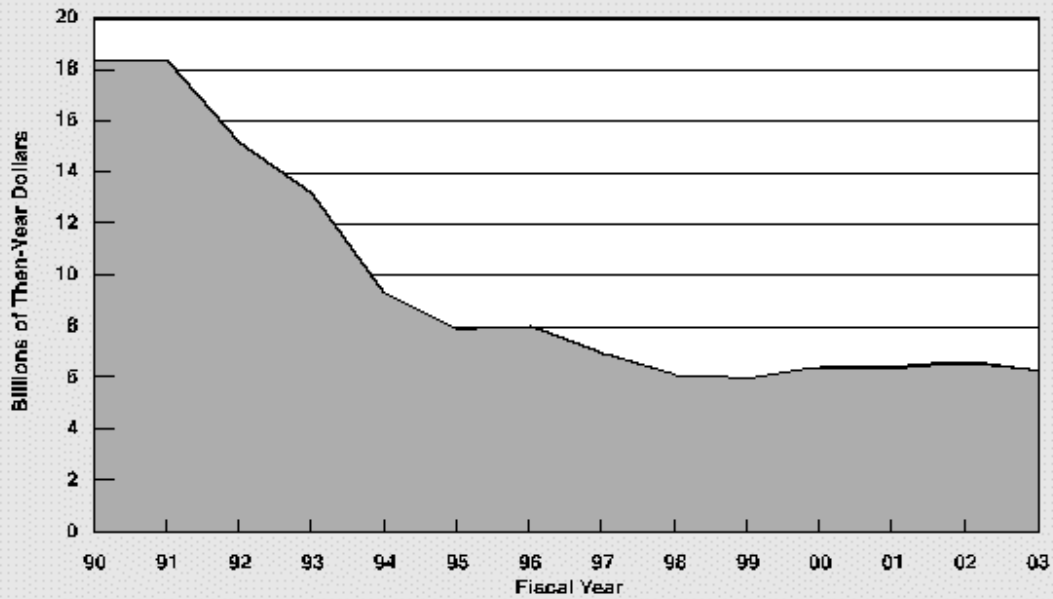
^a Excludes five decommissioned submarines (and their associated missiles and warheads) that were still START accountable.

^b Excludes two Poseidon SSBNs converted to Special Operations Forces that are still START accountable.

^c Excludes FB-111s.

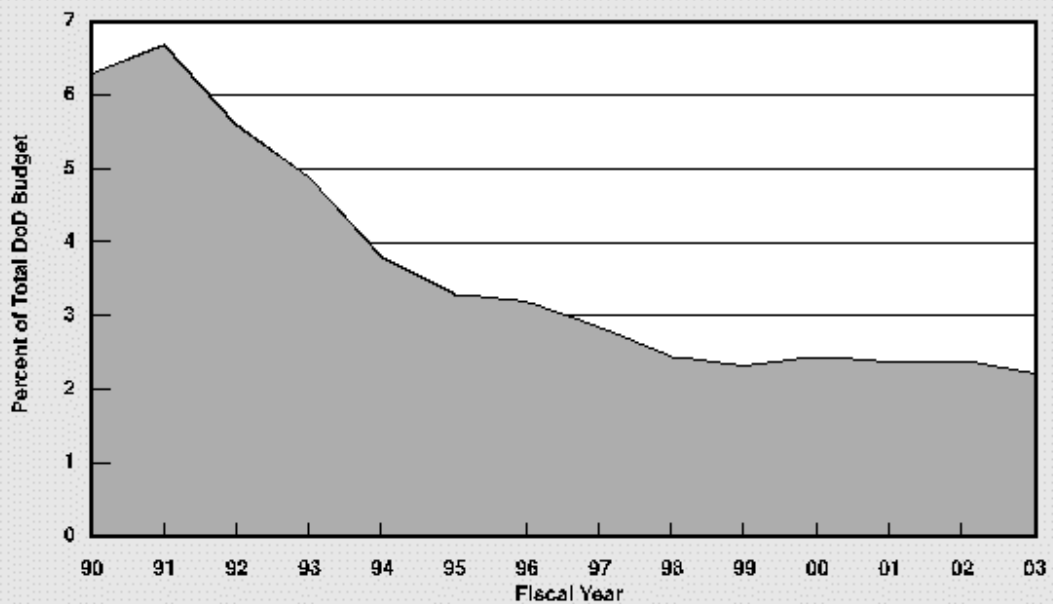
^d Excludes 94 B-1s that are devoted entirely to conventional missions.

Total Strategic Offensive Forces Funding



Note: Excludes B-1 bomber funding from FY 1998 on, reflecting the conversion of the B-1 force to a conventional role.

Strategic Offensive Forces Funding as a Percentage of Total DoD Funding



Reflecting the increased emphasis on nonnuclear operations, bomber modernization efforts are focused primarily on improving conventional warfighting capabilities. Accordingly, no new nuclear weapons for bombers are being produced or developed. Likewise, some nuclear air-launched cruise missiles (ALCMs) have been converted to conventional air-launched cruise missiles, and some gravity bombs and ALCMs have been retired or placed in dormant storage.

The recent Deep-Attack Weapons Mix Study (DAWMS) examined the contribution of bombers to conventional and nuclear warfighting scenarios. DAWMS considered several equal-cost options that would have expanded the B-2 fleet at the expense of planned force structure—land-based tactical aviation, aircraft carriers, or other bombers. The analysis showed that, for most of the cases examined, additional B-2s deployed quickly to a major theater conflict would improve the United States' ability to halt an adversary's advance during the early days. However, the analysis also demonstrated several disadvantages to trading off planned forces to procure additional B-2s. First, the B-2 would not, in most cases, offer either as much daily weapons delivery capacity or as full a range of capabilities as the forces it would replace. Moreover, existing forces would have to be retired immediately to pay for the additional B-2s—long before the B-2s would become available to provide compensating capability. Even then, savings from retiring forces would not offset the large up-front investment for B-2s until around 2017. Accommodation of additional B-2s under the START II limits also would require significant changes to the planned U.S. nuclear force structure. In view of these considerations and the findings of additional analyses, the QDR recommended against procuring additional B-2s. The FY 1999 budget and associated Future Years Defense Plan therefore include no funds for additional B-2 procurement.

READINESS AND SUSTAINABILITY

Steps to ensure that the Minuteman III force can be maintained well into the next century are under way. For example, installation of new guidance subsystems will begin in FY 1999. Starting in FY 2001, Minuteman III solid rocket motors will be remanufactured to correct age-related degradation and to maintain system reliability.

U.S. ICBMs and those SLBMs at sea are maintained on continuous alert, but are not targeted at any specific country. The missiles could, however, be returned to their previous targeting status on short notice. The United States maintains two full crews for each SSBN, with about two-thirds of operational SSBNs routinely at sea. On average, about 10 percent of U.S. SSBNs are undergoing long-term overhauls at any given time, and thus are not available for immediate use. The bomber force is no longer maintained on constant alert, although it could be returned to alert status within a few days if necessary.

FUNDING AND MODERNIZATION

Funding for strategic nuclear forces—ICBMs, SLBMs, and nuclear bombers—has declined in recent years, as has the fraction of the total defense budget that is devoted to nuclear forces. Moreover, one of the weapon systems included in the nuclear force category—the B-1 bomber—has just completed its transition to a conventional role. Past and projected funding trends for strategic nuclear forces are highlighted in the charts on the preceding page.

Modernization programs for strategic forces largely have been completed or curtailed during the past few years. The only major acquisition efforts that remain are deliveries of the final four programmed B-2s, B-2 modifications (primarily for conventional missions), Trident II missile procurement, and Minuteman III life extensions. With most nuclear modernization efforts complete, programs to sustain force readiness now account for most strategic nuclear funding. The portion of the strategic budget devoted to operations and support has increased from about 40 percent of the total in 1991 to about 65 percent today and a projected 67 percent in 2003.

CONCLUSION

Strategic forces remain a critical element of the U.S. policy of deterrence. Although nuclear forces have been reduced in size and the percentage of the defense budget devoted to them has declined, strategic forces continue to provide a credible and valuable deterrent. The United States remains committed to appropriate and jointly agreed upon reductions in strategic nuclear forces, but will protect options to maintain its strategic capabilities at START I levels until the START II treaty has entered into force.

Chapter 6

MISSILE DEFENSES

The proliferation of nuclear, biological, and chemical (NBC) weapons and the missiles that can deliver them pose a major threat to the security of the United States' forces, its allies, and friendly nations. Over 20 countries possess or are developing NBC weapons, and more than 20 nations have theater ballistic missiles (TBMs) or cruise missiles. Robust missile defense programs play a critical role in the broader strategy to prevent, reduce, deter, and defend against NBC and missile threats.

The Intelligence Community has estimated that a new threat to the United States from a rogue ballistic missile attack is not likely to emerge for several years, while the threat to deployed U.S. forces and to allies and friends exists today. U.S. missile defense priorities reflect the urgency of this immediate threat, and are consistent with the defense strategy's focus on the threat of major theater wars and smaller-scale contingencies involving adversaries armed with advanced conventional weapons, weapons of mass destruction, and missiles to deliver them. The U.S. missile defense program places the highest priority on Theater Ballistic Missile Defense (TBMD) and Cruise Missile Defense (CMD) programs to meet the today's threat. The second priority is a National Missile Defense (NMD) program that positions the United States to field the most effective defense system possible when the threat warrants. The third priority is the continued development of technology to improve ballistic and cruise missile defense systems.

ROLE OF MISSILE DEFENSE IN U.S. DEFENSE STRATEGY

The U.S. defense strategy for the 21st century, as presented in the *Report of the Quadrennial Defense Review*, seeks to shape the international security environment in ways favorable to U.S. interests, respond to the full spectrum of threats, and prepare now for an uncertain future. Missile defense is a key component of this strategy. Missile defenses contribute to the reduction and prevention of missile proliferation and strengthen regional stability, both critical for positively shaping the international security environment. Effective missile defense systems reduce the incentives for nations to develop, acquire, or use missiles and NBC weapons by reducing the chances that an attack would inflict serious damage on U.S. or allied targets. Additionally, the U.S. ability to provide missile defense protection to allies and friends, in conjunction with the extended deterrent from the U.S. nuclear umbrella, may contribute to mitigating the desire of many states to acquire their own NBC weapons.

Should prevention and deterrence fail, missile defenses are essential for responding to missile threats. The threat of missile use in regional conflicts has grown substantially, and the potential combination of NBC weapons with theater missiles poses serious complications to the management of regional crises and the successful prosecution of U.S. strategy for major theater wars. Hostile states possessing theater missiles armed with NBC weapons may threaten or use these weapons in an attempt to deter or otherwise constrain U.S. power projection capability. Such threats could further limit U.S. freedom of action in meeting its global security commitment by intimidating allies or friends, thereby discouraging them from seeking U.S. protection or participating with the United States in the formation of coalitions. With NBC weapons, even small-scale theater missile threats would raise dramatically the potential costs and

risks of military operations, undermine conventional superiority, and jeopardize the credibility of U.S. regional security strategies. Missile defenses will ensure that the United States is prepared to confront regional instability or conflict effectively in such an environment.

Theater Air and Missile Defense Programs

The Department's first missile defense priority is to develop, procure, and deploy theater air and missile defense (TAMD) systems to protect forward-deployed elements of the U.S. armed forces, as well as allies and friends. This plan envisions the time-phased acquisition of a multi-tier, interoperable, defense in-depth capability against ballistic and cruise missiles. The Ballistic Missile Defense Organization (BMDO) and the Joint Theater Air and Missile Defense Organization (JTAMDO) have a shared responsibility to provide an improved capability to defend against air and missile threats. The increased emphasis on interoperable air and missile defense has led to a Family of Systems (FOS) concept. A key aspect of FOS is to leverage the synergy between ballistic and cruise missile defenses, and to integrate the various systems that contribute to a comprehensive effort to defeat the threat. The FOS concept is a flexible configuration of interoperable TAMD systems capable of joint theater operations. The FOS concept includes an integrated and interoperable architecture consisting of individual weapon systems, sensors, and battle management/command, control, communications, computers, and intelligence (BM/C⁴I) capabilities.

Lower-tier systems remain a top priority to defeat shorter range ballistic and cruise missiles. The Patriot Advanced Capability-3 (PAC-3) and Navy Area are the core lower-tier systems for the TAMD mission. PAC-3 provides air defense of ground combat forces and high value assets against high performance air-breathing and theater ballistic missiles. The Navy Area program will provide U.S. forces, allied forces, and areas of vital national interest with an active defense against theater missiles. This system builds on the national investment in Aegis ships and weapon systems. The Medium Extended Air Defense System (MEADS), which will satisfy a U.S. requirement for a highly mobile system, is a follow-on lower-tier program being pursued cooperatively with Germany and Italy.

Upper-tier systems are necessary to defend larger areas, to defeat medium and intermediate range ballistic missiles, and to increase the theater commanders' effectiveness against weapons of mass destruction. The Theater High Altitude Area Defense (THAAD) system and the Navy Theater Wide program are the upper-tier core programs. THAAD will make possible the protection of broad areas, dispersed assets, and population centers against TBM attacks. The Navy Theater Wide system builds upon the existing Aegis Weapon System and is an evolution of the Navy Area system.

Other TAMD concepts remain important. BMDO and the Air Force continue to explore additional concepts for boost-phase theater missile defense. These programs would add an additional layer to missile defenses, and would provide enhanced deterrence by confronting an adversary with the prospect that missile warheads would fall short of their targets and perhaps back on the adversary's own territory. The primary boost-phase program is the Air Force funded and managed Airborne Laser (ABL) program, which is scheduled to provide a contingency capability in an aircraft demonstrator platform in 2002.

Many of the capabilities needed for effective cruise missile defense exist or are being developed in other programs. For example, ballistic missile defense sensors; battle management/command, control, and communications (BM/C³), including Cooperative Engagement Capability; and weapons (including the PAC-3, Navy Area, and MEADS lower-tier systems) have capabilities against cruise missiles. A key aspect of CMD, therefore, is to leverage the synergy between ballistic and cruise missile defense, and to integrate the various systems that contribute to CMD into a comprehensive effort to defeat this emerging threat. Additionally, advanced technology programs for CMD such as the Joint Land Attack Cruise Missile Defense Elevated Sensor System are focusing on defeating land attack cruise missiles at extended ranges over an adversary's territory. To ensure the Department is positioned to capitalize on all of these developments, joint employment concepts and a prioritized investment plan for TAMDM, including CMD, are being developed through a collaborative process among the Services, BMDO, and JTAMDO.

Cooperation with Allies and Friends

As part of broader efforts to enhance the security of U.S., allied, and coalition forces against ballistic missile strikes and to complement U.S. counterproliferation strategy, the United States is exploring opportunities for TBMD cooperation with its allies and friends. The objectives of U.S. cooperative efforts are:

- To strengthen U.S. security relationships.
- To enhance the U.S. counterproliferation strategy.
- To share the burden of developing and fielding defenses.
- To enhance interoperability between U.S. forces and those of allies and friends.
- To share knowledge for the mutual benefit of both the United States and its partners.

The United States is taking an evolutionary and tailored approach to allied cooperation that accommodates varying national programs and plans, as well as special national capabilities. This approach includes bilateral and multilateral research and development, off-the-shelf purchases, and coproduction. Furthermore, as part of an ongoing initiative aimed at the TBM threat, the United States is sharing early warning data on launches of ballistic missiles with several allies as a means of engendering greater cooperation on TBMD.

The United States is also exploring opportunities for TBMD cooperation with Russia as one means of fostering cooperative approaches to deal with new regional security challenges of mutual interest, such as the proliferation of ballistic missiles. Toward this end, a second joint United States-Russian TBMD command post exercise was hosted by Russia in January 1998. These simulation exercises have provided a practical basis for U.S. and Russian forces to cooperate in TBMD operations during regional contingencies where they could be deployed together against a common adversary possessing theater ballistic missiles.

The Israeli cooperative programs will assist Israel to develop a ballistic missile defense capability to deter and, if necessary, defend against the current and emerging ballistic missile threat in the region, and because of its planned interoperability with U.S. theater missile defense systems, will be capable, as a contingency, to assist in the protection of forward deployed U.S. and coalition forces. Moreover, the program provides technical benefits by expanding the theater missile defense technology base and providing risk mitigation for U.S. weapon systems.

National Missile Defense Program

The second priority of the ballistic missile defense program is NMD. President Clinton has stated that the primary mission of a U.S. NMD system would be to defend the United States against a limited strategic ballistic missile attack by a rogue nation, should such a threat emerge. It would also provide some capability against a small accidental or unauthorized launch of strategic ballistic missiles from more nuclear capable states. It would not be capable of defending against a heavy deliberate attack.

The Intelligence Community has concluded that the only rogue nation missile in development which could conceivably have the range to strike the United States is the North Korean Taepo Dong 2, which could strike portions of Alaska or the far-western Hawaiian Islands, but the likelihood of its being operational by 2005 is very low. With this exception, no country, other than the declared nuclear powers, will develop or otherwise acquire a ballistic missile in the next 15 years that could threaten the United States, although outside assistance is a wild card that could shorten timelines to deployment.

The NMD program is structured to develop and test system elements the United States could deploy if intelligence indicated that a new strategic threat was emerging. The United States is not making a decision to deploy a national missile defense at this time. Deploying before the threat emerges would preclude deploying the most advanced technology if and when the threat does emerge. If a threat does not emerge, the NMD program will continue to improve the performance of the system by advancing the technology of each element and adding new elements as necessary, while maintaining the capability to deploy a system in a short period of time.

The NMD development program will be conducted in compliance with the Anti-Ballistic Missile (ABM) Treaty. Depending, for example, on the required siting of system elements deployed to defend against a specific emerging threat, a deployed NMD system either could be compliant with the ABM Treaty as written, or might require amendment of the Treaty's provisions. Determination of the compliance of potential NMD systems with the ABM Treaty would be made by DoD on the advice of the Compliance Review Group.

Technology Base

Activities in the missile defense technology base are key to countering future, more difficult threats. The technology base program underpins the TBMD, CMD, and NMD programs. It allows DoD to provide block upgrades to baseline systems, to perform technology demonstrations, to reduce program risk, to accelerate the insertion of new technology, and to

advance basic technologies to provide a hedge against future surprises. Advanced technologies are also being exploited to reduce drastically the cost of future missile defense systems.

CONCLUSION

The Administration is committed to protecting the United States, its forces abroad, and its friends and allies against the proliferation of weapons of mass destruction and the missiles that deliver them. The United States has a comprehensive strategy for countering such threats. The structure of the missile defense program meets present and possible future missile threats, provides the best technology to meet these threats, and is fiscally prudent.

Chapter 7

SPACE FORCES

Space power has become as important to the nation as land, sea, and air power. The evolution toward a global economy will depend as much upon the information lines of communication through space as it will on the transportation lines of communication across the sea. Space forces will support the realization of *Joint Vision 2010* by dominating the collection and dissemination of information in support of military operations. Consistent with National Space Policy, DoD is committed to utilizing and, if required, controlling space to assist in the successful execution of the National Security Strategy and the National Military Strategy.

SPACE FORCES AND NATIONAL DEFENSE

Space forces have contributed significantly to U.S. successes during the Cold War and subsequent military operations. They continue to play a crucial role in supporting national security objectives, as evidenced by operations in the former Yugoslavia and the Middle East.

Space forces have become an integral part of the deterrent posture of the U.S. armed forces. They help confer a decisive advantage upon U.S. and friendly forces in terms of strategic warning, battlespace awareness, operational timing and tempo, synchronization, ability to maneuver, targeting, and the application of firepower. Any nation contemplating an action inimical to U.S. national security interests must be concerned about U.S. space capabilities.

Space forces help ensure that hostile actions will be detected by the United States in a timely manner and will also increasingly provide the information for operations planning and execution during crises and conflict. Space forces also play an ever-widening role in a number of military tasks, such as the effective application of precision munitions, the identification of critical enemy centers of gravity, target detection/attack, managing the flow of forces and logistics, battle/operations tracking, and campaign monitoring. The U.S. ability to effectively integrate space capabilities into military operations is critical to maintaining an effective U.S. deterrence capability and posture.

Enabling Joint Vision 2010

The Department of Defense recognizes the importance of information to the future conduct of warfare as highlighted in National Security Strategy, National Military Strategy, National Space Policy, and *Joint Vision 2010*. DoD is moving into the information age and toward a totally integrated battlespace, where communications and intelligence space systems are no longer viewed as solely supporting capabilities to the warfighter, but as instruments of combat. The space force structure represents a major component of the information infrastructure and will become increasingly important in deterring conflict and conducting future military operations.

Space forces provide the sole means to access otherwise denied areas of foreign countries without violating their sovereignty. The command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) capabilities provided by space forces are crucial to generating information necessary to support investment decisions that maintain U.S.

military preparedness and readiness, to support military planning, and to enable information superiority during a crisis or conflict. Ground, naval, and air forces use satellites to maintain global awareness of events; to command, control, deploy, and employ forces; to monitor weather, oceanographic, and space environmental conditions; and to assess the effectiveness of military operations.

Space power has application throughout the continuum of military operations, from peacetime through all levels of conflict. U.S. space forces operate on a 24-hour basis and provide a C⁴ISR backbone to support military deployments and operations across the entire spectrum of military operations. Loss of access to overseas bases and increasing force deployments to areas lacking modern infrastructure increases reliance on space forces' ability to rapidly provide an operational C⁴ISR infrastructure anywhere on earth. Space systems, always alert and ready, provide indispensable support to U.S. military forces and increasingly to coalition partners deployed and deploying outside the United States.

Future capabilities to provide geospatial information from space will sustain high quality information data bases that can be used to support the training of continental United States-based forces on virtual battlespaces prior to deployment. Such battlefield preparation will familiarize forces with operational areas prior to deployment and enhance mission planning and execution.

Protecting a New Center of Gravity

Space access and use are becoming increasingly important to the United States and its allies. The use of space assets and systems can be expected to flourish because of the unique benefits that space offers. The number of nations with militarily useful space systems is growing. Along with this, dependence on space forces for military operations, as well as for civil and commercial uses, is growing. The space C⁴ISR infrastructure, including terrestrial applications technologies, is expected to contribute tens of billions of dollars to the U.S. economy and may grow to hundreds of billions by 2000. During the next ten years, as many as 1,200-1,500 satellites may be launched—most will be built in the United States, and 30 percent will likely be launched by U.S. flag carriers. The total commercial investment in space will increase substantially over the next few decades as the nation transitions from an industrial-based economy to a global information and knowledge-based economy.

The world is increasingly transitioning to economies in which information is a major engine of prosperity. While U.S. national security interests focused in the past on assuring the availability of oil, the future may require greater interest in protecting and accessing the flow of information. As a result, the importance of space as a principal avenue for the unimpeded flow of information throughout a global market increases. DoD recognizes these strategic imperatives and will assure free access to and use of space to support U.S. national security and economic interests.

Numerous countries in regions around the world are acquiring or accessing space systems, technologies, and products. Foreign nations and subnational groups are obtaining space capabilities through indigenous efforts, purchases of goods and services, and cooperative activities. The spread of indigenous military and intelligence space systems, civil space systems with military and intelligence utility, and commercial space services with military and

intelligence applications poses a significant challenge to U.S. defense strategy and military operations.

Because of the value of space systems to the U.S. economy and the military in future conflicts, the United States can expect attacks against U.S. and allied space systems. Consequently, DoD must be able to ensure freedom of action in space for friendly forces and, when directed, limit or deny an adversary's ability to use the medium for hostile purposes. To ensure space control, DoD must sustain and improve capabilities to surveil and monitor all militarily significant activities in space. DoD also will continue to design, develop, and operate space systems with ensured survivability and endurability of their critical ground and space-based functions. Moreover, DoD must have capabilities to deny an adversary's use of space systems to support hostile military forces.

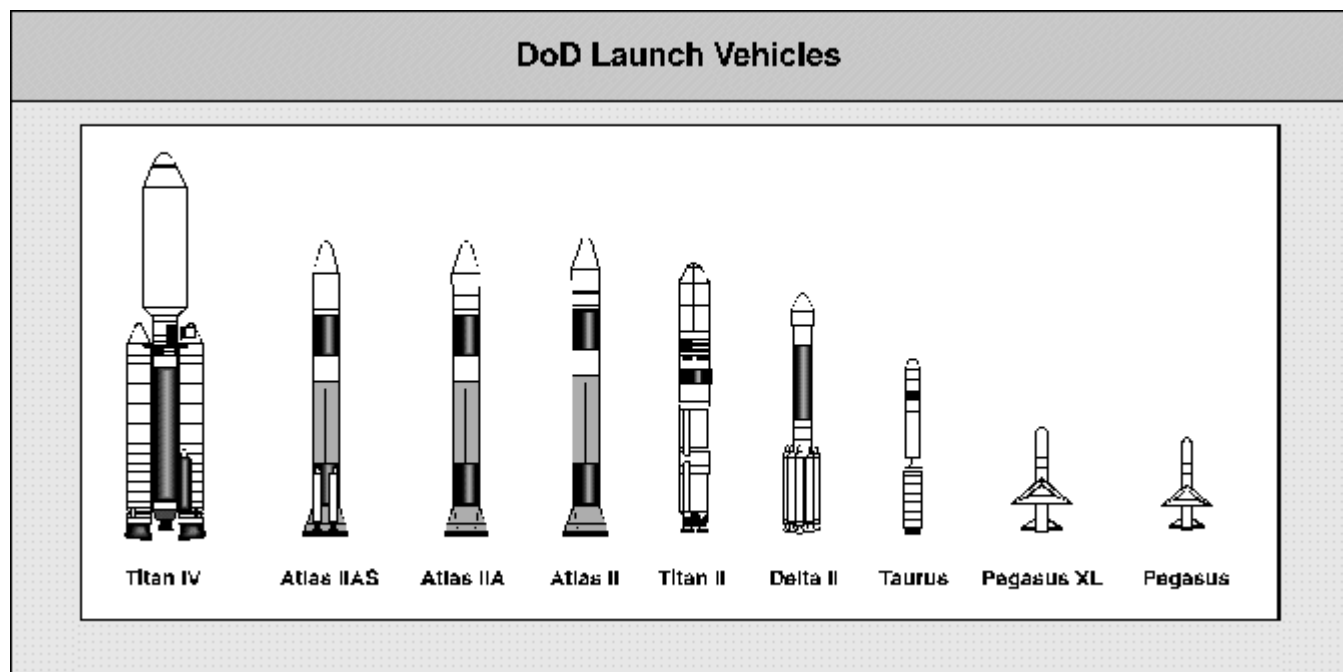
MODERNIZING THE FORCE

Space Launch

Access to space is key for DoD to effectively use space. The current U.S. space launch systems differ only slightly from ballistic missiles developed during the 1950s and 1960s and have become increasingly costly to use. The National Space Transportation Policy seeks to balance efforts to sustain and modernize existing launch capabilities with the need to invest in the development of improved capabilities. DoD is the lead agency for improving today's expendable launch vehicle (ELV) fleet, to include developing technology. The Department's objective for this effort is to reduce costs while improving capability, reliability, operability, responsiveness, and safety.

To implement this guidance, DoD has initiated an Evolved ELV (EELV) program to eventually replace current medium and heavy lift launch systems. The program is defining a new relationship with the launch industry that emphasizes measured development. The intent is to allow U.S. industry a greater leadership role in free market access to space. The medium lift EELV could become operational as early as 2001, and the heavy lift version could become operational by 2003. Both would be based on a core system which would spawn a cost-effective family of vehicles. Ongoing efforts to define the size and capabilities of future satellite architectures will more clearly determine the need for medium and heavy lift versions of the EELV.

Although the National Aeronautics and Space Administration (NASA) is the lead agency for the development of reusable launch vehicles, technology development and demonstration (for next generation reusable space transportation systems), including operational concepts, will be implemented in cooperation with related activities in DoD.



Space-Based Infrared System

The Department is proceeding with the development of a new multimission infrared detection system in geosynchronous and low earth orbits, with additional sensors in highly-elliptical orbits. The Space-Based Infrared System (SBIRS) program consolidates all previous space-based infrared systems into a single architecture system of systems supporting missile warning, missile defense, and intelligence applications. First launch of the geosynchronous SBIRS-High satellites will commence in 2002. The SBIRS-Low component, formerly known as the Space and Missile Tracking System, provides unique mid-course tracking of threats which will significantly enhance performance of both theater and possible national missile defenses, as well as augment intelligence and space surveillance. The SBIRS-Low notional concept calls for a constellation of 24 satellites working synergistically with SBIRS-High. The first launch is scheduled for the fourth quarter of FY 2004. To reduce technical risk in the accelerated SBIRS-Low program, three demonstration satellites will be launched (one in 1999 and two in 2000).

Military Satellite Communications

The Department recently conducted a comprehensive study on a future Military Satellite Communications (MILSATCOM) architecture to determine the best mix of capabilities, including commercial alternatives, to support military satellite communications needs for the 21st century. The findings validated several initiatives to take DoD into the next century, including upgrades to the Defense Satellite Communications System (DSCS) and Milstar, new advanced wideband and advanced EHF systems, the Ultra-High Frequency (UHF) Follow-on System, and the introduction of the Global Broadcast Service (GBS).

DSCS has been providing the bulk of DoD's long-haul, high-capacity (wideband) satellite communications requirements for many years. However, Defense planning has emphasized the

increased tactical needs of U.S. armed forces for space-based communications. To meet these needs, the remaining four DSCS payloads will be upgraded to provide five times as much data throughput in direct support of tactical users. This program's last satellite is planned to be launched in 2003.

The Department is embarking on an accelerated wideband (SHF/Ka band) Gapfiller system which will focus on providing even more throughput by leveraging technology advances in the commercial sector. Wideband Gapfiller will provide an earlier capability—focused on the warfighters' satellite communications (SATCOM) requirements in the 2004 time frame—than the previously planned Advanced Wideband System (AWS) previously planned for 2006. The SHF/Ka Gapfiller will allow for transition to the AWS in the FY 2009 time frame.

The key to *Joint Vision 2010* digitized battlefield communications for mobile platforms will be UHF SATCOM, provided via UHF Follow-on through 2007. The Navy is studying the requirement to replace the current UHF satellite communications with the next generation of UHF and/or commercial systems.

The redesigned Milstar II system will provide medium data-rate communications to tactical forces worldwide that are survivable, difficult to detect, and jam-resistant. Milstar will continue to provide the requisite survivable, enduring, jam-resistant communications connectivity for strategic forces. Beyond Milstar II, DoD is seeking to provide advanced extremely high frequency capabilities on a platform that can be launched on a future medium lift vehicle instead of the heavy lift vehicle required today.

The Department's MILSATCOM architecture study looked closely not only at military system solutions, but also at commercial technology. A prime example is the commercial development of direct television satellite broadcast systems. This technology created DoD-wide interest in a commercial-like GBS as a possible solution to capacity shortfalls and to enable efficient use of bandwidth. GBS would become part of the overall MILSATCOM architecture and would meet the warfighters' need for increased worldwide, high-capacity communications by providing direct broadcast of digital multimedia information—including high bandwidth imagery and video—from global and theater injection sites to users. Initial operational capability is in 1999.

Global Positioning System

The Global Positioning System (GPS) is being integrated into all DoD combat forces, at all levels, from the hand-held receiver carried by the infantryman to the embedded GPS navigation aids on the most modern aircraft to provide precision location determination and navigation support. GPS is a part of the guidance system in most current and planned precision-guided munitions being acquired by the Services. GPS is also being integrated into military forces worldwide, both friend and foe.

Since the GPS has significant military utility, and since it is in the best interest of the United States to prevent the hostile use of the system against U.S. and allied forces, DoD has embarked on a security program known as Navigation Warfare (NAVWAR). The three principal tenets of NAVWAR are to protect the use of GPS by DoD and allied forces in times of conflict within the

theater of operations; prevent the use of GPS by adversary forces; and preserve routine GPS service to all outside the theater of operations.

At the same time that military reliance on GPS is increasing, the applications of the worldwide civil user community continue to expand. GPS has evolved far beyond the vision of its original designers, and satellite navigation is now widely recognized as a worldwide information resource. For example, under U.S. leadership, the world has determined that a possible means to control air traffic—from en route to precision landing—will be via satellite. Since the inception of GPS, DoD has been confronted with the need to balance a wide range of different and sometimes competing national security, civil, foreign policy, commercial, and scientific interests. The challenge has been to exploit the full civil utility of the system without jeopardizing national security interests in the process.

To demonstrate commitment to the civil user, the Departments of Defense and Transportation have agreed to identify a second coded civil GPS signal and to develop a plan for providing the signal. Additionally, DoD has agreed not to alter the GPS military coded signal until the second coded civil GPS signal is available. These agreements assist civil users in their constant quest for greater accuracy.

From the program's inception in the 1970s, the Department of Defense has been dedicated to successful management of the GPS as a dual-use (civil and military) national information resource. DoD's stewardship of GPS has been instrumental in the growth of a new global industry. Today's GPS industry provides employment and new export markets for U.S. firms, has spurred a rapid advance in technology and applications, and is providing products that will soon touch the lives of almost everyone on earth. As GPS moves into its next phase, management and oversight of dual-use aspects of GPS will be provided by a Presidentially-mandated Interagency GPS Executive Board. The Department will continue working in this new management structure to maintain the delicate balance between global security and economic interests in the operation of GPS.

Meteorological Satellite Convergence

The President's decision to converge U.S. polar-orbiting operational environmental satellite systems will merge the Defense Meteorological Satellite Program and the Department of Commerce (DoC) Polar-orbiting Operational Environmental Satellite (POES) program, and capitalize on the technologies developed for NASA's Earth Observing System. An Integrated Program Office (IPO), led by DoC, has been created to plan, develop, acquire, manage, launch, and operate the National Polar-orbiting Operational Environmental Satellite System (NPOESS). DoD has been designated the IPO's lead agency for NPOESS system acquisitions. NPOESS will meet a National Performance Review objective to reduce the cost of acquiring and operating polar-orbiting environmental satellite systems, while continuing to satisfy military and civil operational requirements.

The NPOESS program is a three-satellite constellation which will enhance coverage and data availability to U.S. and allied forces. A DoC-led team that includes DoD and NASA is negotiating with the European Organization for the Exploitation of Meteorological Satellites to

provide the third satellite in the converged constellation. DoD is working closely with the National Oceanic and Atmospheric Agency and NASA to ensure that NPOESS satisfies national security requirements.

CONCLUSION

Space forces are fundamental to sustaining U.S. global commitments. The national security C⁴ISR infrastructure that space forces support enables air, land, and sea forces to be projected anywhere on the globe with the assurance that essential information will be available. The strategic significance of space to the nation's security and prosperity will continue to increase as the world evolves toward a global market. DoD's role in space during that evolution is to protect the nation's investment by protecting U.S. space systems and assuring continued leadership in space.

Chapter 8

COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

The strategic vision for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) is to provide capabilities that enable forces to generate, use, and share the information necessary to survive and succeed on every mission. Major accomplishments in all areas of C⁴ISR bring DoD closer to achieving this vision.

Information superiority provides the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same. It includes comprehensive knowledge of the battlespace, including the status and intentions of both adversary and friendly forces. The Quadrennial Defense Review (QDR) identified information superiority as the backbone of military innovation, and noted that the Revolution in Military Affairs centers on developing the improved information and command and control capabilities needed to significantly enhance joint operations.

COMMAND AND CONTROL

Command and control (C²) systems provide the means to effectively execute nuclear, conventional, and special operations. The Global Command and Control System (GCCS), which replaced the World Wide Military Command and Control System, provides nearly 700 locations with its secret level functionality and increased capability. GCCS provides an enhanced common operational picture, force status, intelligence support, enemy order of battle, related facility information, and air tasking orders. In 1998, GCCS Version 3.0 will provide imagery, meteorological, and oceanographic data. GCCS Top Secret (GCCS-T) provides a top secret infrastructure for C² throughout the force deployment cycle. When completed in mid-1998, GCCS-T Version 2.2 will add nuclear Single Integrated Operational Plan capabilities and a top secret (including special intelligence) common operational picture. GCCS and GCCS-T improvements in 1999 will further add sensitive compartmented information, increase user sites, and improve performance and reliability. DoD will evolve toward more integrated and interoperable battle management systems through continued deployment of GCCS below the joint command level and into operational units.

GCCS is supported and complemented by other modernized automated information systems. For example, the Global Transportation Network (GTN) is being deployed to provide GCCS with information to support planning for common user airlift, surface lift, and terminal services for global military force deployment and sustainment. Together with other applications such as Joint Total Asset Visibility, GTN is being integrated into the Global Combat Support System (GCSS), which complements GCCS by providing warfighters with the ability to track the status and location of critical logistics, procurement, engineering, finance, personnel, and medical resources. During 1998, GCSS will enhance the common operational picture of the battlespace with asset visibility information and decision support tools to plan and execute combat service support for military operations.

DoD continues to modernize, consolidate, and optimize its portion of the U.S. Nuclear Command and Control System to be more effective and efficient. It relies on survivable and enduring command centers and a redundant, survivable communications network. Increased utilization of the Milstar satellites will improve the ability to initiate, execute, and terminate a nuclear response. The Space-Based Infrared System will provide improved ballistic missile launch detection.

Command and control includes the ability to safely and efficiently apply airborne resources in support of air, land, and naval military operations. With increased air traffic and growing reliance on satellite navigation, DoD must assure air safety with improved navigation. DoD is working closely with the Federal Aviation Administration and its international counterparts to establish common military and civilian standards. The Joint Precision Approach and Landing System, Air Traffic Control and Landing System and its deployable counterpart, the Global Positioning System, avionics modernization, and the Traffic Alert and Collision Avoidance System are funded to facilitate essential international military air operations.

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

Defense intelligence must be able to provide timely, usable, detailed intelligence to allow U.S. military forces to out-think and out-operate enemy forces and protect American lives. Round-the-clock crisis and contingency support is provided to military commanders and deployed forces. During 1997, intelligence and counterintelligence support has provided:

- Ground force capabilities, intentions, and force protection assessments for the NATO Stabilization Force in Bosnia.
- Noncombatant evacuation and contingency planning support in Albania, Democratic Republic of the Congo, and Sierra Leone.
- Targeting support and enemy capability assessments in Iraq.
- Humanitarian and disaster relief support.
- Support for counternarcotics, force protection, and monitoring the proliferation of weapons of mass destruction and their delivery means.

Increasing demands for precise, finished intelligence strain the resources available to satisfy the required analytical depth and breadth of Defense intelligence. Due to the changing conflict environment, global scope, and the wide range of potential military missions, significant improvements are essential to meet current and long-term needs.

Intelligence and Counterintelligence

The Deputy Secretary of Defense and the Director of Central Intelligence (DCI) issue Joint Intelligence Guidance to provide focused program direction and priorities for all intelligence and related activities. They co-chair the Expanded Defense Resources Board, which is the senior

advisory body for reviewing all Defense intelligence and related activities, including programmatic, resource, and substantive intelligence issues. Defense intelligence is placing greater emphasis on activities that promote information availability and interoperability between Services and multinational partners. DoD is aggressively pursuing an integrated intelligence collection, production, and infrastructure strategy.

During U.S. Forces Korea's Ulchi Focus Lens exercise in August 1997, the Joint Intelligence Virtual Architecture concept to improve battlespace visualization and information sharing was demonstrated. Recent implementation of revised security policy by the National Imagery and Mapping Agency (NIMA) has expanded the availability of national imagery at the unclassified level.

The Defense Intelligence Agency (DIA) is leading an advanced concept technology demonstration (ACTD) to enhance management systems for intelligence collection across all echelons. DoD and the Central Intelligence Agency are reviewing potential evolutionary approaches to fully integrate collection management, and to improve the balance of imagery, signals, and human intelligence (HUMINT) capabilities. The Defense HUMINT Service has restructured global assets to increase human intelligence capabilities, and new defense attache offices have expanded U.S. military diplomatic presence around the world. The DIA Central Measurement and Signature Intelligence (MASINT) Office initiatives to improve intelligence collection from complex sensors, unattended MASINT monitoring, and chemical/biological weapon detection programs have been successful.

DoD has implemented numerous other programs to enhance intelligence capabilities. The Joint Staff has enhanced the process for identification of intelligence support requirements for new weapon systems, and for input to new intelligence systems by weapon system developers and users. The Joint Reserve Intelligence Program has established electronic connectivity among 28 continental United States (CONUS) Joint Reserve Intelligence Centers and the organizations they support. DoD is developing a Defense Reserve Language Program to enhance Reserve linguistic resources. In addition to its currently accredited Master of Science in Strategic Intelligence curriculum, DIA's Joint Military Intelligence College has gained congressional approval to award the Bachelor of Science in Intelligence. NIMA has established new training standards and is conducting a pilot program to improve the integration of geospatial data into intelligence analysis for imagery analysts and cartographers.

To continue progress toward *Joint Vision 2010* implementation, Defense intelligence must further expand the availability of information to participants in joint and multinational military operations. Among other initiatives, a multi-level security (MLS) strategy is required, leading to immediate MLS implementation within the Intelligence Community and the Department. Additionally, standard dissemination paths, data access procedures, and delivery formats must be established. These innovations must be tested with advanced technology and concepts to enhance information superiority within the context of military operations. This will be accomplished by fully integrating Defense intelligence into the Task Force XXI (Army), Information Technology 21 (Navy), and Hunter Warrior (Marine Corps) advanced warfighting experiments.

DoD's counterintelligence (CI) program provides protection against the intelligence activities of foreign entities and terrorist organizations. All of the Department's tactical CI capability and almost 70 percent of its foreign CI program directly support U.S. military operations—primarily force protection. The Department runs over 2,000 CI investigations annually. In addition to espionage cases, the Department conducted several high profile CI investigations into the illegal transfer of critical defense technologies, intrusions into defense automated information systems (AISs), and terrorism. A joint computer forensics laboratory and computer investigations training program are being developed to support both criminal investigations and CI.

Following the Khobar Towers bombing, the Department conducted a comprehensive, worldwide review to determine how DoD could substantially enhance intelligence and CI support to combating terrorism and force protection. Ten study recommendations approved by the Deputy Secretary in FY 1997 are currently being implemented. DoD's terrorism warning apparatus is being overhauled to ensure that threat warning is timely, widely disseminated, and as predictive as possible. Training of analysts and CI agents has been substantially improved. A single primary terrorism data base will be established and sharing of terrorism data with the Federal Bureau of Investigation is being improved. The study's 11 remaining recommendations are being consolidated and refined for implementation in FY 1998.

Surveillance and Reconnaissance

To increase interoperability, the National Reconnaissance Office and the Defense Airborne Reconnaissance Office are developing complementary space and airborne surveillance and reconnaissance systems. Joint Signals Intelligence (SIGINT) Avionics Family (JSAF) sensor equipment will not only provide increased performance, interoperability, and commonality across the airborne reconnaissance fleet, but also allow interoperability with satellite systems.

Increased warfighter demands for information have highlighted the need for enhanced airborne reconnaissance coverage and increased reconnaissance operating tempo. DoD is procuring a family of unmanned aerial vehicles (UAVs) to complement current manned systems, with significant savings. Through the ACTD process, Predator UAV was quickly fielded and has flown over 3,600 hours in support of operations in Bosnia. Other UAVs are beginning flight tests and will participate in warfighter demonstrations beginning in FY 1999.

Manned airborne surveillance and reconnaissance assets are developing better situational awareness by using enhanced and modernized capabilities, such as Moving Target Indicator (MTI) and JSAF. In addition to the Joint Surveillance Target Attack Radar System (JSTARS), the most robust and capable example of MTI surveillance, MTI capabilities have migrated to the U-2 and the Airborne Reconnaissance Low. While U-2's improved MTI-capable radar will begin delivery in FY 1998, both the RC-135 RIVET JOINT and EP-3 aircraft are completing other major upgrade programs and will begin transitioning to JSAF in FY 1999. JSAF equipment can be used not only in manned signals intelligence platforms, but also in UAVs, pending their adoption of the signals intelligence mission.

The airborne reconnaissance fleet is migrating toward Common Data Link (CDL) compliance. The Tactical CDL, a low-cost, lightweight communications system to facilitate this migration,

will complete development in FY 1999. DoD is consolidating Common Imagery Ground/Surface System (CIGSS) and Joint Airborne SIGINT Architecture standards. Most Service imagery ground systems will meet CIGSS standards by the end of FY 1999.

DoD has expanded the flow of intelligence information from national reconnaissance systems to all users. The Common Object Framework (which achieved initial operational capability in October 1997) uses commercial off-the-shelf software to integrate national reconnaissance data directly into the Air Force Special Operations Command mission planning system. During the 1997 Joint Warrior Interoperability Demonstration, users received primary imagery for precision strike planning and targeting using open systems and commercial standards. And finally, in 1997, submarines in the Pacific received real-time situational awareness data from newly installed tactical receivers and exploitation equipment.

To meet long-term requirements, the National Reconnaissance Office has launched initiatives to revolutionize collection technologies used in space. NIMA acquires commercial imagery from multiple vendors for both geospatial production and peacetime and crisis applications. NIMA will also acquire unclassified imagery from new high-resolution commercial sensors with enhanced spectral capabilities. A joint government/industry team has been established to identify the best acquisition approach for the future. NIMA will migrate existing production systems to a more sustainable and flexible open architecture, and is shifting from predominantly hardcopy production, storage, and distribution to digital capability.

Numerous programs are being developed to allow users to receive data more quickly with the ability to manipulate it to meet their requirements. Presently, users have Internet-like access to information and services over existing communications channels. The Intelligence Community is developing a global geospatial data base for rapid access to dynamic, highly accurate, time-tagged views of the mission space. The Joint Deployable Intelligence Support System allows cartographers to gain expanded access to intelligence data bases, while providing warfighters with access to critical fused intelligence.

Information Operations

Information operations (IO) are actions taken across the entire conflict spectrum to affect adversary information and information systems while protecting one's own information and information systems. Information warfare is conducted during crisis or conflict to achieve specific objectives over an adversary. Information assurance protects and defends information and information systems by ensuring their availability, integrity, authenticity, and confidentiality.

In 1997, the Department identified command operational priorities for IO requirements and continued to improve processes for fielding IO capabilities. IO reviews included intelligence (from indications and warning, collection, and production); modeling and simulation; and battle management/command, control, and communications. The Intelligence Community published the first National Intelligence Estimate on IO which identified foreign interest in IO and worldwide availability of IO tools. The Department also established the IO vision, goals, and objectives; described IO strategies and timelines; and identified federal agency interfaces in an IO master plan. To examine IO issues, DoD sponsors the Highlands Forum, which brings

together government, industry, and academic professionals from various fields. DoD provides two intensive IO courses to students from all federal agencies, and wargames and exercises are being extended to increase experience in applying IO to military operations.

The new Information Operations Technology Center (IOTC) acknowledges a transition in viewing IO threats and targets as technology-centered rather than geography-centered. Through a formal DoD/DCI agreement, the IOTC will enhance IO cooperation throughout the Intelligence Community. Also, the Joint Staff is evaluating potential changes to joint warfighting organizations and processes, to centralize command responsibilities for executing IO campaigns and responses to strategic IO attacks. This requirement was identified during the two primary 1997 IO exercises. Exercise Evident Surprise (March 1997) highlighted the interagency coordination process required to deconflict and execute IO, and Exercise Eligible Receiver (June 1997) highlighted Indications and Warning issues, as well as coordination of responses to IO attacks.

Security

Defense security programs prevent or deter espionage, sabotage, subversion, theft, or the unauthorized use of classified or controlled information, systems, or war materiel in DoD custody. The Defense Investigative Service (DIS), which provides security services to DoD, will become a fee-for-service organization in FY 1999. Cost visibility will motivate customers and focus DIS on more cost-efficient operations. DIS has already undertaken reengineering of the entire Personnel Security Investigative Program, from request to clearance issuance. Case completion time for initial investigations has already been reduced from 192 to 133 days (40 percent), with a target of 90 days or less by the end of FY 1999. In FY 1998, information technology modernization will reduce internal processing times and provide customers and end users with Internet and intranet access to standardized data from a corporate data base.

In 1997, DoD declassified over 68 million pages, eight times the number declassified in 1996. Additionally, multidisciplinary threat, vulnerability, and risk assessments to determine the threat against critical program information provided the basis for decisions and identification of appropriate security countermeasures.

C⁴ISR INTEGRATION AND INTEROPERABILITY

Achieving information superiority requires improvements in C⁴ISR integration and interoperability. Developing an overall C⁴ISR architecture is the critical element to ensure consistent implementation and effective employment in all operations.

DoD conducted an extensive C⁴ISR Mission Assessment to examine how C⁴ISR should evolve to support future operations. The study forecast the impact of C⁴ISR performance on the battlefield, examined C⁴ISR interoperability and integration architecture issues, and defined a C⁴ISR architecture framework and an investment strategy. Assessment results will help DoD balance C⁴ISR investments and enhance C² system integration.

The Joint Technical Architecture, which facilitates use and exchange of information for operational planning and combat decision making, is DoD's most important C⁴ISR architecture initiative. To facilitate AIS development and operation, the Defense Information Infrastructure (DII) common operating environment provides an architecture of standards and software.

To integrate C⁴ISR operational and systems architectures at the command level and below, DoD has expanded the Command Intelligence Architecture Planning Program. All Unified Commands completed their first C⁴ISR architectures under this program in FY 1997. The C⁴ISR Architecture for the Warfighter program describes current priority C⁴ISR operations; highlights shortfalls, deficiencies, and incompatibilities; identifies relative priorities; and enables management to initiate corrective action.

The Joint C⁴ISR Decision Support Center (DSC) provides analytical support to requirements and acquisition decision makers. During 1997, the DSC studied precision engagement architectures, C⁴ISR impacts on strike warfare, and space-based versus airborne tactical communications. FY 1998 studies include dissemination of intelligence sensor information, Moving Target Indicator radar requirements, precision force architecture analysis, and reengineering the C⁴ISR interoperability requirements process.

C⁴ISR INFORMATION TECHNOLOGY MANAGEMENT

Subdivision E of the Clinger-Cohen Act of 1996, better known as the Information Technology Management Reform Act (ITMRA), is the most far-reaching management reform legislation enacted during the past several years for DoD's C⁴ISR. Along with the Government Performance and Results Act, ITMRA changes the selection and management process for information technology resources and requires that information technology investments provide measurable improvements in mission performance. Information technology investments must support only those functions that are consistent with agency missions, and that cannot be performed more effectively and at less cost by the private sector or another government agency. Programs that pass these two tests must be reengineered before new investments are made. DoD has designated a Chief Information Officer (CIO), established a DoD CIO Council, published the first information technology management strategic plan and supporting component plans, and established ITMRA compliance requirements for information technology acquisitions. The annual report required by Section 5123 of this legislation is provided as Appendix K.

The Department determines the level of oversight and approval based on cost and special interest. Presently, there are 44 major AISs or special interest initiatives subject to oversight by the DoD CIO, or Major AIS Review Council, and 27 major AIS or special interest initiatives subject to component oversight. A steering committee chaired by the Deputy Secretary of Defense is overseeing correction of the Year 2000 problem throughout the Department.

DEFENSE INFORMATION INFRASTRUCTURE

The Defense Information Infrastructure is the web of communications networks, computers, software, data bases, applications, weapon system interfaces, security, and other services that meet DoD's end-to-end information transport (telecommunications) and processing (computer)

needs. Defense Information Infrastructure resources connect DoD mission support, C², and intelligence systems and users through voice, data, imagery, video, and multimedia services. The Defense Information Infrastructure is part of the National Information Infrastructure. The Defense Information Infrastructure relies upon the National Information Infrastructure when cost, performance, and security considerations support that choice.

Telecommunications

The Defense Information System Network (DISN) is DoD's worldwide, common-user telecommunications network that interfaces with customer-owned equipment to deliver secure and non-secure information from desktop to foxhole. DISN, the communications infrastructure of the Defense Information Infrastructure, supports the Defense Message System (DMS) and Electronic Commerce/Electronic Data Interchange (EC/EDI). DISN incorporates surge capacity, robustness, interoperability with the systems of allied and coalition forces, end-to-end network management, and assured service using a mix of military and commercial media. The Joint Worldwide Intelligence Communications System, the secure compartmented information component of DISN, provides Defense intelligence and other secure communications capabilities.

DISN has adopted common standards and integrated disparate DoD networks and services into a common-user network and is now buying and using services based on new and emerging technologies to improve interoperability, reliability, and positive control. Five major DISN contracts were awarded in 1997—two for CONUS services, one for services in Hawaii, and two for global services. These contracts will provide sizable cost savings following completion of network implementation in June 1998. Acquisition of DISN services for the Pacific, Europe, and Southwest Asia theaters is under way. Non-CONUS initial operating capability will occur through FY 2000.

The Joint Tactical Information Distribution System (JTIDS) is a ultra high frequency terminal that uses Link 16 (DoD's primary tactical data link) to provide secure, jam-resistant, high-capacity interoperable voice and data communications for tactical platforms and weapon systems. The terminal uses an internationally standardized NATO waveform and message format to transmit tactical information. The third generation Link 16 terminal, the Multifunctional Information Distribution System-Low Volume Terminal (MIDS-LVT), is an international cooperative program with France, Italy, Germany, Spain, and the United Kingdom that will be JTIDS-interoperable. The first MIDS-LVT terminals will be delivered in early 1998. These new terminals will be half the price and weight and one-third the size of JTIDS terminals, allowing expanded fielding opportunities at lower cost.

In September 1997, DoD initiated the Joint Tactical Radio System (JTRS), previously called the Programmable Modular Communications System, acquisition program to develop a single family of radios to replace many incompatible Service radios. The JTRS family will have modular configurations that will satisfy all user requirements from backpacks to strike aircraft and will span multiple frequency bands and waveforms. JTRS will be scalable, extendible through technology insertion, and low cost. The initial family of JTRS products will respond to

the Mission Needs Statement validated and approved by the Joint Requirements Oversight Council.

Value-Added Services

The Defense Message System is a secure, reliable, standards-based global message system that uses mainline commercial products. DMS-compliant messaging provides high assurance interoperability within DoD, the national intelligence community, NATO/allied partners, and some federal agencies. DMS also provides a global directory and public key infrastructure that can be used by other Defense Information Infrastructure applications. DMS completed initial operational testing in August 1997. Operational testing and rapid deployment will continue through FY 1998/1999. DMS will allow the phase-out of the 1960s technology automatic digital network message switches by FY 2000. Future DMS technology will include transmission of all messages, including those using closed national systems today.

ITMRA seeks substantial operational improvements through the use of modern information technology. Electronic Commerce (EC) has emerged as one of the dominant functional applications of information technology. EC uses technologies such as electronic data interchange (EDI), electronic mail, imaging, facsimile transmission, electronic bulletin boards, electronic catalogs, electronic engineering drawings and data, electronic funds transfer, bar coding, webs and electronic navigators, and workflow management systems. An EC oversight office and an EC Information Services Office will provide the information services and infrastructure needed to coordinate EC initiatives, assure DoD-wide interoperability, and eliminate duplicative efforts.

Information Assurance

Information Assurance (IA) is the component of Information Operations that assures DoD's operational readiness by providing for the continuous availability and reliability of the information systems and networks that comprise the DII. IA protects the DII against exploitation, degradation, and denial of service, while providing the means to efficiently reconstitute and reestablish vital capabilities following an attack. IA is recognized as a critical component of DoD's operational readiness.

Accordingly, DoD components are actively addressing the issue by increasing operator and system manager training; installing firewalls and guards, network intrusion detection systems, and encryption hardware and software; using 24 hour-per-day computer emergency response teams; identifying critical nodes that support the Department; and conducting system and network vulnerability assessments.

Given the shared risk environment created by the Department's increasing reliance on global networks, DoD is restructuring its management of IA, and is creating an integrated, ITMRA compliant, Defense-wide Information Assurance Program. This program will empower DoD and component CIO oversight of the Department's IA operations and resources, and will synchronize Department-wide IA efforts to maximize return on investment. In doing so, DoD will build and maintain a DII capable of continuously protecting the Department's information and enhancing the operational effectiveness of U.S. military forces throughout the world.

Spectrum Accessibility

Assured access to the electromagnetic spectrum is essential for U.S. strategic and tactical systems to fulfill their missions. These include communications, intelligence, surveillance, reconnaissance, and weapons guidance. Government and private sector requirements and competition for this finite resource are increasing. DoD continues to review its spectrum requirements to assess which (if any) spectrum can be shared, and to identify ways to manage the spectrum more effectively and efficiently. As spectrum becomes an increasingly scarce resource, national level processes will need to place even more emphasis on ensuring emerging private sector and federal requirements are systematically addressed. Before additional government spectrum is reallocated, target bands should be reviewed based on priority consideration of the cost and operational impact on military operations, readiness, and national security.

Information Systems

The Defense megacenters provide computing capabilities critical to DoD's global combat support operations. The overall annual operating cost of DoD mainframe processing has been reduced from \$1,062 million in 1990 to \$505 million in 1996, with a 70 percent personnel reduction. The QDR approved further consolidation of the current 16 Defense megacenters into six sites. Consolidation and workload optimization will result in steady-state annual savings by FY 2003 of \$203 million. Customers will receive reduced information processing rates beginning in FY 1999.

DoD continues migration to a suite of standard automated information systems for combat and combat support functions, and will eliminate 1,000 legacy systems by FY 2000. Increased compliance with the Joint Technical Architecture and other technical standards will improve compatibility, interoperability, and integration. Nonstandard data elements are also being reviewed to standardize data element identification. Over 15,000 standard data elements have been approved, resulting in a ten to one reduction in departmental data.

CONCLUSION

The QDR reaffirmed the general focus and level of resources that DoD is applying to C⁴ISR. Major improvements in capability have occurred during the last four years, and programs now under way will accelerate progress toward achieving information superiority. The Department's challenge lies in improving the balance within C⁴ISR programs, applying advanced technology to support modernization targets and information-enabled operational concepts for *Joint Vision 2010*, and using information technology to achieve DoD's revolution in business affairs.

Chapter 9

TOTAL FORCE INTEGRATION

Since its adoption in 1973, the Total Force Policy has guided decisions about how people available to the Department of Defense—active, Reserve component (RC), retired military, federal civilian, Service auxiliaries, and contractors—are structured to protect the nation’s interests. The integrated capabilities of the Total Force are essential to successfully implementing U.S. defense strategy and, indeed, are a prerequisite to a cost-effective force structure.

A COST-EFFECTIVE AND FLEXIBLE TOTAL FORCE

Increased Reliance on Reserve Components

A quiet evolution has occurred within the Total Force since the end of the Cold War. During the Cold War, the Reserve components were structured to contain and, if necessary, defeat the Soviet Union and its allies. In the post-Cold War era, the Reserve components now comprise a greater percentage of the Total Force and are essential partners in a wide range of military operations, from smaller-scale contingencies to major theater wars.

Guard and Reserve forces provide trained units and individuals to fight in wartime and to support the complete spectrum of DoD peacetime operations. Today, Reserve component forces are fully integrated into all war plans, and no major military operation can be successful without their participation.

Because of high operating and personnel tempo demands on the active component (AC), Reserve components are being called upon more frequently and for longer periods in peacetime than ever before. Since this trend is expected to continue, major changes to doctrine, training, education, and materiel are being made throughout the Department to ensure the rapid and seamless deployment of Reserve components.

Requirements for a Seamless Total Force

The Quadrennial Defense Review (QDR) concluded that national leaders must have a wide range of viable options for promoting and protecting U.S. interests in peacetime, crisis, and war. The number and variety of potential military challenges require:

. . . . a military force of sufficient size and capability to defeat large enemy conventional forces, deter aggression and coercion, and conduct the full range of smaller-scale contingencies and shaping activities, all in the face of asymmetric challenges. U.S. forces, active and reserve, must be multi-mission capable, proficient in their core warfighting competencies, to include force protection, and able to transition from peacetime activities and operations, to enhanced deterrence in crises, to war.

This force must be fully integrated to be successful in today’s resource-constrained climate. It must have the correct mix of capabilities between and within the Services, and among

conventional, nuclear, and special operations forces. This joint force must also be able to shift quickly and efficiently from one type of operation to another.

The capabilities and strengths of each Service, including the U.S. Coast Guard, provide the foundation for planning and executing the National Military Strategy. These Service resources include a wide variety of capabilities for meeting national objectives. All elements of the Total Force must be able to work together smoothly. Success on the battlefield will depend on the operational and tactical synergy of fully integrated, agile Service forces. To meet the challenges of the future, the force also must be capable of evolving new capabilities through infusion of new technology, doctrine, operational concepts, training approaches, and organizational structures. This is particularly needed to enhance the ability of joint forces to operate in consonance with other U.S. government agencies, nongovernment organizations, international organizations, and private voluntary organizations in a variety of settings.

Balancing the Force

The ability of Reserve components to provide cost-effective military capability has influenced changes in the mix of active, Reserve component, and civilian forces. The Total Force increasingly will depend on the Reserve components to serve not only in their traditional wartime role, but also to provide a rotational base to ease operating and personnel tempo for a busy active component.

Force structure changes recommended by the QDR were based on a strategy that requires the United States to sustain the forces and capabilities needed to meet demands in the near term while beginning to transform the force for the future. Modest reductions in end strength and force structure are planned to achieve this goal. The enhanced capabilities of new systems and more efficient support structures will offset reduced end strength and force structure.

Planned FY 1999 capabilities are shown in Table 12.

IMPROVING FORCE INTEGRATION

Increased reliance on Guard and Reserve forces to meet critical operational requirements—in peacetime, crisis, and war—requires a corresponding commitment to improve the integration of Service forces.

Active/Reserve Component and Allied Joint Operations

Each Service uses Reserve component forces for a wide range of missions. For example, Army National Guard (ARNG) artillery brigades and Marine Corps combat battalions were used effectively in the Gulf War. Army National Guard, Army Reserve, and active troops also combined to form a battalion for peacekeeping efforts in the Sinai. ARNG support and infantry personnel are now serving in Macedonia as part of Task Force Able Sentry, and the total number of Army Reserve component members who have served in Bosnia over the course of operations so far exceeds 17,500. Air Reserve components provide tankers, transports, and fighters to support several different missions, including Operation Deny Flight over Bosnia. Naval and

Marine Corps Reserves also provide air, ground, and sea support. Most Coast Guard Reservists serve in fully integrated units, reflecting the Team Coast Guard philosophy.

Since the end of the Cold War, the Army has expanded its reliance on Reserve component combat forces in roles beyond that of strategic reserve. RC contributions to the Sinai peacekeeping battalion and to Task Force Able Sentry in Macedonia demonstrate that smaller Reserve combat units can be utilized effectively. The 15 ARNG enhanced Separate Brigades—which the Army is committed to having ready for combat within 90 days post-mobilization—are included in the regional commander in chief’s (CINC) war plans for both Korea and Southwest Asia. The Army is committed to implementing two integrated divisions comprised of both active and Army National Guard members.

Table 12		
FY 1999 Force Structure and End Strengths		
Service	Force Structure	End Strengths
Army (Active/Reserve components)	10 Divisions / 8 National Guard Divisions 15 enhanced National Guard Separate Brigades 4 Corps Headquarters 2 Armored Cavalry Regiments	480,000 / 565,000
Navy (Active/Reserve)	Aircraft Carriers (11/1) Air Wings (10/1) Amphibious Ready Groups (12/0) Attack Submarines (57/0) Surface Combatants (106/10)	372,696 / 90,843
Air Force (Active/Reserve components)	Fighter Wings (12.6/7.6) Air Defense Squadrons (0/6) Bombers (186 total)	370,882 / 181,223
Marine Corps (Active/Reserve)	Marine Expeditionary Forces (3/0) Divisions (3/1) Wings (3/1) Force Service Support Groups (3/1)	172,200 / 40,018

National Guard divisions must continue to be prepared to contribute to several key missions, which include providing rear-area security in theater; backfilling in Europe and in ongoing smaller-scale contingency operations; supporting the rapid deployment of active units and the mobilization of the enhanced Separate Brigades; and supporting state missions. Under the Army’s division redesign program, up to 12 of the 42 ARNG maneuver brigades will be converted to meet shortfalls in combat support and combat service support units.

Force Integration Policy and Principles

Achieving a seamless Total Force requires command emphasis on the principles of Total Force integration, as set forth in the September 4, 1997, Secretary of Defense policy memorandum. Progress towards Total Force integration depends on the ability of all military and civilian leaders to create an environment that eliminates residual barriers to integration—structural and

cultural. Integration is defined as the conditions of readiness and trust needed for the leadership, at all levels, to have well-justified confidence that Reserve component units are trained and equipped to serve as an effective part of the joint and combined force—within whatever timelines set up for the unit—in peace and war. To achieve joint integration, the following basic principles must be applied consistently:

- Clearly understood responsibility for and ownership of the Total Force by senior leaders.
- Clear and mutual understanding of each unit’s mission—active, Guard, and Reserve—in Service and joint/combined operations, during peace and war.
- Commitment to provide the resources needed to accomplish assigned missions.
- Leadership by senior commanders—active, Guard, and Reserve—to ensure the readiness of the Total Force.

INITIATIVES LEADING TO FURTHER FORCE INTEGRATION

Force Planning

Force planning processes have undergone review and modification to provide the National Command Authorities greater flexibility in the use of Reserve component units and members. The Reserve components have been slowly but increasingly accepted within DoD force planning organizations. Recent policy changes, which require that RC capabilities be tied to war plans and contingency plans across the total spectrum of national military requirements, will help further AC/RC integration.

Accessibility

The Department of Defense is reviewing its policies to provide for increased accessibility and flexibility in the use of Reserve component forces. Far from being limited to ensuring that Reservists are trained and available for call-up in times of emergency, DoD now asks Reservists to be available to support the full spectrum of military activities, including peacetime operations. Therefore, use of the Reserves today requires balancing the nation’s ongoing requirements with Reservists’ nonmilitary career and family demands.

The policy governing the Individual Mobilization Augmentee program has been revised to increase flexibility in the use of augmentees to support CINC, Defense Intelligence, and joint support functions. Training and pay category policies have been rewritten to provide additional flexibility in the use of training time and in the scheduling of training which supports active component missions.

Family Readiness and Support

All Services have made the transition to an integrated family readiness program, which supports both active and Reserve component families. (The Coast Guard also supports both active duty and Reserve members, and their families, through a common family support program.) Inter-Service Family Assistance Committees, automated networks, and professionally prepared guides and brochures help disseminate information about family support programs to the force.

Family support plans are now extensively coordinated at regional, state, or major command levels. Most Services use a combination of chain of command, staff assistance and inspection, mobilization exercises, and Joint Staff exercise support to evaluate the effectiveness of family readiness plans and programs. The Reserve components of the Army and Air Force also use active component inspections, Operational Readiness Evaluations (exercises and inspections), and Quality Air Force Assessments to evaluate their family support plans.

Parity of Benefit

In conjunction with increased use of the RC, the Department is examining the compensation and benefits available for RC members to ensure fairness and parity with the active force. Primary areas being reviewed are:

- Authorizing Basic Allowance for Quarters for single RC members.
- Identifying when Basic Allowance for Housing should be authorized for RC members.
- Determining when the continental United States Cost of Living Allowance should be authorized for RC members.
- Assessing the adequacy of the leave accrual policy for RC members.
- Assessing the adequacy of medical and dental care for RC members and dependents.
- Applying standards when determining disability severance pay for RC members.

Training

Reserve components are planning to increase use of simulation, embedded training, and distance learning technologies. Through these technologies, the limited time available to train Selected Reservists—collectively in units and as individuals—can be made more productive. Recent reports on Reserve component training readiness indicate that approximately 20 percent of members are not qualified in their current assignments. DoD is pursuing the growing spectrum of distance learning media, in ways fully interoperable with existing DoD and government systems, to facilitate improved training readiness throughout the Department.

To foster integration, DoD is developing policies to emphasize education and experience in joint matters for Reserve officers not on the active-duty list. Such policies will, to the extent

practicable for the Reserve components, be similar to the personnel management and professional military education (PME) policies established to enable active duty military officers to function more effectively in a joint environment.

During FY 1997, all joint positions occupied by Reserve component officers were identified and evaluated for the required level of joint professional military education. Approximately 1,100 of 4,400 Reserve officer positions require education beyond the traditional Phase I, intermediate, and senior PME levels. Several options are being considered, including a shorter version of the Armed Forces Staff College course and a revised National Defense University Reserve Forces National Security course.

The Joint Reserve Intelligence Program (JRIP) leverages the talents of intelligence Reservists in direct support of national intelligence requirements. In 1997, the JRIP allocated over 34,000 man-days to these requirements; more are programmed for FY 1998. The JRIP can enhance individual readiness by providing intelligence Reservists opportunities to do in training what they will do upon mobilization or to learn national intelligence systems and skills by doing real world intelligence production. These Reservists often bring unique civilian/military mixes of skills, capabilities, and contacts that may be particularly useful, but not otherwise available to the national intelligence community.

Equipping

Efforts are under way to ensure that Reserve component units are equipped with modern, compatible equipment that enables them to perform their missions side-by-side with active components and coalition partners.

- During FY 1997, the Services provided \$1.4 billion in new equipment and upgrades. Also, Congress directly provided \$0.8 billion for new equipment, such as C-130, CH-53, and C-9 replacement aircraft; P-3 modernization; heavy tactical trucks; medium and light tactical vehicles; and aircraft system modifications and upgrades.
- The primary method of providing more modern combat equipment to RC units is the redistribution of major weapons systems which had been used by active forces. The new purchase value of the used equipment redistributed to the Reserve forces in FY 1997 was about \$6 billion.

Facilities

In 1997, the Reserve components continued to benefit from several years of base realignment.

- The Army National Guard established Reserve enclaves at Fort Pickett, Virginia; Fort Indian Town Gap, Pennsylvania; and Fort Chaffee, Arkansas.
- The Army transferred command and control of Fort Dix, New Jersey; Fort Totten, New York; and CE Kelly Support Center, Pennsylvania, to the Army Reserve.

- The Navy completed closure of Naval Air Station (NAS) South Weymouth, Massachusetts, and moved its assets to NAS Brunswick, Maine, and Westover Air Reserve Base and Fort Devens, Massachusetts. Construction at NAS Fort Worth Joint Reserve Base, Texas, continues, with completion and transfer of all scheduled units from NAS Dallas to NAS Fort Worth by early 1999.
- The Air National Guard is building facilities at Fort Drum, New York, and Scott Air Force Base (AFB), Illinois, to accommodate the closures of Griffiss AFB, New York, and O'Hare International Airport, Illinois.

The realignments in 1997 enhanced the Reserve and active components' ability to accomplish training and increase mission readiness. In addition, a well-managed annual construction program has yielded as many as 123 new facilities to accommodate Reserve component mission requirements. The Department seeks to take advantage of economies of scale by combining and co-locating active and reserve component facilities and operations whenever possible.

CONCLUSION

An integrated Total Force is the key to achieving the goals of shaping, responding, and preparing for the challenges and opportunities confronting the nation today and tomorrow. Using the concepts and principles of the National Military Strategy, the Concept for Future Joint Operations (*Joint Vision 2010*), and the Total Force Policy, the Department of Defense will continue the evolution towards a seamlessly integrated, cost-effective force.

Chapter 10

PERSONNEL

The U.S. military is the finest in the world because of the outstanding quality of its service members. Its highly skilled and motivated force is the result of a strong and sustained commitment to robust recruiting, training, compensation, and quality of life programs.

RECRUITING HIGH QUALITY PEOPLE

Each Service must recruit and commission enough people each year to sustain the force and to ensure seasoned and capable leaders for the future. As a whole, the Department of Defense must annually recruit about 200,000 youth for the active duty armed forces, along with approximately 150,000 for the Selected Reserve. Across the Department, recruiting requirements for FY 1998 are slightly lower than those from FY 1997.

Recruits with a high school diploma are especially valued. Years of research and experience show that about 80 percent of recruits who hold a high school diploma will complete their initial three years of service. Fewer than 50 percent of those who failed to complete high school will do that. Those holding an alternative credential, such as the General Educational Development certificate, fall between those extremes. Over the past five years, more than 95 percent of all active duty recruits have held a high school diploma, compared to 77 percent of American youth ages 18 to 23.

Aptitude also is important. All recruits take a written enlistment test called the Armed Forces Qualification Test (AFQT), which measures math and verbal skills. Again, research and experience show that those who score at or above the 50th percentile on the AFQT demonstrate greater achievement in training and job performance compared to those below the 50th percentile. Roughly 70 percent of recent recruits scored above the 50th percentile of a nationally representative sample of 18-23 year olds.

Challenges in a Changing Recruiting Environment

Since 1975, the Department of Defense annually has conducted the Youth Attitude Tracking Study (YATS), a computer-assisted telephone interview of a nationally representative sample of 10,000 young men and women. This survey provides information on the propensity, attitudes, and motivations of young people toward military service.

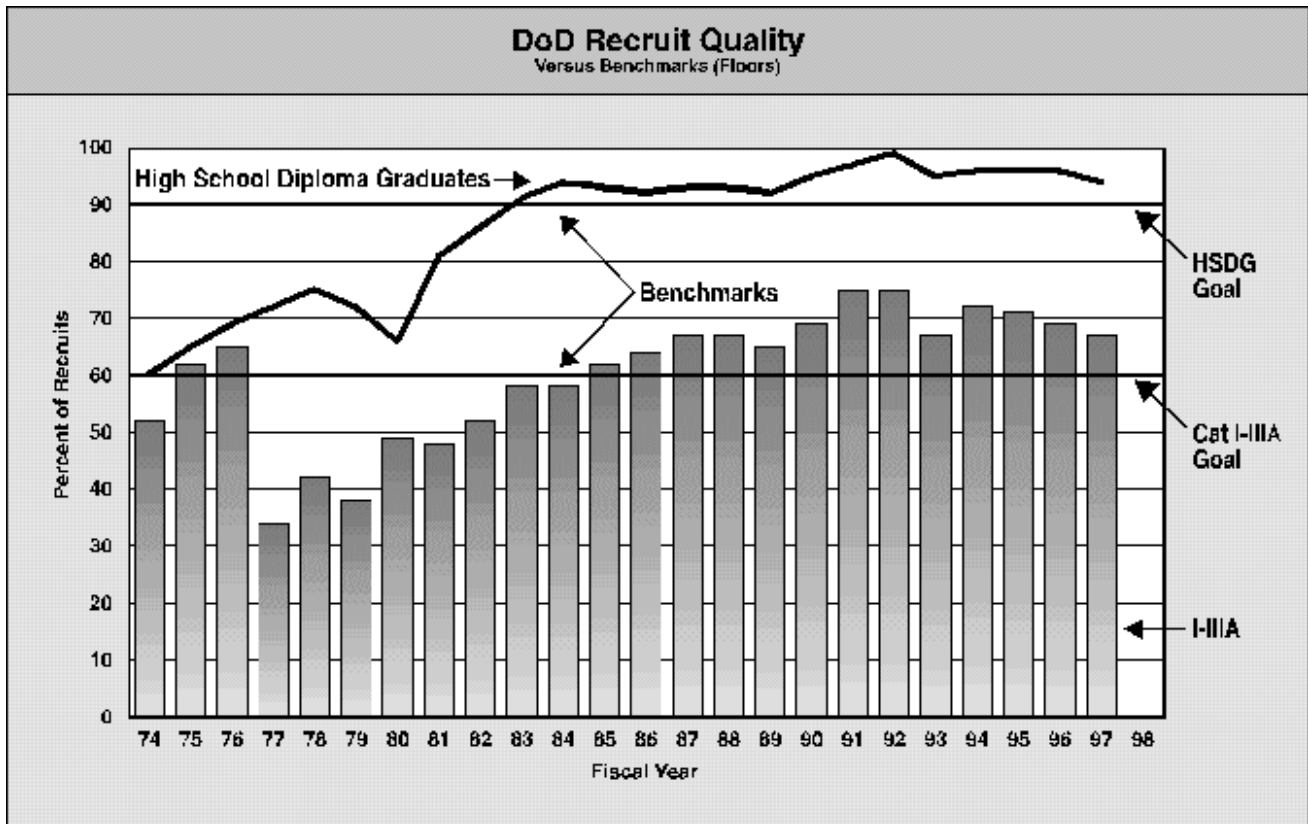


Table 13

Quality and Numbers of Enlisted Accessions—Active

Component/ Service	FY 1997 Quality Indices		Accessions ^a (in thousands)			
	Percent High School Diploma Graduates	Percent Above Average Aptitude AFQT I-III A	FY 1997 Objectives	FY 1997 Actual	FY 1998 Planned ^b	FY 1999 Planned ^b
Army	90	68	82.0	82.1	75.0	77.8
Navy	95	66	50.1	50.1	55.6	47.6
Marine Corps	96	65	34.5	34.5	33.8	34.7
Air Force	99	79	30.3	30.3	30.0	31.2
TOTAL	94	69	196.9	197.0	194.7	191.3

^a Includes prior service accessions. Only Army and Navy recruit to a prior service mission.

^b Based on Service Recruiting Production Reports and DoD FY 1999 Budget Estimates.

Enlistment propensity is the percentage of youth who state they definitely or probably plan to be serving on active duty in one of the Services in the next few years. Research has shown that the expressed intentions of young men and women are strong predictors of enlistment behavior.

Results from the 1997 YATS show that, overall, the propensity of young men for military service has not changed significantly in the last three years. In 1997, 26 percent of 16-21 year-old men expressed interest in at least one active duty Service, about the same as in 1996 (27 percent) and 1995 (28 percent). The propensity of 16-21 year-old women, however, declined significantly, from 14 percent in 1996 to 12 percent in 1997. In the previous 5-year period, as career opportunities in the Services opened to women and more women enlisted, women's propensity increased gradually, from 12 percent in 1992 to 14 percent in 1996. The 1997 drop returned women's propensity to 1992 levels.

During the early 1990s, enlistment propensity declined as the Services experienced serious cuts in recruiting resources. In 1995, 1996, and 1997, recruiting advertising increased, and the 1995 and 1996 YATS results suggested that the decline in propensity might have stabilized. Nevertheless, in considering enlistment propensity from 1995 to 1997, there was a downward trend; this is troubling given the low levels of national unemployment. Thus, recruiting in 1998 will remain challenging. Continued investment in recruiting and advertising resources is required to assure that the pool of young men and women interested in the military will be available to meet Service personnel requirements in the future. Appendix G contains additional detail on 1997 YATS results by gender and race/ethnicity.

National Service and Recruiting Programs

The Department has looked at the potential impact of National Service on military recruiting, and believes that both programs can coexist successfully since the National Service program is smaller and the value of its benefits is of lower monetary value than military enlistment benefits.

Recruiting for the Selected Reserve

With the increased reliance on the Reserve components, the Department must continue to focus on signing up high quality prior service and non-prior service recruits. During recent years, the Department has experienced considerable success in recruiting for the Reserve forces. However, the approaching completion of the active force drawdown will mean fewer members entering the prior service pool for Selected Reserve membership. This will increase the need for non-prior service recruiting. To meet this challenge, DoD will require increased advertising budgets and more non-prior service recruiters, especially after the downsizing of the Reserve component slows and the Department's personnel needs increase.

Table 14

Quality and Numbers of Enlisted Accessions—Selected Reserve						
FY 1997 Quality Indices Non-Prior Service				Total Accessions Non-Prior and Prior Service		
Component/ Service	Percent High School Diploma Graduates	Percent Above Average Aptitude AFQT I-III A	FY 1997 Objective ^a	FY 1997 Actual ^a	FY 1998 Planned ^b	FY 1999 Planned ^b
Army National Guard	83	55	59,262	63,495	56,638	56,911
Army Reserve	94	67	47,935	47,147	47,900	50,450
Naval Reserve	N/A ^c	N/A ^c	16,650	16,801	18,264	18,624
Marine Corps Reserve	97	76	10,578	10,744	10,700	10,600
Air National Guard	96	76	9,996	9,956	8,666	10,325
Air Force Reserve	95	76	9,618	7,254	10,570	8,729
TOTAL	89	63	154,039	155,397	153,098	155,639

^a Based on Service Component Recruiting Production Reports.

^b Based on Service Component Recruiting Production Reports and DoD FY 1999 Budget Estimates.

^c The Naval Reserve only enlisted prior service recruits in FY 1997.

TREATING PEOPLE FAIRLY

Pay and Allowances

In order to attract, motivate, and retain quality people, the armed forces must provide a standard of living for its members that can compete with the private sector. The Administration requested and Congress approved a 2.8 percent pay raise for FY 1998, and the Administration has pledged support for full current law pay raises through the end of the decade.

This past year, the Department of Defense implemented a number of new compensation initiatives providing significant benefits to a broad range of service members. The new initiatives include the Variable Housing Allowance (VHA) Floor, increased Dislocation Allowance, Basic Allowance for Quarters for E-5s on sea duty without dependents, round-trip travel to pick-up or drop off a privately owned vehicle, and government storage of vehicles when they cannot be shipped or when the member is deployed in excess of 30 days.

Additionally, the Department proposed a number of initiatives that were included in the FY 1998 National Defense Authorization Act. The most significant were reform of the Housing Allowance and Basic Allowance for Subsistence (BAS).

Housing allowance reform is the first step in stabilizing, and then reducing, the percentage of housing costs absorbed by the individual service member. It will eliminate the complicated VHA formulas and cumbersome survey of service members, and replace them with a single housing allowance based on commercially provided housing cost data. This will result in an allowance for every pay grade and every location where military members are assigned. It will help ensure the allowances are sufficient to provide each member with the ability to obtain housing that meets a minimum adequacy standard. This reform will also decouple housing allowances from pay raises and get the right amount of money to the right people, limiting the housing cost burden on service members. Phased in over a multiyear period, implementation will be cost neutral.

Reform of BAS will correct long-standing pay inequities between enlisted service members. It will also delink increases in BAS from pay raises and link increases in the subsistence allowance to an appropriate food cost index. The BAS reform efforts, again phased in over a multiyear period, will result in an increase in the level of subsistence allowances for over 400,000 junior enlisted personnel and ensure that the allowance adequately covers the food costs of enlisted military members.

Other legislative initiatives in the FY 1998 National Defense Authorization Act include:

- Increased maximum Aviation Continuation Pay bonus from \$12,000 to \$25,000 to retain aviators in critical shortages and increased Aviation Career Incentive Pay for aviators with over 14 years of service.
- \$2,000 overseas tour extension bonus for 12 month extensions.
- Increased maximum nuclear officer bonus and special pay to arrest declining retention.
- Increased hazardous duty incentive pay from \$110 to \$150, and free fall parachute duty pay from \$165 per month rate to \$225 per month.
- New bonus for dental officers and increased dental officer incentive pay.
- Family Separation Allowance increased from \$75 to \$100 a month.
- Authorization for the Department to design and implement a Deployment Pay to replace Certain Places Pay.

These initiatives all work to improve the quality of life of service members and their families, while preserving high levels of personnel readiness.

Improving Compensation

President Clinton chartered the 8th Quadrennial Review of Military Compensation (QRMC) in 1995, as required by Title 37 U.S.C. He directed that this review look to the future and identify

the components of a military compensation system that will attract, retain, and motivate the diverse work force of the 21st century.

The 8th QRMC report, completed in 1997, describes how the Department of Defense and the Services can organize, manage, and reward their people by aligning all elements of the human resource management system to support organizational leaders throughout DoD. This strategic approach to human resource management will contribute to the Department's revolution in business affairs. The QRMC affords an opportunity for DoD to change strategic direction, to make its leaders even more effective, and to further enhance its overall organizational performance.

IMPROVING FORCE MANAGEMENT

Promotions

The Services have worked hard to provide reasonably consistent promotion opportunities in order to meet requirements, ensure a balanced personnel force structure, and provide a meaningful opportunity for all service members. There is a common misconception that promotions have been frozen because of the drawdown, but that is simply not the case. Promotions have remained generally steady during the drawdown. For FY 1997, the Services promoted 112,038 soldiers, sailors, airmen, and Marines into the top five enlisted pay grades (E-5 to E-9). Officer promotion opportunity also has held steady, generally remaining within 5 percent of pre-drawdown levels. For the future, the Department expects promotion opportunity will remain steady.

Force Stability

The Department of Defense is taking steps to return a sense of stability to the armed forces following the unavoidable turbulence of the drawdown. Improvements in compensation, housing, and family support are central to creating this sense of stability. Less quantifiable factors also contribute to a stable environment for service members, including challenging career opportunities, healthy military communities, and the availability of a military career for those who perform well.

Personnel tempo (PERSTEMPO), the amount of time service members spend away from their home base, is an important component of force stability. PERSTEMPO has increased as DoD has reduced forces stationed overseas since the end of the Cold War. While there are certain units and military specialties which have been deployed repeatedly, DoD officials believe the current PERSTEMPO of the force as a whole is sustainable and that overall morale and readiness remain at acceptable levels. Nevertheless, the Department has made PERSTEMPO a focus of its quality of life effort in order to avoid future problems.

Equal Opportunity

It is the policy of the Department of Defense to provide an environment for military members and civilian employees that is free from unlawful discrimination and sexual harassment. The year

1998, which marked the 50th anniversary of Executive Order 9981 to racially integrate the armed forces, serves as a milestone to measured progress. In a June 1997 speech on the status of race relations in America, President Clinton said:

But the best example of affirmative action is in our military. Our armed forces are diverse from top to bottom—perhaps the most integrated institution in our society and certainly the most integrated military in the world. And, more important, no one questions that they are the best in the world. So much for the argument that excellence and diversity do not go hand in hand.

The Secretary of Defense has demonstrated the Department's resolve to employ the talents of America's diverse population. He established a Department-wide goal to increase employment of people with severe disabilities from 1.2 percent to 2.0 percent of the civilian work force. The Workforce Recruitment Program for College Students with Disabilities, cosponsored by DoD and the President's Committee on Employment of People with Disabilities, provided a vital pipeline to help achieve that goal. In the summer of 1997, DoD employed over 120 students through that program at activities nationwide. For the summer of 1998, funds are available to increase the total number of participants, support management of the program government-wide, and purchase adaptive technology and services for individuals employed.

The Department has also sharpened its focus on equal opportunity, sexual harassment, and related human relations issues. The Secretary took several actions to maintain the effectiveness of U.S. military forces with clear and fair policies. The actions include the appointment of an independent panel of private citizens to review gender integrated training and related issues in the Services and the convening of a task force to review policies and practices essential to ensuring respect for the individual while maintaining good order and discipline.

STATUS OF WOMEN IN THE MILITARY

The Department has continued to progress in the area of integrating women into units and positions traditionally closed to them. The number of women assigned to combat aviation squadrons and aboard combatant naval vessels continues to grow. Their presence is also growing in Army and Marine Corps ground units, although women are still excluded from serving in units below brigade with the primary mission of engaging the enemy in direct combat on the ground.

The proportion of women in the Services continues to increase, standing at almost 14 percent today. As a result of the Department's actions over the past four years, women are competing equally for assignment in some 260,000 additional military positions for which they were previously not allowed to compete. During 1997, the Department achieved several firsts, evidence that women are performing in positions of greater responsibility. For example, the Army promoted its first woman to lieutenant general; the Air Force selected its first woman fighter pilot for Test Pilot School; and the Marine Corps pinned wings on its first female combat pilot.

Today, over 80 percent of the total jobs are open to women. More than 90 percent of the career fields in the armed forces can now be filled with the best qualified and available person, man or

woman. This provides DoD greater flexibility in assigning people to fill worldwide positions and enhances readiness in today's smaller force.

Defense Advisory Committee on Women in the Services

The Defense Advisory Committee on Women in the Services (DACOWITS) was established in 1951 to assist the armed forces in recruiting quality women for military service. The role of DACOWITS has since evolved into advising the Secretary of Defense on all policies relating to the utilization and quality of life of female service members, as well as general quality of life issues.

In 1997, the DACOWITS Executive Committee conducted its annual overseas installation trip in the Western Pacific, visiting bases in Alaska, Korea, Japan, Okinawa, and Guam. Over 2,400 service women and men provided their views to DACOWITS members on issues ranging from operating and personnel tempo to the need for improved gynecological care. Significantly, the primary issues raised by service members were unrelated to gender.

In 1997, the Committee focused on three significant issues:

- The percentages of women in each Service and their representation in newly opened communities, particularly women in senior enlisted female leadership roles.
- Each Service's system for responding to alleged incidents of discrimination and sexual harassment, including the training provided to military professionals involved in these systems.
- Initiatives and research directed at improving the quality of health care for women in all Services.

CIVILIAN PERSONNEL

Recruitment and Hiring

Managing the work force humanely and efficiently continues to be a primary emphasis of the civilian personnel program. With planned cuts, base closings, and the recommendations of the Quadrennial Defense Review, the Department stands to lose nearly 110,000 additional civilian positions by the end of FY 2003. Nonetheless, regular attrition requires the Department to hire thousands of workers each year. Therefore, DoD remains committed to recruiting and retaining a well-trained and diverse work force ready to meet the challenges of the next century.

To help fulfill the Administration's pledge to end traditional welfare, DoD also implemented a welfare-to-work program in June 1997. DoD's components and nonappropriated fund activities have already hired more than 360 former welfare recipients for positions ranging from child development project assistant to cashier to electrician. The program involves special partnerships with private industry concerns, state agencies, local welfare offices, high schools, and nonprofit

organizations across the country. These collaborations variously involve recruitment, training, mentoring, and other support to help ensure a successful transition.

Civilian Downsizing and Transition Assistance

The Department continues to use innovative personnel and incentive programs to ease the transition for employees affected by downsizing. These programs have allowed the Department to eliminate 329,000 civilian positions since the end of FY 1989 with minimum work force turbulence. DoD has experienced eight consecutive years of downsizing while maintaining an involuntary separation rate of less than 10 percent.

Since 1993, incentive offerings have helped prevent the need for 105,000 layoffs. During that same time, the Department's Priority Placement Program has enabled DoD to reabsorb approximately 37,000 other employees who lost their positions. With the use of the Voluntary Early Retirement Authority, the Department saved 46,000 employees from involuntary separation, change to lower grade, or directed transfer outside their commuting area. The Defense Outplacement Referral System also helped locate new jobs for nearly 2,000 employees with other private and public sector employers.

Civilian Training, Education, and Development

STREAMLINING MANAGEMENT OF OFFICE OF THE SECRETARY OF DEFENSE-SPONSORED HIGHER EDUCATION ORGANIZATION AND PROGRAMS

In conjunction with the Quadrennial Defense Review, DoD has undertaken an analysis of educational and professional development programs sponsored by the Office of the Secretary of Defense, including the defense agencies and field activities, to find alternatives for streamlining and strengthening program management. Development of the civilian work force is receiving increased attention as downsizing expands the performance requirements of continuing employees and DoD seeks to avoid skills imbalances.

DEVELOPING LEADERSHIP

The Defense Leadership and Management Program (DLAMP) is a systematic, Department-wide program of joint civilian education and development. Implementing recommendations of the Commission on Roles and Missions of the Armed Forces, DLAMP provides the framework for developing future civilian leaders with a DoD-wide capability. It also fosters an environment that nurtures a shared understanding and sense of mission among civilian employees and military personnel. Inaugurated in 1997, DLAMP incorporates graduate education, rotational assignments, and professional military education to prepare civilians for key leadership positions.

Defense Partnership Council

Labor-management partnership has taken hold throughout DoD. The National Partnership Council's October 1996 *Report to the President on Progress on Labor-Management Relations*

showed that 61 percent of DoD employees represented by unions are covered by partnership arrangements.

Through FY 1997, the Defense Partnership Council has advanced this mandate by including its labor partners in discussions on issues that are key to the future of DoD and its civilian work force. For example, DoD's labor partners have been included in briefings of the Quadrennial Defense Review and Defense Reform Task Force. The latter actively sought information and ideas from representatives of unions and employee associations.

Through its active labor-management cooperation training and facilitation programs, DoD directly assisted approximately 70 installation-level partnerships during 1997. DoD is recognized as the leader in the federal sector for this effort.

Improving Personnel Management

CIVILIAN PERSONNEL REGIONALIZATION AND SYSTEMS MODERNIZATION

The Department's efforts to regionalize civilian personnel services and deploy a modern information management system are well under way. By the end of FY 1997, the ratio of personnel specialists to employees served had improved steadily from a 1:61 baseline to nearly 1:72. The ratio will continue to improve as the modern system is deployed and regionalization is completed.

Regionalization capitalizes on economies of scale by consolidating processing operations and program management into 23 regional service centers. Operations providing face-to-face service will remain at over 300 support units at DoD installations worldwide. Through the end of FY 1997, the military departments and defense agencies had established 17 regional service centers and almost 50 percent of the planned customer support units. The remaining regional service centers will be established by early FY 1999.

CIVILIAN PERSONNEL MANUAL REVISION

An ongoing revision of the Civilian Personnel Manual will further streamline the civilian personnel system. Already 23 of the 52 subchapters have been updated and published. The balance will be completed in FY 1998. Overall, this effort will standardize core policies while eliminating over half of the existing regulations.

Improving Efficiency and Effectiveness

FIELD ADVISORY SERVICES

In 1997, the National Performance Review selected the Field Advisory Service Division of the Defense Human Resources Field Activity to receive Vice President Gore's Hammer Award for its continuing excellent service. The Field Advisory Service Division is the Department's principal source of guidance in the areas of benefits and entitlements, pay and compensation, job classification, and labor relations. The organization continues its outstanding support to the DoD

personnel community by responding to 93 percent of inquires within one work day and 98 percent within three work days.

INJURY COMPENSATION

The Department has consolidated its injury compensation and unemployment compensation programs, providing an effective and efficient way to manage both programs. Initiatives include proactive claims processing and verification procedures, use of liaison personnel co-located with Department of Labor district offices, and a comprehensive automated data tracking system. Use of the liaison personnel and installation and component access to the data tracking system have directly contributed to a decrease in the Department's injury compensation costs for three consecutive fiscal years, culminating in an \$11 million (1.97 percent) decrease for 1997. This combined program has also been selected to receive a Hammer Award.

FAMILY FRIENDLY WORKPLACE INITIATIVES

The Department continues to be an important participant in developing a telecommuting test program for federal employees. More than 160 employees currently use General Services Administration telecommuting centers.

CONCLUSION

A country's national security is only as strong as the people who stand watch over it. The men and women of the U.S. armed forces demonstrate their courage and excellence every day, protecting the lives and interests of the American people. In turn, the nation must continue to provide its military personnel with the finest possible training, support, and quality of life.

Chapter 11

READINESS

The United States plays a unique and important role among nations. The diverse demands of today's international security environment mean that the United States continues to require the best trained, best equipped, and best prepared military forces, capable of performing a wide range of missions effectively. Recruiting, training, retaining, equipping, and providing for these forces is an ambitious undertaking and the number one priority of the Department of Defense. The Department's challenge is to maintain the appropriate balance between the competing priorities of modernization, ongoing mission responsibilities, and current readiness. Thus, readiness is Government Performance and Results Act Corporate-Level Goal 5.

AMERICA'S FORCE IS READY

Overall, the Department's first-to-fight units continue to remain at high levels of readiness, while the readiness of later deploying units remains within historical norms. All major combat and key support forces are ready to respond effectively, and the Department is pursuing a number of initiatives to ensure their continued readiness. DoD routinely assesses the readiness of its forces to respond to a variety of scenarios, ranging from major theater war through the full range of smaller-scale contingencies to selected asymmetrical threats.

While the overall readiness of forces is good, the Department is closely watching a few areas of concern. These concerns include issues such as personnel tempo (PERSTEMPO) and pilot retention. Managing the load on people, known as the PERSTEMPO level, is critical to maintaining a ready force. As General Hugh Shelton, Chairman of the Joint Chiefs of Staff, stated in his confirmation hearing, "Foremost is a conviction that people are more important than hardware." Military members are currently shouldering a large deployment schedule. DoD's ongoing operations involve about 35,000-40,000 people at any time. With a force of nearly a million and a half active duty personnel, and nearly a million Reservists, this is a load the Department can meet. But the burden is not always spread evenly. Certain military skills or specialized units may be called on to deploy more often than others. DoD's new Global Military Force Policy is one of the initiatives undertaken to improve the way the load on people is regulated.

DoD faces another problem in pilot retention. Increased airline hiring, coupled with the earlier force drawdown, has raised concerns about maintaining a robust pool of qualified pilots for the future. All Services are aggressively managing this situation, with initiatives including reduced pilot deployment tempo, improved quality of life, and increased aviation compensation.

NATIONAL SECURITY STRATEGY AND READINESS

America's leadership in world affairs relies on ready military forces. Because U.S. forces are organized and trained to support the National Security Strategy, they must be prepared for, and on occasion must engage in, operations that support the full spectrum of national interests.

Shaping the International Environment

The U.S. military plays an essential role in building coalitions and shaping the international environment in ways that protect and promote U. S. interests. On a day-to-day basis U.S. defense efforts help to:

- Promote regional stability.
- Prevent or reduce conflict and threats.
- Deter aggression and coercion.

Responding to the Full Spectrum of Crises

Despite best efforts to shape the international security environment, the U.S. military will, at times, be called upon to respond to crises in order to protect U.S. interests, demonstrate U.S. resolve, and reaffirm the role of the United States as a global leader.

Therefore, U.S. forces must also be able to execute the full spectrum of military operations. These include:

- Deterring an adversary's aggression or coercion in crisis.
- Conducting concurrent smaller-scale contingency operations.
- Fighting and winning major theater wars.

Forces must meet standards in terms of the:

- Time it takes to mobilize, train, and deploy to a theater of operations, and engage.
- Military missions these forces must execute once engaged.
- Length of time these forces should remain engaged.
- Time to disengage, refit, and redeploy to meet priority missions.

Keeping U.S. forces ready to fight requires an appropriate force structure, modernized equipment, adequate maintenance, training and logistics support, and the requisite trained and motivated personnel. A deficiency in any of these elements can hurt readiness, inhibiting force deployment. In managing readiness, the Department strives to maintain a balance among these crucial elements to ensure that forces arrive on time and fully capable to meet mission demands. All units are expected to meet their readiness goals.

Preparing Now for an Uncertain Future

As the United States moves into the next century, it is imperative it maintain the military superiority essential to global leadership. To be able to respond effectively in the future, DoD must strive for information superiority and technological innovations.

READINESS CHALLENGES

It takes resources and time to develop and sustain ready forces. Readiness is a cumulative process, the result of many years of care and attention. It takes 20 years to develop senior military leaders, five to ten years to develop and field technologically superior equipment, and one to two years to develop a sustainment program to provide trained and ready units. Meeting DoD readiness goals in today's dynamic political, fiscal, and operating environment presents a daily challenge. A decline in resources and adequately educated and trained people will lengthen the amount of time it takes to rebuild readiness. Through its efforts to ensure a highly capable force, DoD has encountered tough challenges to readiness. Those challenges fall into four key areas: attracting and retaining quality people, training the forces, keeping equipment ready, and ensuring ready forces.

CHALLENGE: ATTRACTING AND RETAINING QUALITY PEOPLE

Managing Time Away From Home

One of the top challenges to readiness is managing the various demands placed on the forces, while ensuring they remain trained and ready. The time service members spend away from home station, PERSTEMPO, places stress on both the individuals and their families. Similarly, excessive PERSTEMPO by some personnel may shift an extra workload to those who remain at the home station. Deployments are a part of military service. Yet, it is necessary to balance the needs of the Service for training, exercises, and peacetime operations with the needs of the soldiers, sailors, airmen, and Marines for a stable and predictable tempo level. To that end, DoD has taken the following steps to better manage and monitor the peacetime tempo of the force:

- Each Service is addressing its specific PERSTEMPO concerns:
 - The Army limits the number of deployed days in a single deployment to 179. The Army Chief of Staff will consider extensions on a case-by-case basis. However, the goal is no more than 120 days per year.
 - The Navy manages PERSTEMPO through its deployment cycle. This consists of a maximum deployed length of six months, with a minimum turnaround time between deployments equal to twice the length of the deployment.
 - The Marine Corps has established the goal of a deployed length of six months and seeks a time between deployments equal to twice the length of the deployment.
 - The Air Force has limited the number of deployed days in a single deployment to 179 and has established a goal of military members being away from home station no more than 120 days per year.
- The Global Military Force Policy establishes a protocol to help manage the PERSTEMPO of highly tasked units. These units, such as the Airborne Warning and

Control Systems, are normally few in the force structure (low density, or LD) yet are called upon to support almost all contingency operations (high demand, or HD). The high number of regional commander in chief (CINC) missions led to excessive deployment of some HD/LD units to such a degree that unit members in some cases were not able to keep current in unit training. The Global Military Force Policy establishes deployment thresholds for these units. The Secretary of Defense is the approving authority for deployments exceeding the threshold. The policy encourages maintaining required levels of unit training and optimal use of the units across all CINC missions, while discouraging overuse of selected units.

- The Department is developing a centralized repository for PERSTEMPO data. When fully operational, DoD will be able to monitor deployment demands placed on service members and will ensure visibility by senior leaders into the burdens placed upon the men and women in uniform.

The Department also is exploring whether additional initiatives are needed to regulate excessive PERSTEMPO.

Pilot Retention and Recruitment

Another emerging readiness issue is pilot retention. Early indications are that the Department will be unable to retain the optimal number of pilots due to airline hiring and PERSTEMPO concerns. While no immediate readiness impacts are forecast, these critical personnel assets need to be managed carefully since a capable and combat ready pilot takes years to develop. The Department is taking this issue very seriously. The military departments have initiatives planned to mitigate the potential shortfall. Plans include enhancing compensation packages and reducing PERSTEMPO to improve quality of life.

CHALLENGE: TRAINING THE FORCES

The Department's training objective is to ensure that U.S. forces have the highest quality education and training, tailored to needs, delivered whenever and wherever it is required. The challenge is for DoD to modernize its training policies and processes to ensure that forces are continually ready to meet the challenges of today's dynamic global strategic environment.

Service Unit Training

Service unit training is a key building block to Service readiness. Normally, unit training is scheduled periodically so that all individuals may complete their Service mission essential task list training and thus maintain the unit's required readiness. The military departments continue to pursue vigorous unit training programs. The Air Force, for example, has recently developed a new approach to ensure that units' required flying hours are based on meeting the CINCs' operational needs. The Department continues to resource unit training for first deploying forces at 100 percent of requirement, to ensure highly ready forces in times of crisis.

Many of DoD's engagement operations impact a unit's ability to meet all its training objectives. For example, because units deployed in support of humanitarian operations are not using wartime fighting skills, their participation can degrade training readiness. While this sometimes occurs, it presents an acceptable risk to meeting the National Security Strategy. The Department recognizes this issue and has initiatives under way to mitigate the negative effects. For example, Army units in Bosnia rotate crews to Hungary to accomplish gunnery training.

Learning Technology

The Department's training will involve new environments and methods of learning and performance aiding. It will use information technologies to provide an integrated global network of knowledge resources. It will be more distributed, adaptive, and tailored to operational missions and tasks. In particular, the training will take advantage of key advances in learning technology.

MODELING AND SIMULATION

Today's operations involve joint/interservice interactions at organizational levels lower than envisioned in traditionally designed military force structure and doctrine. The Department is using the explosion in modeling and simulation technology to allow less expensive, more realistic, and more frequent training of joint command and control elements.

EMBEDDED TRAINING

Because each operation is unique, forces require additional on-the-spot training to prepare for new roles. Embedding training in the unit itself, either on the operational platform or in a deployable training device (such as a simulator), allows just-in-time training tailored to the immediate situation.

ADVANCED DISTRIBUTED LEARNING METHODOLOGIES

The Department's training infrastructure is large and requires a large end strength because so many people must spend time in schools rather than in operational units. With advanced distributed learning, the Department can take training and education to the student, teaching or reinforcing infrequently used or quickly forgotten skills on training devices located in the unit. By permitting people to remain in their operational units, distributed learning increases unit readiness. It also allows for a more efficient training infrastructure.

CHALLENGE: KEEPING EQUIPMENT READY

Aircraft Engine Initiatives

Since late 1996, the Air Force has experienced some decline in the overall engine mission capable rates and spare engine availability. This deterioration of Air Force engines has been a result of many factors, including technical problems, base realignment and closure actions, spare parts shortages, and resource levels. Although these engine problems have not seriously

degraded unit readiness, the Department is aggressively working to rectify these engine issues. To that end, the Air Force has implemented both near- and long-term policies. For the near term, policies focus on improving parts support to the repair process. Initiatives include improved parts forecasting, revisions in the funding allocation process, an increase in engine stock fund obligation authority, improvements in shop floor material control, and increased utilization of Defense Logistics Agency support.

The Department also developed five proactive policies which aim to solve the root causes of the engine problems in the long term. These policies are:

- Development and implementation of engine life management plans.
- Prototype of an alternative support process.
- Development of engine decision support model(s).
- Revision of engine maintenance policies.
- Increased funding for the engine component improvement program.

All of these policies are designed to preclude the engine problems and prevent any direct impact to unit readiness.

Table 15				
Deferred Maintenance Requirements (Millions of Dollars)				
	FY 1996	FY 1997	FY 1998	FY 1999
Army	259	212	245	269
Navy	677	692	630	670
Air Force	0	208	310	323
Total	936	1,112	1,185	1,262
Note: FY 1996 actual; FY 1997-1999 estimates. Current as of January 1998.				

Depot Maintenance Backlogs

Depot backlogs have always been a key readiness concern. If maintenance backlogs increase, unit readiness may be affected negatively. While backlogs exist today in aviation maintenance, they are at levels that do not cause serious problems. For example, funding for the Navy aviation depot maintenance program has been increased by approximately \$600 million through FY 2003. The Navy also has developed a new readiness-related metric designed to reduce the number of backlogged aircraft and improve the material readiness of deployed or deploying squadrons. Additionally, in accordance with Quadrennial Defense Review guidance, the projected funding for ship depot maintenance has increased by approximately \$800 million over the Future Years Defense Program to more robustly support estimated future requirements and to minimize the

potential future migration of funds into the operations and support accounts. Deferred depot maintenance requirements for recent years are shown in Table 15.

Improved Logistics Management

The scope and variety of modern weapons and support systems require a complex yet highly responsive logistics management system. The Defense Logistics Agency and Service logistics communities manage hundreds of thousands of items on a global scale. To optimize resources and maximize readiness, inventories must be kept small and responsive—the concept of lean logistics. Lean logistics negates the need for large parts inventories while still rapidly responding to the parts requirements of operational units. Parts arrive as soon as they are needed, so warehouse requirements are minimized. Modern computer and communication technologies will soon bring to fruition the concept of providing units and depots constant visibility of all items in the global inventory. Parts will be obtained from depots or other installations around the world, minimizing delays in ordering and equipment becoming nonoperational due to parts shortages.

To improve responsiveness to DoD customers around the world, the logistics community has established the goal of reducing the response time of the wholesale logistics system by 50 percent in three years. In 1997, the Department began measuring the performance of the wholesale system in response to customer requisitions. Early in 1997, it took an average of 36 days from the date a customer requisitioned an item until the customer received that item if the requisition had to be passed to the wholesale system. The Department's goal is to reduce wholesale logistics response time to 18 days by 2000.

In summary, the Department's efforts to improve its logistics system focuses on managing parts from creation to operational use in minimum time. These improvements have reduced cost, improved supplier responsiveness, and increased unit readiness. Of course, funding levels have a direct effect on the level of parts entering the system. If funding shortages occur, the velocity of parts in the logistics system will decrease.

CHALLENGE: ENSURING READY FORCES

Funding Readiness Accounts Adequately

The Department must ensure that adequate resources are allocated to ensure ready forces. Structuring the budget to ensure adequate readiness resources involves a rigorous, multistep process. The process begins with the Secretary's guidance to the Services and other defense components in setting Department priorities. In the latest budget cycle, the Secretary directed the Services to provide enough funding in future programs and budgets to ensure their forces were ready to carry out missions at acceptable levels of risk.

The Department's emphasis on fully funding all readiness accounts will avoid having to later move funds from other business areas or the investment accounts. The Services have adequately funded their readiness accounts over the Future Years Defense Program, so the risk of funds migration is at a manageable level. The Department's FY 1999 budget request further aids readiness by increasing funding in readiness risk areas, such as the flying hour programs and

depot maintenance. Not all currently identified readiness risk areas can be solved solely by funding actions; some will require further study as well as nonfiscal decisions.

In light of the improvements made, the Department's budget is balanced and realistic. The funding provided in the FY 1998 budget will maintain adequate readiness levels in the Services, with one important caveat—the Services must receive timely funding for unbudgeted contingency operations. Without this funding, readiness can degrade rapidly. This is because most contingencies are unplanned, and the Department must therefore fund them by reallocating other funds. The later the operation occurs in a fiscal year, the less flexibility the Department has in funding alternatives. Usually, the cost can only be absorbed from the Operation and Maintenance (O&M) appropriation, which provides the funding for core readiness activities. By the fourth quarter of the fiscal year, the only places from which O&M funds can be diverted are the readiness accounts that support training and maintenance. The key resource lost while waiting for supplemental funding is time. Dollars arriving late in the fiscal year cannot buy back missed training or quickly put a delayed maintenance program back on track.

The Department's challenge, then, has been to develop alternative funding to avoid damaging the readiness accounts. Currently, the Department is able to fund ongoing contingency operations. Yet, there will remain unforeseen operations for which timely reprogramming authority will be necessary.

Readiness Assessment

Assessing readiness is one of the Department's toughest tasks. In an unpredictable world, U.S. forces must be able to adapt and respond to a wide spectrum of military and political circumstances. Thus, the Department must be able to monitor the readiness of the forces to accomplish the stated capability of winning two major theater wars. In addition, the Department must be able to measure the readiness of the forces to accomplish unplanned—and in many peacetime engagement cases unforeseen—operations other than war, frequently referred to as smaller-scale contingencies. Further, the Department must be able to measure the ability of the sustaining base to support either major theater wars or smaller-scale contingencies for extended periods. The Department's goal is a system that accurately measures the actual conditions in the field.

Better Assessment Forums—Senior Readiness Oversight Council

DoD's central forum for integrating readiness issues is the Senior Readiness Oversight Council (SROC). The council meets on a monthly basis to review, debate, and decide on critical readiness issues. The SROC is chaired by the Deputy Secretary of Defense; membership includes the Vice Chairman of the Joint Chiefs of Staff, Service Chiefs, Under Secretaries of Defense and of the military departments, and key DoD civilian leaders. One-third of the SROC meetings are devoted to reviewing the current readiness assessments provided through the Joint Monthly Readiness Review (JMRR). At these meetings, the Service Chiefs and the Vice Chairman provide a current and one year forecast assessment of the readiness of the operational Service units, as well as an overall assessment of the readiness of the armed forces to fight and execute the national military strategy. JMRR assessments provide a tool for the SROC in determining

whether near-term reallocation of resources is required to maintain readiness. JMRR assessments provided to the SROC show that, overall, the readiness of military units today is holding steady, with some indicators such as pilot retention and mission capable rates showing a decline.

SROC meetings are devoted to discussions of readiness issues. For example, an SROC agenda might address PERSTEMPO, personnel shortfalls or imbalances, pilot retention, or mission capable rates for aircraft. Other issues may arise from Status of Resources and Training System reports or a host of other sources of readiness issues. These sources include routine reviews of leading readiness indicators, reviews of program and budget requests, issues raised during Department readiness assessment trips to field units, or points discussed in congressional testimony. The Department is sensitive to the perception of a gap between official readiness reports and concerns voiced by some individuals in the operating forces. The SROC provides the forum through which senior leaders can review all aspects of readiness. The Department submits a Quarterly Readiness Report to Congress, providing a synopsis of the readiness status reviewed in SROC meetings.

Better Assessment Forums—Joint Monthly Readiness Review

A key part of the Chairman's Readiness System is the Joint Monthly Readiness Review, chaired by the Vice Chairman of the Joint Chiefs of Staff. The JMRR is designed to examine the armed forces' current readiness to execute the full range of the National Military Strategy, including peacetime engagement, deterrence and conflict prevention, and winning the nation's wars. The review provides the Chairman a key tool for accurate advice to the President and Secretary of Defense on the use of force; current and projected unit, combat support agency, and joint readiness; current force and support commitments; and how those commitments impact the flow of forces and services to warfighting commanders.

Created in conjunction with the SROC, the JMRR provides visibility into the CINCs' ability to integrate and synchronize Service-provided forces and combat support agencies by assessing joint readiness, as well as traditional readiness status of units provided by the Services. The JMRR process provides a joint perspective by focusing on the unified commanders' requirements to conduct joint operations with Service-provided and combat support agency assets across geographic regions vital to national interests. The scenarios used in the JMRR assessments change quarterly to explore possible conflict combinations such as force protection initiatives or a chemical and biological warfare threat. JMRR reports assess current and projected readiness over the following 12 months.

Better Assessment Processes—The Readiness Assessment System

The current readiness system is composed of tactical level information provided by Service-specific readiness systems and the Global Status of Resources and Training System (GSORTS), synthesized with operational level analysis from the CINCs and other combat support agencies via the Joint Monthly Readiness Review. These two levels feed the Chairman's Readiness System, which allows strategic assessment of the U.S. military's readiness to execute its assigned missions.

Although vastly improved in recent years, the GSORTS system still has its shortcomings. Unless carefully understood, the system provides little information on readiness to perform missions short of a major theater war. Additionally, this cumbersome system fails to sufficiently capture topical readiness concerns such as depot backlogs or infrastructure shortfalls.

To address these shortcomings, DoD is developing an integrated business plan to establish a Readiness Assessment System capable of addressing the full spectrum of missions required by the strategy. Its goal is to incrementally improve the current system by providing visibility into supply pipelines and by integrating leading indicators. This business plan is the underpinning for future readiness assessment development.

The Readiness Assessment System combines policy changes and new technology to improve the Department's ability to assess force readiness on a near real time basis. The new system will permit the Department to assess its readiness to meet the full range of military missions. The rapid progress of technological advances will provide more accurate and faster information gathering from desired information sources. As these are implemented, a broader and more in-depth picture of total readiness will become available to senior leaders. This fusion is already being undertaken in the current readiness data bases which support the Global Status of Resources and Training System (Enhanced) and the Joint Operation Planning and Execution System. This action will provide a graphic portrayal of unit data tied to the various operational and concept plans.

By taking advantage of rapidly advancing technology and other initiatives under development, such as the Global Combat Support System, the Department will incrementally develop a cost-effective readiness assessment tool that is user friendly, decreases errors, and reduces the manpower burdens on analysts. Also, the Department will conduct mobilization and crisis response exercises to assess readiness and sustainability. Lastly, the Department will improve scenario assessments used in the JMRR, the SROC, and in operational plan development to enhance analysis of current status and capability of forces to transition to tasked missions.

Medical Readiness

In conjunction with the Office of the Secretary of Defense and the Services, the Joint Staff is developing a force medical protection strategy within the framework of future joint health service support. The focus is on healthy and fit forces, casualty prevention across the operational spectrum, and casualty care and management during operations.

Force medical protection is the uppermost principle embedded in this strategy. It builds on lessons learned since the Gulf War, as well as the tenets contained in the National Military Strategy and *Joint Vision 2010*. The Military Health System provides health services in support of military operations by emphasizing readiness, health promotion, and managed care for eligible health care beneficiaries.

A key component of medical readiness is the experience gained through real-world health service support operations. The Department has provided medical support to numerous peacekeeping, noncombatant evacuations, and humanitarian assistance operations around the

world. In addition to supporting operations, the department also conducts exercises that provide active, Reserve, and National Guard medical personnel the opportunity to hone their wartime skills in a realistic environment, employing the equipment and systems they will deploy with in wartime or contingency operations.

To enhance force protection for deployed service members, the Department has implemented a Joint Medical Surveillance Policy. This new policy will accurately capture health status, health risks encountered, and health consequences of deployment throughout the Services. It will enable the precise assessment of individuals across time and will also capture population based data for trends and for post-deployment assessment.

DoD's Medical Readiness Strategic Plan 2003 provides an integrated synchronized plan for achieving and sustaining medical readiness. Medical readiness is measured against objectives outlined in the plan. The Department continuously monitors the status of DoD medical readiness through the development and implementation of effective oversight/evaluation mechanisms.

The Medical Readiness Strategic Plan is complemented by internal DoD program guidance which is used to define Departmental policies, help in the consistent allocation of medical-related resources, and monitor the success of medical readiness programs and initiatives.

CONCLUSION

For the foreseeable future, DoD will maintain the readiness of its forces to carry out the National Security Strategy. The Department is addressing readiness challenges with continued initiative and energy. These efforts will set the stage for future readiness and ensure the United States will continue to have the world's best trained, best equipped force.

Chapter 12

QUALITY OF LIFE

Now that the Cold War is over and the drawdown is nearly complete, the Department is focused on returning predictability and stability to military life and military careers. The Department is strongly committed to strengthening the quality of life programs supporting service members and to enhancing readiness, recruiting, and retention. Quality of life is an important component of Government Performance and Results Act Corporate-Level Goal 5. Part of this emphasis will be to aggressively address personnel tempo (PERSTEMPO) rates, which have a direct bearing on the quality of life for service members and military families.

Changes in American society—including higher expectations among young people, an increase in families with two working parents, and a strong economy with low unemployment—have necessitated changes in military quality of life programs. The Department's quality of life strategy recognizes that young people want good pay, educational opportunities, meaningful work, challenging off-duty opportunities, and good places to live. To achieve these goals, the Department has established six quality of life guiding principles:

- Commit to fund raises in basic pay and improve the fairness and efficiency of other elements of compensation.
- Drive PERSTEMPO as low as possible without jeopardizing mission and readiness.
- Afford service members and their families safe, modern communities and housing.
- Make educational opportunities a cornerstone of the Department's quality of life programs.
- Ensure that parity is built into quality of life programs across installations and Services, and during deployments, while recognizing the unique operational cultures of each Service.
- Build a solid communication line to service members and their families so as to understand their perceptions on quality of life.

THE QUADRENNIAL DEFENSE REVIEW

The May 1997 *Report of the Quadrennial Defense Review* strongly supported the Department's ongoing emphasis on quality of life. The report reiterated the Department's long-term commitment to provide adequate funding in areas such as housing; community and family support; transition assistance; and Morale, Welfare, and Recreation (MWR) activities. Educational assistance, including off-duty voluntary education, was particularly noted for its positive impact on recruitment and retention.

Secretary Cohen has institutionalized the Quality of Life Executive Committee initiatives of Secretary Perry. He has directed these advisors to monitor quality of life issues and advise him regularly on service members' perceptions.

COMPENSATION AND BENEFITS

The Department has long recognized the importance of an appropriate level of compensation in sustaining a robust quality of life program. The military compensation package is made up of both pay and nonpay benefits—the components of a standard of living. Operating together, these elements of the compensation package stimulate enlistment and retention, which contribute to operational readiness of U.S. forces.

The Administration funded a 2.8 percent pay raise for FY 1998 and programmed for military pay raises through the Future Years Defense Program. This commitment reflects the recognition that adequate military pay is essential to attract and retain high quality personnel. While the military offers a strong line-up of compensation benefits, such as medical care, funds for college, inflation protected retirement, and survivor benefits, it is also important that military pay be competitive with the private sector.

Adequate allowances are also essential to reimburse members for their costs when necessities, such as housing, are not provided. In 1997, the Department proposed major reform of both the housing and subsistence allowances for implementation in 1998. These changes will provide DoD the flexibility to get the right amount of money to the right people—for example, those residing in high-cost housing areas.

Military retired pay is a critical element of effective force management and the military compensation package. The current system allows top-notch service members to be retained while maintaining the overall youth and vigor essential to an effective armed force. Service members want to know that the retirement benefits they expected when they joined the military will be available when they complete their military careers. Significant revisions to the retirement system in 1980 and 1986 substantially reduced the long-term value of the retirement, the effects of which are just now being felt. Consequently, the Department has strongly opposed any further changes to the retirement system.

HOUSING

The Department of Defense owns over 300,000 military family housing units and maintains over 400,000 barracks spaces. Currently, due to neglect over many years, approximately two-thirds of the Department's housing stock—some 200,000 units—and more than 60 percent of barracks spaces require renovation or replacement. Those housing problems will not be resolved quickly. The Department's FY 1999 budget request includes \$611 million to construct, replace, or improve approximately 5,600 units. However, substantial progress in the maintenance, repair, and construction of military housing can only be made by using private sector capital to leverage federal funds. The Department has worked hard to develop and implement a strategy to privatize family housing. DoD's desire is to find out what works in which locations and then leverage every housing dollar possible through privatization efforts. This effort is discussed in detail in Chapter 19.

BARRACKS

The Department's FY 1999 troop housing construction request of approximately \$550 million will construct over 7,800 barracks spaces. In FY 1998, Congress appropriated \$360 million in the Quality of Life Enhancement Account for the repair and maintenance of real property, specifically emphasizing barracks and living facilities. The Army received \$100 million; the Navy, \$70 million; the Air Force, \$145 million; and the Marine Corps, \$45 million.

The Department has recently created an important new standard in housing quality, specifically aimed at improving retention and quality of life for single service members. With the establishment of the new 1+1 barracks construction standard (two service members, each in a private bedroom, sharing a bath), the Department's goal is to give unaccompanied service members a higher level of housing. Additionally, DoD is working toward eliminating gang latrines before 2008.

COMMUNITY QUALITY OF LIFE SUPPORT

Child Development Program

On April 17, 1997, President Clinton issued an executive memorandum recognizing the DoD child development program as a model for the nation. He also directed the Department to share its expertise with federal and state agencies, and the private sector. Since then, DoD has developed partnerships with the Department of Health and Human Services, the General Services Administration, and the National Governors Association. The Department also established a National Clearinghouse of Military Child Development Programs as a way to share materials and lessons learned.

In FY 1997, the Department completed its biannual projection of child care need. As of the end of FY 1996, there were 166,322 child care spaces available to meet 56 percent of the maximum need for child care services. Child care is provided at 300 locations, including 9,700 family child care homes, 811 child development centers, and school-age care facilities. Key initiatives to increase child care spaces include more partnerships with elementary schools, on-and off-base to care for more school-age children, and expansion of off-base family child care homes through memorandums of agreement with state and local child care licensing agencies.

The Department also continues to explore contracting options for some of its child care needs, using the Navy and the Defense Logistics Agency (DLA) as executive agents. In 1997, the Navy contracted for spaces in 17 civilian accredited centers in California, Florida, Hawaii, and Virginia. In addition, DLA contracted for the management of a DLA-owned child care facility in Columbus, Ohio.

Youth Program

Worldwide, 450 youth centers at over 300 locations serve approximately 748,000 youth, 6-18 years of age. Youth programs offer positive alternatives for children during after school hours

that develop leadership and life enhancing skills, in addition to traditional social, recreational, and athletic activities. Current youth initiatives include:

- **Model Communities.** This is the final year of an initiative designed to foster community participation in innovative youth programs. Successes include the program at Naval Air Station Lemoore, California, which recently received Vice President Gore's Hammer Award for developing a community-military coalition to aid high school youth entering the job market. To date, this program has placed over 300 graduating seniors.
- **Survey of Military Adolescents.** Over 7,000 military teens, 11-17 years old, participated in the first DoD-wide survey on social and health issues and perceptions about military life. The Department will use the results of this survey to compare military youth with their civilian peers and to develop policy for DoD youth programs.
- **Youth Relocation Project.** This project encompasses the development of a web site which focuses on relocation, schools, and careers and helps military teens stay in touch with friends.
- **Boys and Girls Clubs of America.** Another major collaborative effort is the Department's partnership with the Boys and Girls Clubs of America. To date, 109 military youth programs sponsored by all four Services have formed affiliations with the Boys and Girls Clubs. Through this association, military youth have access to programs such as the National Youth of the Year, Keystone Leadership Clubs, and Nike Sports Challenge. Affiliation also affords DoD youth program staff greater training opportunities by attending Boys and Girls Clubs national training conferences.

Family Centers

The 284 DoD family centers deliver an extensive array of human and social services to promote healthy personal and family life. The centers also help members and their families adapt to the unique challenges of military life. Various programs provide assistance in relocation, spouse employment, parenting, financial management, deployment and family separation, crisis or unexpected contingency, and other areas.

In February 1997, the Department launched the Spouse Employment Demonstration Project to help military spouses find employment outside the federal government. DoD and the Small Business Administration established a demonstration program in San Diego and Norfolk. The program trains and counsels participants on the skills required to start a business or expand an existing business. In 1998, the DoD sites will focus on portable careers and using technology to run a business.

The Department is developing an interactive multimedia course to assist young service members to understand the basics of personal financial management. The course will be fielded in 1998. To support this effort, the Department began providing professional training and certification for DoD financial counselors in December 1997.

DoD's deployment programs are particularly effective in helping service members and families deal with challenges posed by military missions. Recently, the National Performance Review cited these and other Department family-friendly programs as being exemplary. When military families departed Saudi Arabia following the Khobar Towers bombing, family centers provided follow-on support to each family wherever they relocated. All Services have incorporated their reserve component family readiness programs into their active component plans.

The Department recently began delivering family program information and services to military members, their families, and center professionals through the Internet. Three major web sites and a new Internet service were activated in FY 1997. In September 1997, a public-access, customer service web site was added to the Department's family program suite. The Military Assistance Program Site (MAPsite) provides information related to relocation and financial management issues, and features direct e-mail access to individuals through family centers. During 1998, the scope of the Department's existing Web and Internet locations will be expanded and their use as distance learning vehicles explored.

Transition Assistance Program

Transition assistance is one of the Department's most valued programs. In FY 1997, in the continental United States (CONUS) alone, separating service members used DoD transition assistance services such as seminars, automated systems, and employment experts 553,395 times; military spouses used these services 110,663 times. Also in CONUS, the military departments sponsored 914 job fairs, featuring a total of 19,990 corporate, federal, state, and local employers, which were attended by 304,592 service members and their spouses.

DoD sponsored overseas job fairs in Germany, South Korea, Okinawa, and Japan for transitioning service members, DoD civilians, and family members. Some 5,850 job seekers attended the 1997 overseas job fairs. Fifty-six private employers, as well as federal and state agencies, participated. Each employer committed to making a minimum of 50 provisional or conditional, near-or long-term job offers to qualified candidates. As of November 1997, these fairs have produced 1,153 firm job offers and 420 hires. These numbers will continue to increase in 1998.

Family Advocacy Program

The Department is committed to preventing spouse and child abuse, and each Service maintains a vigorous program in this area. The Marine Corps has been particularly successful with its New Parent Support programs. Of the families identified as being at high risk, only 4 percent who received New Parent Support program services for at least six months subsequently abused the child. Of the families identified as having previously abused the child, only 10 percent who received New Parent Support program services for at least six months subsequently abused the child. DoD has developed a Department-wide model for New Parent Support programs to maximize the use of existing resources.

Also in 1997, the Department consolidated Service repositories of substantiated reports of child and spouse abuse into a single, Department-wide central registry. This Department-wide registry

will improve the accuracy of family violence data and speed the process of conducting background checks for those who provide DoD child care services.

Morale, Welfare, and Recreation

MWR programs include those facilities and activities which create the basic community support and recreational infrastructure on an installation. They contribute significantly to retention and readiness. Their presence on an installation provides a safe and healthy environment for military families, contributes to the attractiveness of the military lifestyle, encourages healthy teamwork and socialization skills, and promotes individual intellectual and physical development of the force. Activities include physical fitness centers, youth centers, libraries, recreation centers, sports and athletics programs, clubs, and bowling facilities. Like other defense programs, MWR is rapidly evolving to meet the needs of the modern force and the challenges of the future.

MWR programs are arranged in three categories; they receive appropriated fund support based upon their relationship to the military mission. In 1995, the Department established funding standards for these programs to ensure that they are provided an adequate appropriated fund base. The military departments have made steady progress in achieving these standards. MWR accounts increased overall by \$77 million in the FY 1998 budget, and are programmed to increase in FY 1999 within Army and Navy accounts.

In order to ensure that program management encourages efficient operations and postures the program for future improvements and changes, the Department is in the midst of executing the congressionally-directed Uniform Resource Demonstration Project. This project allows appropriated funds authorized for MWR programs to be spent using the laws and regulations applicable to nonappropriated funds. This test is under way at six installations to determine if there are operating and managerial efficiencies associated with this funding approach, and whether it improves customer service. While the Uniform Resource Demonstration test and evaluation is under way, the Department has initiated an interim MWR funding practice to allow controlled DoD-wide use of the efficiencies of nonappropriated fund practices.

Fitness and Library Programs

Two of the most important and most used MWR programs are fitness and library. Because of the importance service members and their families attach to these programs, and because of their contribution to positive military outcomes, the Department is taking special action to improve and modernize the services offered. Operation Be Fit is a special fitness initiative launched to improve programs and increase individual participation in fitness activities. Funding for fitness in the Service accounts has increased steadily since 1995.

The Department of Defense operates 300 general libraries, as well as 315 libraries aboard ships and submarines. These libraries function as community resources and provide for unique defense needs. They are especially important overseas and where there are dependent schools. Libraries provide materials to support professional military and voluntary education programs; provide technical materials; and assist with information to ease transition out of the military. To ensure

that libraries keep pace with modern needs, the Department is developing standards for operation and a strategic technology plan to guide library development.

COMMISSARIES

The Defense Commissary Agency (DeCA) operates the worldwide system of 300 commissaries. This network provides quality groceries at cost, plus a 5 percent surcharge, to active duty military members, retirees, members of the National Guard and Reserve (limited access) and their families. Congress, through the General Accounting Office, has directed a study to determine the impact of expanding commissary access for reservists. The Department plans to study this in 1998. The commissary benefit continues to be rated as the most important nonpay compensation benefit by military members and their families. Important to both recruiting and retention, commissaries provide patrons with an average saving of approximately 25 percent on purchases.

DeCA has achieved major cost savings without impacting the level of the benefit or cost savings to the troops. It has already reduced operating costs by nearly 30 percent and continues to pursue additional efficiencies. Since becoming a Performance Based Organization in FY 1996, DeCA has adopted numerous innovative management practices and improved business processes. DeCA has been recognized with two Hammer Awards from the National Performance Review for its commonsense approach to business. The awards recognized the Agency's facilities directorate for engineering initiatives in commissary design and the Inspector General's office for improving management efficiency and integrity.

MILITARY EXCHANGES

Today's exchanges are an integral part of the military community at U.S. installations and deployment sites all over the world. These modern, state-of-the-art retailers are an important element of the military nonpay compensation package and a critical component of quality of life. There are three separate exchange systems: Army and Air Force Exchange System, Navy Exchange Command, and Marine Corps Exchange. Exchanges not only benefit authorized patrons by providing the goods and services that military families want, but have also contributed to quality of life programs by distributing more than \$2 billion to MWR programs over the past ten years. The nonappropriated fund dividends generated by exchanges are crucial to the military MWR programs.

In order to sustain and improve the exchange benefit, the Department—with the consent of the Congress—has changed the Armed Forces Exchange regulations to permit exchange systems to expand merchandise assortments to better meet demands. A task force examined the merits of creating an integrated exchange system. This initiative identified potential opportunities to standardize systems and programs and to reduce costs and overhead. The study to determine the best means of realizing these benefits, while preserving the value of the exchange benefit for the service members, will be completed by March 1999.

RELIGIOUS MINISTRIES

Chaplains ensure the free exercise of religion by service personnel and their families. They also provide religious ministry for their respective faith group members and facilitate religious ministries for those of other religious denominations. Chaplains are educated, trained, and ordained or certified to conduct worship, provide religious education, conduct pastoral counseling, and deliver sacramental ministrations in accordance with their respective ecclesiastical endorsements.

Chaplains serve on commanders' staffs with a primary advisory role in the areas of morale, ethical, and quality of life matters. Chaplains routinely serve in cooperation and partnership with family support and quality of life programs. They also provide a wide range of nondenominational programming which insures inclusive religious ministries.

OFF-DUTY/VOLUNTARY EDUCATION

Education opportunities are a primary incentive to young people joining the military. Participation in the voluntary education program remains strong, with over 600,000 enrollments in undergraduate and graduate courses and 28,000 degrees awarded in FY 1997. The high level of participation makes this program one of the largest and most diverse continuing education programs in the world.

The Department's off-duty, voluntary education program provides service members and their families with the opportunity to participate in academic improvement and college degree programs comparable to those available to nonservice personnel. These programs, along with counseling, testing, and other services, are available at education centers located on nearly 300 military installations around the world. Instructor-delivered and interactive CD-ROM courses are provided to shipboard personnel. Additionally, the Marine Corps has established the Marine Corps Satellite Education Network, which provides academic skills and college degree programs via video teleconferencing. The Air Force has made distance learning programs available to its members by establishing Internet capabilities at its major installations. Service members may take tests for credit and college entrance without cost and receive financial assistance to cover up to 75 percent of tuition costs, depending on branch of Service. Beginning in FY 1999, all Services will provide a uniform level of tuition assistance for their members.

DOD EDUCATION ACTIVITY

The DoD Education Activity (DoDEA) is the umbrella organization for the Department of Defense Dependents Schools (DoDDS) and the Department of Defense Domestic Dependent Elementary and Secondary Schools (DDESS). DoDDS provides schooling for students in foreign countries. DDESS provides schooling for students on military installations in selected areas of CONUS, the Commonwealth of Puerto Rico, and the territory of Guam. For school year 1997-1998, DoDDS is operating 160 schools in 14 foreign countries and serving approximately 80,000 students. DDESS is serving approximately 35,000 students in 14 districts in the United States, Puerto Rico, and Guam.

DoDEA's Community Strategic Plan provides long-range educational and organizational goals. DoDEA is committed to:

- Improving the teaching and learning process.
- Raising the standard of learning to ensure even greater excellence.
- Creating greater autonomy at the local level to develop and implement strategies to meet demanding standards.
- Greater accountability in reaching the goals established for the year 2000.
- A more efficient organizational structure that supports both a highly challenging educational environment and greater community input in the organization's decisions.

Department of Defense Dependents Schools

The DoDDS provides a free public education of high quality for eligible minor dependents of U.S. military and DoD civilian personnel stationed overseas; a free, appropriate education for dependents with disabilities, ages 3 through 21; and a community college program for eligible students in Panama. Other children may be enrolled in DoDDS on a space available, tuition paying or tuition free basis.

The DoDDS curriculum includes traditional classroom subjects and a wide range of special programs, including talented and gifted programs, special education, English as a second language, and compensatory education. DoDDS enhances its core curriculum and its support programs through the use of technology and distance education courses.

DoDDS students continue to score well above the national average on standardized tests in reading, language arts, mathematics, science, and social studies. On the Scholastic Assessment Test, the DoDDS system has one of the highest participation rates in the United States. The mean Scholastic Assessment Test verbal and mathematics scores for DoDDS students have increased 7 points and 6 points, respectively, since 1994.

Domestic Dependent Elementary and Secondary Schools

The Department operates schools on stateside military installations through its DDESS program. These schools provide an appropriate education for children residing on federal property where no state or local funds can be expended or where no local education agency is able to provide an appropriate education.

The DDESS educational programs are aligned with the programs of states or territories in which the schools are located. The curriculum includes traditional classroom subjects and a wide range of special programs, including talented and gifted programs, special education, English as a second language, and compensatory education. The core curriculum and support programs are enhanced through the use of technology and distance education courses. By 1997, all DDESS

districts had implemented highly successful early childhood programs for four year olds. Fort Bragg's program was awarded the North Carolina Governor's Programs of Excellence award in January 1997. This program, like others in DDESS, is community based and incorporates the entire family into the learning program.

In 1997, a majority of the DDESS students scored above the national average in all areas tested. On the SAT, both the mean verbal and mathematics scores for DDESS students increased in 1997.

The Department of Defense Education Activity was one of the first school systems to volunteer to participate in the President's voluntary national testing program. Also in support of the President's National Education Goals 2000 Program, civilian and military leadership have become actively involved in partnering initiatives with local schools both on installations and in local communities. Examples of programs that support a family-friendly work environment are adopt-a-school; Drug Abuse Resistance Education; mentoring; and tutoring in math, science, and reading.

HEALTH CARE

Health care continues as a major quality of life factor for the Department of Defense. The Military Health System is committed to a philosophy of excellence in its role to provide:

- Health care deployed in support of the armed forces.
- Top quality, cost-effective health care benefits for members of the armed services and their families, retirees, and others entitled to DoD health care.
- Medical research, education and training, and prevention and health promotion.

Coupled with this, the Military Health Service strives to integrate technologies to enable the best possible and most cost-beneficial clinical and management outcomes.

The Department's health care mission is complex and continually evolving. The Military Health Service currently serves 8.2 million eligible beneficiaries. Direct care is delivered worldwide in 115 hospitals and over 450 clinics. The majority of civilian care is purchased through Managed Care Support contracts implemented under the TRICARE Program. DoD requires substantial resources to accomplish its DoD medical mission. The FY 1997 budget was \$15.7 billion, which represented 6.2 percent of the entire defense program.

Health Care Initiatives

GULF WAR VETERANS' HEALTH ISSUES

The Department is committed to responding to the health concerns of Gulf War veterans. In examining health consequences that may have resulted from service in the Persian Gulf, DoD efforts have concentrated in the areas of clinical care, outreach, research, and investigation.

Since June 1994, the Department has provided in-depth medical evaluations through the Comprehensive Clinical Evaluation Program (CCEP) to active duty and reserve component Gulf War veterans who choose to participate. Access to the CCEP is made available through a toll-free number or by direct contact with a military treatment facility, all of which have designated CCEP physician coordinators. Spouses and children of Gulf War veterans who are eligible for DoD health care may elect to participate in the CCEP as well. As of September 1997, over 29,900 of the 31,866 CCEP participants requesting examination had finished the clinical evaluation process. Based on the experience to date, there is no clinical evidence for a previously unknown, serious illness or syndrome among veterans participating in the CCEP. These findings are consistent with a review of the CCEP conducted by the Institute of Medicine, National Academy of Sciences, released in January 1996.

In order to capture lessons learned from the Gulf War experience in anticipation of future deployments, the Department published DoD Directive 6490.2, Joint Medical Surveillance, and DoD Instruction 6490.3, Application and Implementation of Joint Surveillance for Deployments, in August 1997.

Outreach to Gulf War veterans has been expanded to regular press conferences and media coverage concerning the CCEP findings, research results, and investigation findings. In 1997, DoD revised and expanded its GulfLINK worldwide web site to include e-mail access and to present comprehensive reviews of key issues through a case narrative reporting style. In addition, the Special Assistant for Gulf War Illnesses expanded the public outreach program to include routine press releases and multiple town meetings across the country with veterans' service organizations. For active duty veterans, the family service centers received fact sheets to inform their counselors about Gulf War veterans' issues. Surveys were conducted to assess the effectiveness and determine unaddressed concerns of Gulf War veterans and meetings were held with representatives from the Military Alliance.

In addition to providing comprehensive clinical care and outreach to Gulf War veterans, the Department initiated an aggressive research program. Although the types of conditions identified among CCEP participants appear similar to those seen in the general population, formal research studies involving appropriate comparison populations are needed to determine the degree to which certain kinds of symptoms and diagnoses may or may not be common among Gulf War veterans. DoD medical research efforts are ongoing in a variety of areas, including reproductive health, leishmaniasis, health effects of exposure to depleted uranium, pyridostigmine bromide, and possible chronic health effects resulting from subclinical exposure to chemical warfare agents. Findings of these studies are published in the peer-reviewed scientific literature and are noted in the annual report to Congress, *Federally Sponsored Research on Persian Gulf Veterans' Illnesses*, by the Research Working Group of the Persian Gulf Veterans Coordinating Board.

In concert with the President's commitment to better understand the illnesses reported by Gulf War veterans in 1997, the Department of Defense committed more than \$27 million for research studies to government, nongovernment, and academic institutions to further understand the health effects of the Gulf War deployment. In an effort to promote openness in the scientific community at large, in September 1996 the data set for the CCEP was made available to qualified scientific researchers interested in conducting further analysis.

In 1994, the Deputy Secretary of Defense established the Persian Gulf Investigation Team to look for possible causes of illnesses in veterans by evaluating the vast amount of documents from the war, and by investigating specific incidents and theories presented by veterans and others. A toll-free telephone line was established to allow veterans to provide information on incidents they feel may have affected their health. The Office of the Special Assistant for Gulf War Illnesses (OSAGWI) absorbed and expanded the functions of the original team. As of September 1997, almost 2,800 incidents have been reported, and new information continues to be evaluated. OSAGWI works closely with the Services, the Intelligence Community, and other government and nongovernment agencies to gain a clearer understanding of factors surrounding the incidents and theories involving the health of Gulf War veterans.

The Department continues to collaborate with other federal agencies and to conduct comprehensive, cross-departmental programs to provide care to veterans and assess health consequences of service in the Gulf War. The Department has had consistent representation on the Persian Gulf Veterans Coordinating Board committees (the Clinical Working Group, Research Working Group, and Compensation and Benefits Working Group) since January 1994.

The Presidential Review Directive, PRD-5, Interagency Working Group has had Departmental representation on the four task forces: Deployment Health Issues, Record Keeping, Research, and Risk Communication. These four task forces contributed to the comprehensive federal strategic plan to assimilate the lessons from the Gulf War to prepare for the health outcomes of future deployments and to assist future veterans and their families.

TRICARE

Rapidly rising health care costs, the closure of military bases and their hospitals, and a nondiminishing population of beneficiaries presented DoD with the challenge of finding a better way to meet peacetime demands for health care while maintaining medical combat readiness. The TRICARE health benefits program is DoD's effort to provide the highest quality and most cost-effective health care to active duty and retired members of the uniformed Services, their families, and survivors.

TRICARE is a triple option health benefits program that combines military and civilian resources into a regionally-based, integrated health care delivery system. Since March 1995, DoD has been phasing in partnerships with civilian contractors to expand and supplement the capabilities of its military hospitals and clinics.

TRICARE offers beneficiaries three choices for their health care:

- **TRICARE Standard.** A fee-for-service option formerly known as CHAMPUS. Eligible beneficiaries may choose any physician for health care, and the government will pay a percentage of the cost. This option, although the most flexible, is the most costly of the three.
- **TRICARE Extra.** A managed care option similar to a preferred provider organization. It allows beneficiaries to select a doctor or medical specialist from a network of civilian

health care professionals who participate in the TRICARE Extra program. As with TRICARE Standard, the government shares the cost of health care. TRICARE Extra is less costly than TRICARE Standard, but more costly than TRICARE Prime.

- **TRICARE Prime.** A health maintenance organization (HMO)-type plan wherein all enrollees are assigned a primary care manager who oversees their health care needs. This option is mandatory for all active duty military personnel. TRICARE Prime provides the most comprehensive health care benefits at the lowest cost of the three TRICARE options. Priority for treatment in military hospitals and clinics is given to participants enrolled in TRICARE Prime. Enrolled beneficiaries who seek nonemergency care without prior authorization default to TRICARE's point-of-service option, which requires payment of a deductible plus 50 percent or more of visit or treatment fees.

The TRICARE program also has been extended to active duty personnel and their families stationed overseas. A major reengineering of DoD's health care delivery system overseas has resulted in the establishment of three TRICARE regions (TRICARE Europe, TRICARE Pacific, and TRICARE Latin America) responsible for health care planning and delivery for personnel stationed outside the United States. The Department began offering a modified version of the TRICARE Prime benefit tailored to the overseas environment for active duty personnel and their families overseas in October 1996 and enrolled over 300,000 personnel into the program during 1997. Additional efforts are under way to address the health care needs of personnel at remote locations overseas.

MEDICARE DEMONSTRATION

When military beneficiaries become eligible for Medicare, usually by reaching 65 years of age, they are no longer eligible for CHAMPUS and cannot enroll in TRICARE Prime. This population of beneficiaries, known as dual-eligible beneficiaries because of their eligibility for benefits from both Medicare and the Military Health System, must then rely on space-available care at military treatment facilities or Medicare coverage for their health care services. Currently, there are 1.3 million dual-eligible beneficiaries.

The Department would like to allow these beneficiaries to take full advantage of their military health care benefit by offering them the opportunity to enroll in TRICARE Prime. However, to do this, DoD would require reimbursement from Medicare to cover the cost of providing their care. Congress must approve this type of reimbursement, known as subvention.

In September 1996, the Department of Defense signed an agreement with the Department of Health and Human Services (HHS), which administers the Medicare program, to conduct a demonstration program which would allow DoD to enroll Medicare-eligible beneficiaries in the TRICARE program. The goal of the demonstration is to test a cost-effective alternative for delivering accessible and quality care to dual-eligible beneficiaries that does not increase the total federal cost for either agency. DoD would continue to pay for care provided to dual-eligible beneficiaries up to the amount the Department currently spends to provide space-available care to these beneficiaries. Once DoD reached this level of expenditure, also known as the Department's level of effort, Medicare would reimburse DoD for additional care provided to

those enrollees. Payments would be on a capitated basis and at a rate less than that which Medicare pays commercial Medicare-risk HMOs.

The Balanced Budget Act of 1997 included a provision authorizing a three-year Medicare Demonstration similar to that described in the DoD/HHS Agreement. The legislation required DoD and HHS to implement a demonstration project at six sites under which dual-eligible beneficiaries are offered enrollment in a DoD-operated managed care plan, called TRICARE Senior. The legislation also authorizes Medicare HMOs in the demonstration sites to make payments to DoD for care provided to HMO enrollees by military treatment facilities participating in the demonstration. This part of the demonstration, called Medicare Partners, will allow DoD to enter into contracts with Medicare HMOs to provide dual-eligible beneficiaries the specialty care currently provided on a space-available basis.

OVERSEAS FAMILY MEMBER DENTAL PROGRAM

The Department has implemented an aggressive program to improve and standardize access to dental care for family members living outside the United States. The Overseas Family Member Dental Program is a comprehensive, integrated plan tailored to each location and is an integral part of the regional health services plan for each overseas area. A sizable increase in dental resources already has been provided to overseas dental treatment facilities, resulting in improved dental care access for families. Phased implementation began in Europe and has been extended to the Pacific and other locations worldwide. This initiative is considered one of the single greatest quality of life improvements for family members overseas.

The Department is expanding the TRICARE Active Duty Family Member Dental Program overseas. This will permit enrolled family members overseas to obtain the same basic dental benefits now offered to enrollees in the TRICARE Family Dental Plan in the United States where such care is available. Services will either be provided in the direct care system, or if unavailable, the family member will be referred to a host nation provider identified by the local command who meets accepted U.S. dental practice standards. This will allow the Department to provide dental care for an even greater number of personnel and also facilitate access to dental care while traveling in the United States.

TRICARE RETIREE DENTAL PROGRAM

Section 703 of the National Defense Authorization Act for 1997 (Public Law 104-201) directed the Department to implement a dental insurance program for certain military retirees and family members. By law, the TRICARE Retiree Dental Program (TRDP) offers basic dental coverage, including diagnostic services, preventive services, basic restorative services (including endodontics), surgical services, and emergency oral examinations.

Coverage under the TRDP is available to military retirees receiving pay, members of the Retired Reserve, family members of retirees, and unremarried surviving spouses and dependents of retirees. Enrollment in the TRDP is voluntary. Coverage is offered in three categories: single enrollment, two party enrollment, and family enrollment. TRDP enrollees are responsible for

paying the full cost of the geographically-based premiums; there is no government subsidy. Dental care delivery will begin in February 1998.

TRICARE SELECTED RESERVE DENTAL PROGRAM

The 1996 and 1997 National Defense Authorization Acts required DoD to implement a dental program for members of the Selected Reserve who live in the 50 United States, District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands. Dental care delivery under the TRICARE Selected Reserve Dental Program (TSRDP) began in October 1997. Enrollment in TSRDP is voluntary. Family coverage is not offered under TSRDP.

The TSRDP offers basic dental coverage, including diagnostic services, preventive services, basic restorative services, and emergency oral examinations. The government pays 60 percent of the monthly premium. Reservists who want to enroll in the plan must have at least 12 months of service remaining and must initially enroll for 12 months. Coverage will terminate on the last day of the month in which the member is discharged, transferred to the Individual Ready Reserve, Retired Reserve, or ordered to active duty for more than 30 days.

UNIFORM PHARMACY BENEFIT

The Department's goal is to ensure the availability of an equitable transportable pharmacy benefit to all eligible DoD beneficiaries regardless of geographic location. In light of the numerous Base Realignment and Closure (BRAC) actions, the Uniform Pharmacy Benefit structure includes provisions intended to prevent the potential loss of the pharmacy benefit to beneficiaries who relied on a military treatment facility for obtaining pharmaceuticals. The Uniform Pharmacy Benefit has four components: military treatment facility pharmacies, where pharmaceuticals can be obtained at no cost to the beneficiary; mail order pharmacy programs provided at varying copays depending upon the status of the beneficiary; retail pharmacies in the Preferred Provider Network (PPN) within the managed care contracts; and retail pharmacies outside the PPN, with copays similar to the current benefit under CHAMPUS.

The National Mail Order Pharmacy (NMOP) Program began service in October 1997 and is being implemented in phases. The goal of this program is to offer patients more convenient and cost-effective access to their pharmacy benefit. Under the NMOP, DoD will maximize the use of Best Federal Pricing for pharmaceuticals distributed to DoD beneficiaries through the mail order pharmacy contractor. Best Federal Prices are at least 24 percent less than the Average Wholesale Price paid for pharmaceuticals.

The National Mail Order Pharmacy Program does not yet replace other mail order programs currently provided by TRICARE Managed Care Support contracts. However, the Department is consolidating the various TRICARE mail order pharmacy programs, which cannot use Best Federal Pricing, under the NMOP program. In the future, the NMOP program will also be made available to the remaining BRAC Medicare-eligible beneficiaries, and to all other CHAMPUS beneficiaries now covered by Managed Care Support contractors (both enrolled and nonenrolled).

ENROLLMENT-BASED CAPITATION

The development of military treatment facility Enrollment-Based Capitation (EBC) represents the next—and most advanced—version of the capitation methodology that will be used to appropriately resource military treatment facilities. The original TRICARE capitation model introduced in FY 1994 was used to allocate Defense Health Program funds to the three military departments and acted as the foundation for EBC. The fundamental difference between the two methodologies is that in FY 1998, EBC has identified a specific military treatment facility allocation to the Departments, whereas the FY 1994 model allocated funds to the Services at the Service level based on an overall estimated user population. During this initial year of EBC implementation, the focus will be on accurate and timely data gathering and processing, which is key to the success of EBC.

PREVENTIVE AND WOMEN'S HEALTH CARE

The Department maintains its focus on quality clinical intervention while intensifying its emphasis on prevention and health promotion activities. DoD promotes a healthy lifestyle by first assessing health status, then implementing intervention through either clinical or health promotion activities. The Department has a policy that directs the use of an age-appropriate Health Enrollment Assessment Review as its health status tool. DoD is developing standardized policy to implement the HHS Put Prevention into Practice Program to improve the delivery and documentation of clinical preventive services using a tri-service preventive care flowsheet. The Department continues to identify and implement innovative health promotion and prevention initiatives in support of Healthy People 2000 goals. The Department has demonstrated great strides in the improvement of health status through performance measurements such as Healthplan Employers Data and Information Set (HEDIS), the DoD Worldwide Survey of Health Related Behaviors in Active Duty, and the DoD Annual Beneficiary Survey. For example, a civilian external peer review organization's Quality Management Review of clinical preventive services in DoD shows that active duty cholesterol screening came close to and pap smears exceeded Healthy People 2000, HEDIS, and/or DoD Access Standard Goals.

DoD recognizes that women's health care represents a unique area of medical knowledge which impacts military readiness. Ensuring a baseline knowledge level of women's health issues is essential in providing high quality care at all levels. Therefore, the Department is establishing a task force to develop a Women's Health Curriculum for providers at all levels of care. DoD is also working in partnership with the Department of Veterans Affairs (VA) to provide sexual trauma counseling to active duty members where the need exists. Finally, the Department is continuing a program to improve breast cancer services for beneficiaries, utilizing funds allocated in the National Defense Authorization Act for FY 1997. The first goal of the Breast Cancer Prevention, Education, and Diagnosis Program is to provide training for both beneficiaries and primary health care providers in early detection and risk factors associated with breast cancer. The second goal is to optimize early diagnosis of breast cancer by continuing to improve access and follow-through to high quality breast care services. DoD has developed specific performance measures to evaluate TRICARE regions' progress in improving beneficiary access and feedback in breast cancer education, screening, and access. TRICARE regions are

also developing better psychosocial support programs for patients and family members diagnosed with breast cancer.

Joint Efforts With the Department of Veterans Affairs

The Departments of Defense and Veterans Affairs have established an Executive Council of senior DoD and VA health care executives. The Executive Council oversees a number of joint efforts to reduce costs and improve health care for veterans, active duty military personnel, retirees, and dependents:

- Creation of a Veterans Health Coordinating Board as the next phase of the cooperative work done by the Persian Gulf Veterans Coordinating Board.
- Establishment of pilot programs to assess the effectiveness of designated Centers of Excellence within each Department that would make the most efficient use of existing capability, while maintaining the highest quality of care. Past examples of such specialty care agreements are for spinal cord injury, blindness, amputations, and traumatic brain injury.
- Creation of a joint committee to develop a facility-level cost reimbursement methodology for sharing agreements, ranging from medical and surgical services to laundry, blood, laboratory, and specialty-care services. The committee will also resolve cost-based issues which in the past have been a barrier to resource sharing.
- Implementation of a program which standardizes disability discharge physicals within both Departments. The concept was successfully tested by the Army and VA.
- Evaluation of structure, process, and programs in areas of laboratories, pathology, and other ancillary services in which the two agencies can collaborate and/or combine programs.
- Creation and publication of jointly used clinical practice guidelines for disease treatment.
- Review of each Department's pharmacy programs for areas in which commonality could result in significant economies.

TELEMEDICINE

Telemedicine combines the use of rapidly advancing telecommunications and medical technologies to deliver health care that is time and distance independent. DoD has been a leader in this area, developing programs that provide functional and technical interoperability, standardize and improve care, and produce economies of scale across the Military Health Service. As a result of these successes, new telemedicine initiatives have been introduced throughout DoD, other federal agencies, and the civilian sector. To prevent duplication and identify those projects with the most potential value to military medicine, the Military Health

Service chartered the DoD Telemedicine Program Office to serve as a central coordinating office for all DoD telemedicine initiatives.

During 1997, the Department continued to support deployed telemedicine capabilities for U.S. forces in locations such as Bosnia, Macedonia, Haiti, and Southwest Asia. Numerous exercises were held to demonstrate integrated telemedicine capabilities between land, air, and naval forces. Efforts to integrate information generated from telemedicine technologies into a computer-based patient record also continued in projects such as the Composite Health Care System, the Pacific Medical Network, and the Theater Medical Information Program. The technologies and lessons will ultimately change the way the Department uses information management and information technology to provide health care across the Military Health Service.

Computer/Electronic Accommodations Program

The Computer/Electronic Accommodations Program (CAP) was established in 1990 as a centrally funded DoD program to provide assistive technology to DoD employees with disabilities. This model program, winner of the 1996 Federal Technology Leadership Award, helps disabled employees maximize their potential and ensures employment and advancement opportunities within DoD. CAP assists DoD managers in evaluating and selecting the appropriate assistive technology for an individual's specific situation as it relates to visual, hearing, dexterity, and cognitive disabilities. The CAP Technology Evaluation Center, located at the Pentagon, was created to evaluate leading edge technology and to provide hands-on demonstrations of equipment.

CONCLUSION

The Department is committed to providing programs and services that support the unique culture of the military hometown. Military communities are unique, because military life—its missions, deployments, overseas and isolated assignments—impose special demands and separations on both service members and their families.

As a top Departmental priority, quality of life improvements must continue to keep pace with the greater American community and must adequately address the stressful military lifestyle. The Department of Defense will work diligently to improve program delivery, enhance efficiency, and gear programs and services to meet the needs of today's service members and their families while designing military community support programs for tomorrow's challenges.

Chapter 13

THE REVOLUTION IN MILITARY AFFAIRS AND JOINT VISION 2010

The defense strategy's fundamental challenge is to ensure that the Department of Defense can effectively shape the international security environment and respond to the full range of military challenges throughout the next 20 years. Timely efforts to prepare now for an uncertain future are essential to fulfilling that challenge. Accordingly, the Department has embarked on a transformation strategy to meet the challenges of the 21st century.

The process of transformation begins with the defense strategy itself, which is built on an appreciation of the highly dynamic nature of the projected security environment and the challenges this environment poses for the United States. The process continues with an evaluation of the military missions and tasks that are needed to carry out that strategy. Some of these missions are enduring—such as protecting U.S. forces at home and abroad, in peacetime, crisis, and war—while others will emerge as the security environment evolves. There are also missions that, while not new, are being continually reassessed and refined. One example is the attention that the Department is now devoting to the tasks needed to rapidly halt an enemy's initial attack in a major theater war. DoD continues to identify enduring, refined, and emerging military missions as part of its overall transformation strategy.

Based on the essential missions and tasks it identifies, the Department may alter U.S. force structure to ensure its suitability. Building an optimal force sometimes requires adjustments to DoD's use of manpower and resources. It may also require entirely new operational approaches to accomplish tasks, complemented at times by emerging technologies. The Department's willingness to embrace the Revolution in Military Affairs (RMA)—to harness technology to ultimately bring about fundamental conceptual and organizational change—is critical at this stage of the transformation strategy.

Today, the world is in the midst of an RMA sparked by leap-ahead advances in information technologies. There is no definitive, linear process by which the Department can take advantage of the information revolution and its attendant RMA. Rather, it requires extensive experimentation both to understand the potential contributions of emerging technologies and to develop innovative operational concepts to harness these new technologies. The marriage of advanced technology and new operational concepts can occur in two distinct yet equally valuable ways. First, a new concept to accomplish a critical operational task may emerge that requires the development and exploitation of a new technology, creating a requirements pull. Second, a promising new technology may spur the development of an operational concept to employ it effectively for one or more tasks, creating a technology push. Mature combinations of advanced technologies and innovative operational concepts result in new military doctrine and organizational reconfigurations that have the potential to transform the military at its core, fundamentally altering the way U.S. forces conduct the full range of military operations.

While exploiting the Revolution in Military Affairs is only one aspect of the Department's transformation strategy, it is a crucial one and thus constitutes Government Performance and Results Act Corporate-Level Goal 4. The advent of the current RMA provides the Department with a unique opportunity to transform the way in which it conducts the full range of military

operations. Chapters 14 and 15 describe DoD's efforts to vigorously pursue innovation and the RMA. This part of the annual report fulfills the Secretary of Defense's requirement to provide the Senate Committee on Armed Services and the House of Representatives Committee on National Security a report on emerging operational concepts.

INFORMATION SUPERIORITY: BACKBONE OF THE REVOLUTION IN MILITARY AFFAIRS

Improved intelligence collection and assessment, as well as modern information processing and command and control capabilities, are at the heart of the military revolution currently under way. With the support of an advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) common backbone, the United States will be able to respond rapidly to any conflict; warfighters will be able to dominate any situation; and day-to-day operations will be optimized with accurate, timely, and secure information. Just as much of the nondefense world has become increasingly interconnected through the growth of internetted communications, the DoD is working to provide a complementary, secure, open C⁴ISR network architecture.

The six principal components of the evolving C⁴ISR architecture for 2010 and beyond are:

- A robust multisensor information grid providing dominant awareness of the battlespace to U.S. commanders and forces.
- Advanced battle-management capabilities that allow employment of globally deployed forces faster and more flexibly than those of potential adversaries.
- A sensor-to-shooter grid to enable dynamic targeting and cuing of precision-guided weapons, cooperative engagement, integrated air defense, and rapid battle damage assessment and re-strike.
- An information operations capability able to penetrate, manipulate, or deny an adversary's battlespace awareness or unimpeded use of his own forces.
- A joint communications grid with adequate capacity, resilience, and network management capabilities to support the above capabilities as well as the range of communications requirements among commanders and forces.
- An information defense system to protect globally distributed communications and processing networks from interference or exploitation by an adversary.

JOINT VISION 2010

In an effort to channel the vitality and innovation of the Department's people and leverage technological opportunities in order to achieve new levels of effectiveness in joint military operations, the Chairman of the Joint Chiefs of Staff developed *Joint Vision 2010*. *Joint Vision 2010* is a conceptual template that embraces information superiority and the technological

advances that will transform traditional operational warfighting concepts into new concepts via changes in weapons systems, doctrine, culture, and organization. Through its focus on four new operational concepts that together aim at achieving full-spectrum dominance—dominant maneuver, precision engagement, full-dimension protection, and focused logistics—*Joint Vision 2010* will lead to a more effective joint force.

Dominant Maneuver

Enabling control of battlespace through the multidimensional application of information, engagement, and mobility capabilities, dominant maneuver allows U.S. forces to position and ultimately employ widely dispersed joint air, land, sea, and space forces. Dominant maneuver will provide U.S. forces with overwhelming and asymmetric advantages to accomplish assigned operational tasks.

The dominant maneuver concept requires several enhanced capabilities. First, U.S. forces need to be lighter and more versatile. Flexible, responsive logistics and centralized combat service support at higher tactical levels will enable units to maneuver more quickly. Increasing jointness of operations at lower tactical levels will increase the forces' versatility in achieving their objectives. Second, mobility and lethality must be increased through greater reliance on netted firepower. Third, dominant maneuver requires faster and more flexible strategic and tactical sealift and airlift.

Precision Engagement

Precision engagement enables joint forces to shape the battlespace through near real-time information on the objective or target, a common awareness of the battlespace for responsive command and control, a greater assurance of generating the desired effect against the objective or target due to more precise delivery and increased survivability for all forces, weapons, and platforms, and the flexibility to rapidly assess the results of the engagement and to reengage with precision when required.

Precision engagement requires more capable platforms and advanced weapons and munitions, in addition to the enabling support of an advanced C⁴ISR common backbone. It is based on intelligence about enemy forces and expert judgment regarding the correct force or weapon needed to generate the desired effects. Working together, the Services and DoD combat support agencies are striving to increase battlespace situational awareness and the effectiveness of precision munitions and to ensure that equipment provided to U.S. soldiers, sailors, airmen, and Marines is fully integrated into the advanced systems that support precision engagement. Precision engagement also extends to the full spectrum of operations in which U.S. forces are likely to participate. Precise, nonlethal weapons are currently under development for use in smaller-scale contingencies like noncombatant evacuations and peace operations.

Full-Dimensional Protection

Protection for U.S. forces and facilities must be provided across the spectrum, from peacetime through crisis and war and at all levels of conflict. To achieve this goal, full-dimensional

protection requires a joint architecture that is built upon information superiority and employs a full array of active and passive measures at multiple echelons. Full-dimensional protection will enable U.S. forces to safely maintain freedom of action during deployment, maneuver, and engagement.

U.S. efforts to develop and deploy a multi-tiered theater air and missile defense architecture are a prime example of full-dimensional protection. U.S. forces also need improved protection against chemical and biological weapons. New chemical and biological weapons detectors, improved individual protective gear, and a greater emphasis on collective protection are all critical to the Department's efforts to protect U.S. forces from chemical and biological weapons threats. Finally, full-dimensional protection includes defense against asymmetric attacks on information systems, infrastructure, and other critical areas vulnerable to nontraditional means of attack or disruption.

Focused Logistics

Focused logistics integrate information superiority and technological innovations to develop state-of-the-art logistics practices and doctrine. This will permit U.S. forces to accurately track and shift assets, even while en route, thus facilitating the delivery of tailored logistics packages and more timely force sustainment. Focused logistics will also reduce the size of logistics support while helping to provide more agile, leaner combat forces that can be rapidly deployed and sustained around the globe.

Initiatives such as Joint Total Asset Visibility and the Global Combat Support System will provide deployable, automated supply and maintenance information systems for leaner, more responsive logistics. These and other DoD-wide programs, as well as a host of Service initiatives, will be capable of supporting rapid unit deployment and employment and will better support the battlefield commander by eliminating redundant requisitions and reducing delays in the shipment of essential supplies.

SERVICE VISIONS OF FUTURE WARFARE

Complementing *Joint Vision 2010* are individual Service visions that seek to delineate the future of land, sea, air, and amphibious warfare.

Army

Through *Army Vision 2010*, the Force XXI process, and the Army After Next process, the Army is identifying new concepts of land warfare that have radical implications for its organization, structure, operations, and support. Lighter, more durable equipment will enhance deployability and sustainability. Advanced information technologies will help the Army conduct rapid, decisive operations. The force will be protected by advanced but easy-to-use sensors, processors, and warfighting systems to ensure freedom of strategic and operational maneuver. A global, distribution-based logistics system will take maximum advantage of technological breakthroughs, substituting velocity of logistics for mass. The Army will require flexible, highly

tailorable organizations—from small units to echelons above corps—to meet the diverse needs of future operations and to reduce the lift requirements for deployment.

Navy

The Department of the Navy's future vision of warfare is delineated in *Forward . . . From the Sea*. From this is derived the new Navy Operational Concept, which identifies five fundamental and enduring roles: sea control and maritime supremacy, power projection from sea to land, strategic deterrence, strategic sealift, and forward naval presence. In the future, the Navy will fulfill these roles with vastly enhanced capabilities. The Navy has embraced an RMA concept called network-centric warfare. It involves the use of widely dispersed but robustly networked sensors, command centers, and forces to produce significantly enhanced massed effects. Combining forward presence with network-centric combat power, the Navy will reduce timelines, decisively alter initial conditions, and seek to head off undesired events before they start. In short, the Navy will have the ability to influence events ashore from the sea, quickly, directly, and decisively. The naval contribution to dominant maneuver will use the sea to gain advantage over the enemy, while naval precision engagements will use sensors, information systems, precisely targeted weapons, and agile, lethal forces to attack key targets. Naval full-dimensional protection will address the full spectrum of threats, providing information superiority, air and maritime superiority, antisubmarine and surface warfare, theater air and missile defense, and delivery of naval fires. Finally, naval forces will be increasingly called upon to provide sea-based focused logistics for joint operations in the littorals.

Air Force

Global Engagement: A Vision for the 21st Century Air Force, the Air Force's vision of air and space warfare through 2020, calls for maintaining and improving six core competencies built on a foundation of quality personnel and integrated by global battlespace awareness and advanced command and control. Air and space superiority will allow all U.S. forces freedom from attack and freedom to attack, while the Air Force's ability to attack rapidly anywhere on the globe will continue to be critical. Rapid global mobility will help ensure the United States can respond quickly and decisively to unexpected challenges to its interests. The Air Force's precision engagement core competency will enable it to reliably apply selective force against specific targets simultaneously to achieve desired effects with minimal risk and collateral damage. Information superiority will allow the Air Force to gain, exploit, defend, and attack information while denying the adversary the ability to do the same. Agile combat support will allow combat commanders to improve the responsiveness, deployability, and sustainability of their forces.

Marine Corps

From the Navy's vision of future warfare, contained in *Forward . . . From the Sea*, the Marine Corps derives its vision for future sea-based power projection operations. These are described in the operational concepts of Operational Maneuver From the Sea (OMFTS) and Ship-to-Objective Maneuver (STOM). The underpinning for both of these concepts is maneuver warfare, which demands tactically adaptive, technologically agile, and opportunistic forces. As such, OMFTS and STOM-configured forces must be able to rapidly reorganize and reorient in

response to changing tactical opportunities—while dispersed both at sea and ashore over much greater distances—along the full spectrum of future operational environments. An important assumption for the OMFTS Marine Corps is that it will increasingly need to operate in urban or suburban environments. To make this vision a reality, the Marine Corps will need to rapidly assimilate improvements in warfighting capabilities gained through the RMA. Leveraging the increasing lethality of long-range precision weapons, the greater range and speed of maneuver made possible by new mobility technologies, and opportunities afforded by information dominance forms the foundation for these concepts at both the individual and unit levels.

CONCLUSION

Pursuit of the ongoing Revolution in Military Affairs lies at the heart of the defense strategy's edict to prepare now for an uncertain future. Rooted in an advanced common C⁴I backbone and guided by the joint and Service visions outlined above, a wide range of activities are under way throughout the Department to transform U.S. forces and the way they carry out the full range of military missions. Several of these RMA activities, including studies, wargames, advanced concept technology demonstrations, and advanced warfighting experiments—aimed at developing new operational concepts and, ultimately, organizational configurations—are described in detail in the next two chapters.

Chapter 14

NEW OPERATIONAL CONCEPTS

Creating new operational concepts to conduct battlefield operations and developing innovative force designs that provide versatile new organizational and employment arrangements are essential to the success of *Joint Vision 2010* and the Revolution in Military Affairs (RMA). The very foundation of *Joint Vision 2010* involves the harnessing of new advanced technologies via emerging operational concepts that dramatically alter how U.S. forces conduct the full range of military operations. These alterations subsequently lead to significant changes in joint and Service doctrine and ultimately to new organizational arrangements.

TYPES OF OPERATIONAL CONCEPTS

As the Joint Staff and the Services develop their visions for the 21st century, they must address the fundamental challenge identified in the Quadrennial Defense Review of fulfilling near- and mid-term requirements to shape the security environment and respond to a wide variety of crises and conflicts while simultaneously transforming U.S. forces to meet the challenges of an uncertain future. This transformation involves not only developing and integrating new technologies into the joint force, but equally as important, developing new operational concepts and organizational arrangements that can be applied in conducting joint operations.

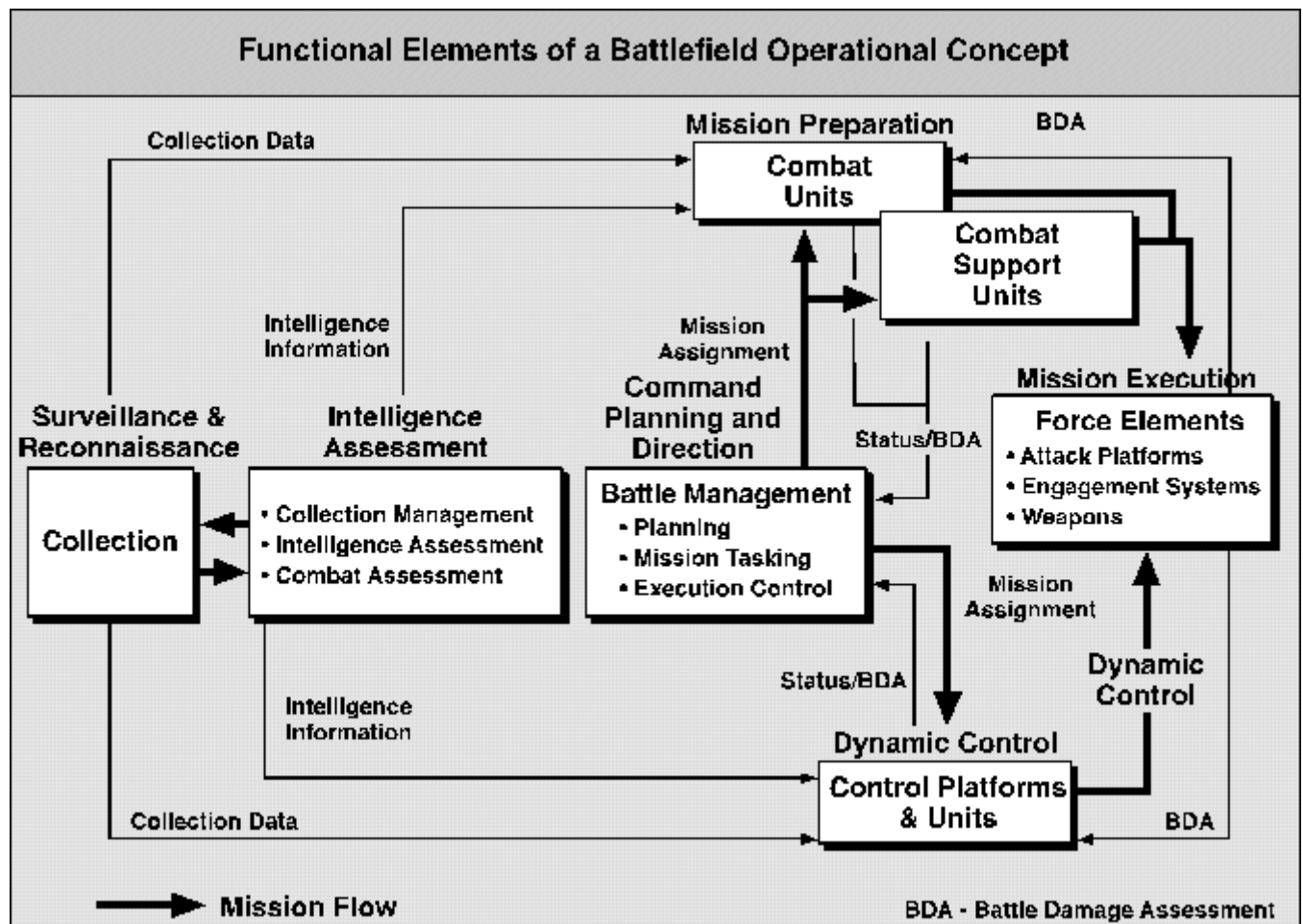
Joint Vision 2010 provides the conceptual framework within which U.S. forces will develop new technologies and leverage resulting technological opportunities and new doctrine to achieve new levels of effectiveness in joint operations. By defining new operational concepts—dominant maneuver, precision engagement, full dimensional protection, and focused logistics—*Joint Vision 2010* provides the Services, joint organizations, and DoD combat support agencies a common direction as they seek to develop the new capabilities, battlefield operational concepts and doctrine, and organizational configurations that will enable and shape the future joint forces necessary to meet the full range of critical challenges.

The development of operational concepts falls into two broad categories. The first involves development of specific battlefield operational concepts that integrate surveillance and reconnaissance activities, intelligence assessment, command and control measures, and mission preparation and execution activities to accomplish a critical operational task. The second involves the development of new organizational arrangements that seek to leverage new technologies and redefine how U.S. forces will conduct successful operations across the conflict spectrum.

End-to-End Battlefield Operational Concepts

A battlefield operational concept links together a series of functions that must be accomplished in order to carry out a critical operational task, such as locating and destroying mobile transporter-erector launchers (TELs) that could be used to launch theater ballistic missiles against U.S./coalition forces and other critical targets in the friendly rear area.

To achieve the capabilities needed to implement these concepts, the Department employs a system-of-systems approach that links surveillance and reconnaissance, intelligence assessment, command and control, mission preparation, and mission execution. The three battlefield operational concepts discussed later in this chapter are representative of these same functional elements and describe an end-to-end operational concept. This end-to-end approach leverages new technologies to accomplish the critical tasks that must be carried out to implement the U.S. defense strategy. Promising new battlefield operational concepts are often tested and refined during the conduct of advanced concept technology demonstrations (ACTDs) and joint warrior interoperability demonstrations. Advanced warfighting experiments (AWEs) aid in their timely transition to the warfighter.



New Organizational and Employment Concepts

As new operational concepts and advanced technologies are proven, they will lead to innovative changes to the organization and employment of forces. For example, efforts to achieve information superiority are providing more timely, accurate, and reliable intelligence support. This information dominance allows a shift in focus from merely concentrating forces for attrition warfare to obtaining desired effects from dispersed, synergistic forces at a critical place and time to achieve a tactical or strategic objective. The Army's Force XXI Operations, the Navy

Operational Concept, the Air Force's Air Expeditionary Force concept, and the Marine Corps' capstone concept of Operational Maneuver from the Sea, and its tactical enabler, Ship-to-Objective Maneuver, can deliver crippling blows against enemy centers of gravity.

DEVELOPING AND VALIDATING NEW OPERATIONAL CONCEPTS

The rapid pace of the transformation of military capabilities demands a thorough understanding of the potential impact of new battlefield operational concepts. Therefore it is essential that they be tested by a full range of joint and Service warfighting experiments and ACTDs and be accompanied by focused efforts to develop a new joint doctrine.

The Services have embarked on an ambitious concept development and testing process that involves warfighting centers, battle labs, and warfighting experiments. Joint- and Service-specific concept development is undertaken at warfighting centers and battle labs. Concepts considered operationally feasible are then tested in the field. When the results of these tests indicate improved warfighting capability can be achieved, the concepts can be expeditiously integrated into the requirements and doctrine development processes to provide new capabilities to the fighting forces as quickly as possible.

This testing and validation process often includes unified command exercises that provide critical operational feedback early in the concept development phase. The Services and the unified commands then have the proof-of-concept necessary to permit them to reconfigure force elements and support organizations, where appropriate, as new battlefield operational concepts are proven in the field.

The sections below present three promising new battlefield operational concepts that are under development using advanced concept technology demonstrations or warfighting experiments, followed by three new organizational or force employment concepts. These examples represent only a few of the many new operational concepts being developed by the Department.

BATTLEFIELD OPERATIONAL CONCEPTS

Time Critical Targeting to Destroy Theater Ballistic Missile Transporter-Erector Launchers

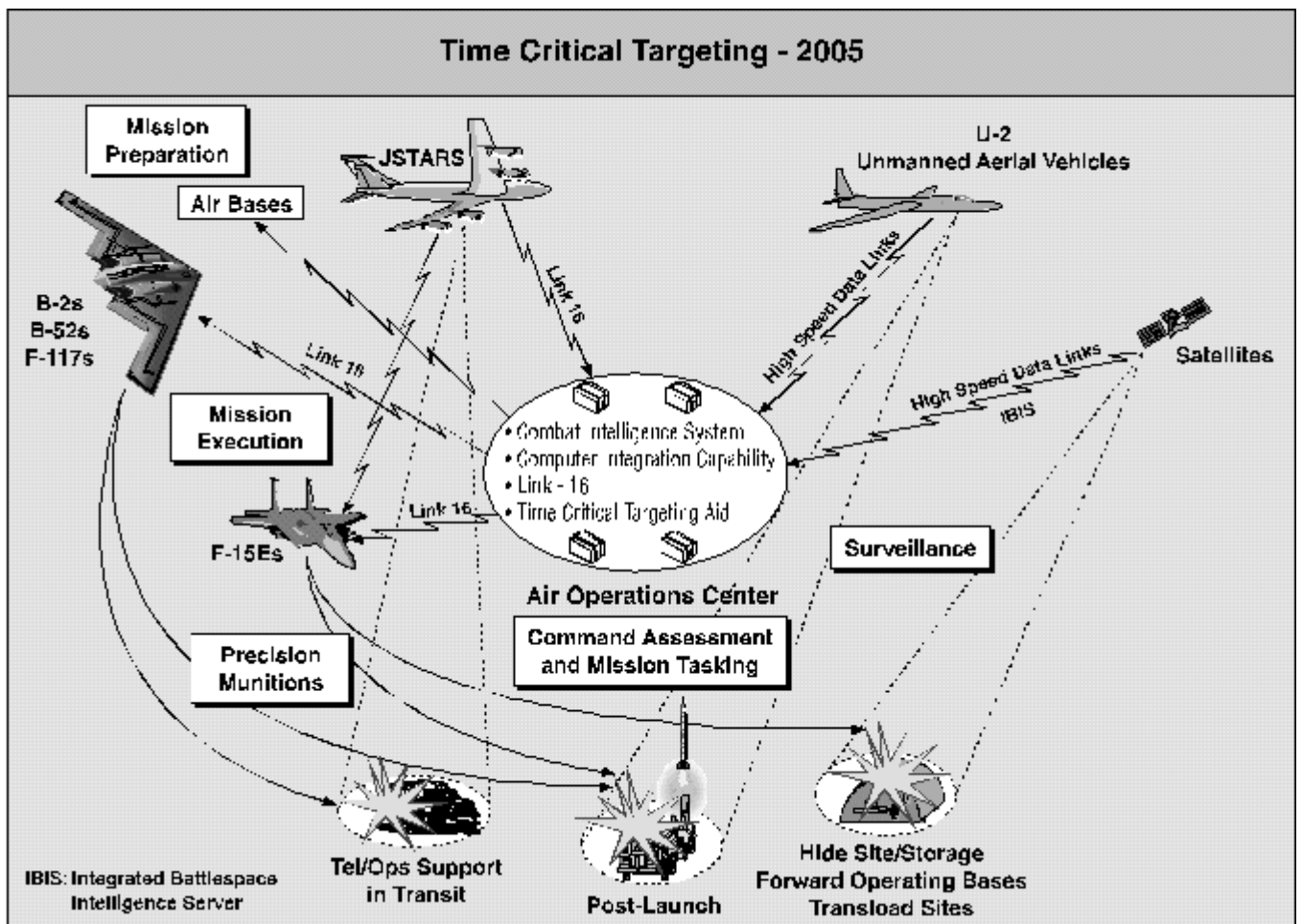
THREAT AND MISSION

The mobile theater ballistic missile (TBM) demonstrated its political and operational impact during the Gulf War. Theater ballistic missiles carrying chemical or biological weapons represent one of the most significant challenges facing the United States in future conflicts. Coordinated joint missile defense that integrates active defenses, passive protection measures, and offensive attack operations is required to successfully defeat this increasingly dangerous threat.

The most efficient method of dealing with the theater missile threat is to destroy enemy missiles and their launchers prior to launch. Since most regional powers have hundreds of missiles, but only several tens of launch platforms, the value of attacking the enemy's launch platforms,

including TELs used to support mobile operations, is very high, even if a TEL has already launched its missile.

Mobile missile TELs represent one of the most demanding time critical targets on the modern battlefield. TELs are highly mobile, relatively autonomous, and produce a low discriminating signature prior to launch. It is very difficult to locate and identify TELs while they are hidden or moving into launch positions, but intelligence, surveillance, and reconnaissance (ISR) systems have a reasonably good chance of detecting TELs on the battlefield just after launch. This window of opportunity, where the TELs are stationary, may exist for only three to five minutes. Therefore, success requires an end-to-end battlefield operational concept that permits the warfighter to move rapidly from detection and identification, through appropriate battle management at a command and control center to the assignment of an appropriate attack system, and finally successful engagement and attack.



A NEW BATTLEFIELD OPERATIONAL CONCEPT

The essential elements of the end-to-end operational concept for destroying mobile TELs are depicted in the accompanying graphic. The keys to time critical targeting of theater ballistic missile TELs include timely detection and discrimination, automatic target recognition coupled

with moving target indicator tracking, and the transfer of data in near real-time to key command and control elements that can quickly task lethal attack operations.

The Air Force has developed a Rapid Targeting System (RTS), a system of systems containing the functional elements of ISR, command assessment and mission preparation, and mission execution to enable the suppression of mobile TBM TELs. The Rapid Targeting System can find targets, facilitate planning and task attack systems, engage and destroy the TELs, assess the effectiveness of attacks, and report these results to key command elements.

Rapidly collecting and evaluating ISR information, predicting potential enemy courses of action, and transmitting only relevant data to the warfighter is referred to as intelligence preparation of the battlespace (IPB). With regard to the theater missile threat, IPB is the most critical function required in the near-term to underwrite the end-to-end battlefield operational concept for destroying TBM TELs.

ISR systems include not only surveillance and reconnaissance assets, but also systems that can focus and thereby improve their effectiveness for IPB. Examples of systems that are a part of the RTS include:

- Generic Area Limitation Environment, a computer-based terrain delimiter tool that eliminates much of the terrain as unsuitable for mobile TEL setup or launch and provides a focus for U.S. surveillance systems and sensors.
- The Integrated Battlespace Intelligence Server, which receives multiple data bases from other collection systems and filters out information that is not relevant to time critical targeting.
- Theater-level surveillance and reconnaissance systems like the Joint Surveillance and Target Attack Radar System (JSTARS) and the U-2 aircraft.
- The TPQ-37 Firefinder counter battery radar, used successfully against threat mobile rocket launcher system in the Precision/Rapid Counter-Multiple Rocket Launcher ACTD discussed in the 1997 Emerging Operational Concept Report.
- Predator unmanned aerial vehicles (UAVs) that are focused against specific areas of the battlespace based on extensive theater missile defense-oriented IPB.
- Air- and ground-delivered remote sensors placed in likely missile launch areas identified via IPB that can detect the movement of TELs and missile launches.
- Special Operations Forces observer teams, which transmit near real-time data to intelligence centers, command and control elements, and weapons delivery platforms through satellite communications and airborne relays.

Following assessment of ISR information in the intelligence, surveillance, and reconnaissance cell at the Air Operation Center, targets are nominated to the battle staff. Approved tasking of

appropriate attack aircraft then flows via the Rapid Targeting Dissemination System to squadron operations facilities, a control platform, and in some cases, directly to attack platforms, such as F-15Es. Aiding in this process are command, control, communications, and computers (C⁴) systems designed to ensure the timely flow of information. They include:

- A high speed tactical data link, Link-16, that transmits the tasking message, target imagery, and threat updates to the attack platform in real time.
- The Combat Intelligence System (CIS), a component of the Contingency Theater Automated Planning System, which provides core capability for automating the receipt, correlation, and dissemination of intelligence information to systems directly supporting combat planning and execution of air operations at both the component and unit levels.
- The Combat Integration Capability, which performs integration of space-based and terrestrial sensors with intelligence data to provide near real-time target identification of both air and ground targets. Using Link 16 to quickly flash targeting and warning information across an entire theater, it simultaneously employs a number of software based decision aids to recommend offensive and defensive actions against a specified time-critical target.
- The Time Critical Targeting Aid, a workstation that makes the JSTARS moving target indicator/ synthetic aperture radar (SAR) ground picture available in the Air Operations Center/Control and Reporting Center. It does this by using the Army's Ground Station Module capability to receive data from the JSTARS aircraft and network connections to assimilate CIS and Link 16 data. These inputs, along with available SAR imagery and maps, are displayed together with radar data so that target behavior can be immediately discerned.

Complying with theater specific rules of engagement, the attack aircraft locates the target, in some cases assisted by JSTARS controllers, attacks using precision-guided munitions, and reports real-time assessment data through airborne command and control channels to the battle staff, completing the mission execution and initial battle damage assessment phase. An example of the Air Force's capability to execute the rapid transmission of information required in this end-to-end task against mobile TBM threats is currently fielded in the Bosnian area of operations. The Gold Strike Rapid Targeting System transmits near Real Time Information in the Cockpit to an F-15E in flight, enabling rapid tasking of strike assets against detected threats.

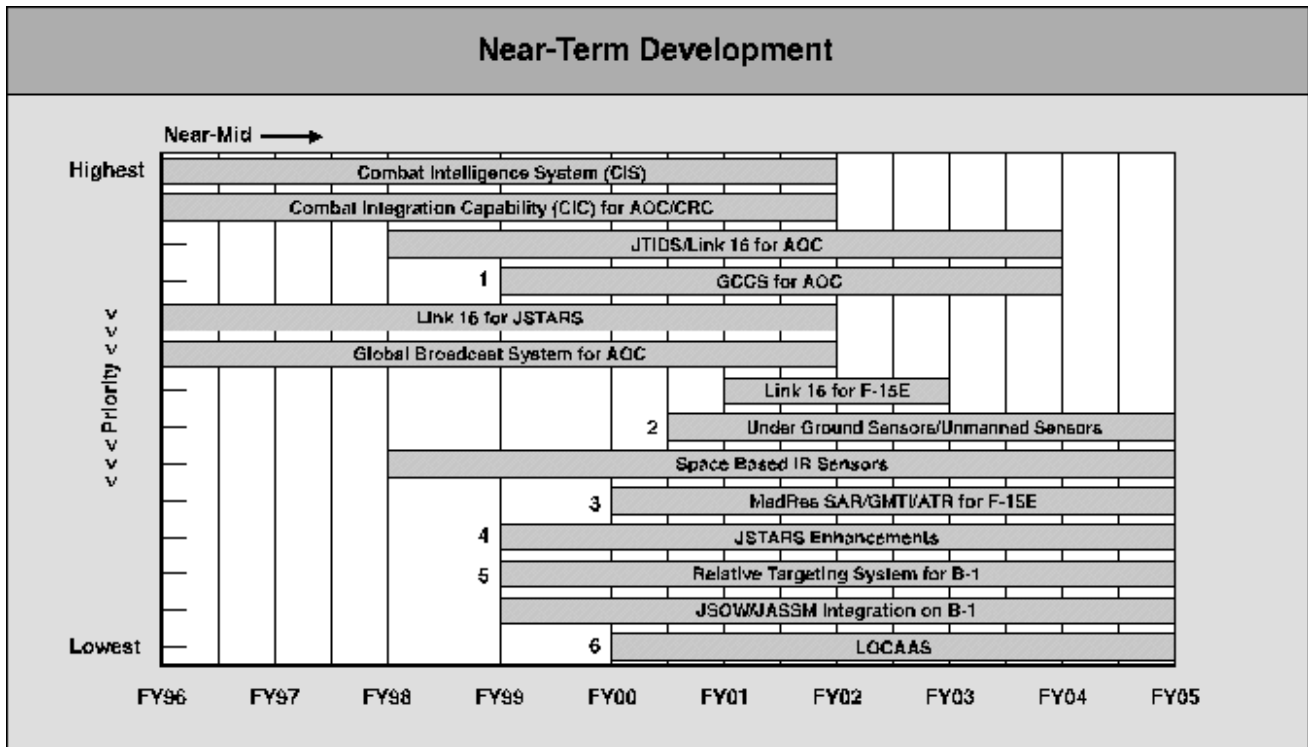
Time critical targeting will continue to be validated and tested in Air Force and joint exercises, including Roving Sands and the Global Engagement exercise series. Future development of time critical targeting will explore automation of IPB information for graphic display on operator consoles and interface with decision aids that cue battle managers to find and identify entities, task assets, attack and kill targets, and utilize near-real time battlefield assessment data. IPB will form the basis of Dynamic Battle Management (DBM), an approach that will ensure the dissemination of the right information to the right command and control node and shooter at the right time. The DBM environment will evolve to include:

- Shared information, improved decision support, superior connectivity, and a common operating picture among key joint nodes in a theater.
- Execution authority and engagement control by the command and control node that best meets the commander's need. A common operating environment based on agreed data and communications standards will make DBM possible.

In addition, an improved ISR systems capability will be developed for data collection, processing and dissemination, target acquisition, and identification and tracking, relying on systems like the Integrated Battlespace Intelligence Server, Unmanned Ground Sensors, and Unmanned Ground Measurement Intelligent Sensors. Finally, time critical targeting will include boost phase intercept by an Airborne Laser, which will dramatically reduce the load in terminal defense systems protecting critical assets. It will also increase the capability of critical active defense systems through early cuing on incoming TBMs. Early sensing/cuing will aid battle management/command, control, communications, computers, and intelligence (BM/C⁴I) by enabling commanders to more easily prioritize targets, deconflict events, and allocate task resources.

PLANNING, PROGRAMMING, AND BUDGETING

The near-term development plan for the improved TBM attack operations system of systems will provide the new capabilities needed to achieve the desired level of rapid targeting capability against TBM TELs. It is important to note that this architecture, although built specifically for attacking mobile missile TELs and the entire theater missile target set, also enhances air and space power employment across the board by improving real-time management of combat power.



Joint Mine Countermeasures

THREAT AND MISSION

Many future crises will likely occur in environments where mines on land and at sea serve as serious obstacles to U.S. military operations. Mines are inexpensive weapons, available worldwide. Often emplaced along with other pre-placed obstacles, mines in combination with other obstacles restrict maneuver, disrupt operating tempo, deny flexibility, and increase friendly casualties at sea, during amphibious landings, in airborne forced entry, and in ground operations.

The Joint Countermine Advanced Concept Technology Demonstration (JCM ACTD), will evaluate the capability of U.S. forces to conduct integrated mine countermeasures operations from deep water, through the shallow water, very shallow water, and the surf zone onto land. Some of the major objectives of the JCM ACTD are to integrate new mine countermeasure systems into a JCM-tailored digital command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR) architecture, and to develop a tactical software application that provides a JCM common operational picture. New systems that prove effective in this demonstration will be integrated with already fielded Army, Navy, and Marine Corps C⁴ISR and countermine capabilities to develop an overall JCM system-of-systems.

The operational sponsor for the JCM ACTD is the United States Atlantic Command (USACOM). The USACOM staff will assess the military utility of the new systems in achieving joint employment objectives under varied conditions while leveraging previously scheduled joint and Service field training exercises.

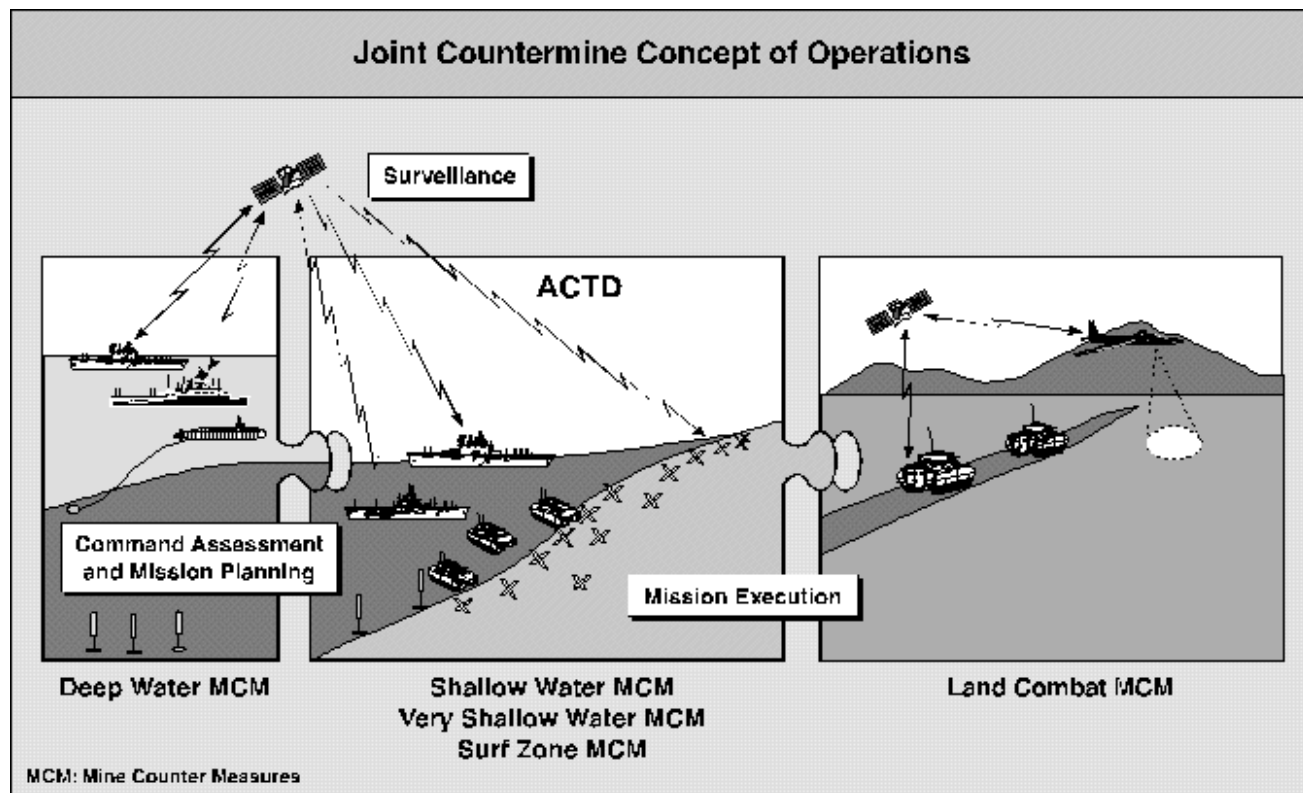
The JCM ACTD consists of a two-phased demonstration. Demonstration I, centered on Joint Task Force Exercise (JTFEX) 97-3, was concluded in September 1997. A JTFEX is a joint field training exercise that evaluates and certifies the readiness of sea, air, and land forces to deploy and carry out assigned tasks. JTFEX 97-3 focused on enhancing near-shore mine clearing capabilities, with an emphasis on detection and neutralization of mines and obstacles during the conduct of amphibious operations. The second phase of demonstrations will emphasize the use of technologies to perform surveillance and reconnaissance and demonstrate the integration of various technologies to continuously carry out an effective transition of countermine operations from the sea to the land. Following completion of the second demonstration, the most effective ACTD hardware, software, and documentation will be transferred to the operating forces of several Services for further refinement and the development of appropriate tactical and operational concepts.

BATTLEFIELD OPERATIONAL CONCEPT

In JTFEX 97-3, a joint task force conducted forced entry missions into a simulated area of operations that included an airborne assault objective on an airfield at Fort Bragg, North Carolina, and an amphibious assault on the beaches of Camp Lejeune, North Carolina. This scripted scenario specifically focused on a series of intelligence collection and other mission execution functions in accordance with the Joint Countermine end-to-end operational concept.

During the 1997 demonstration, clandestine intelligence surveillance and reconnaissance operations against the Camp Lejeune and Fort Bragg operating areas were demonstrated using a littoral remote sensing software application that linked national assets and experimental processing/exploitation techniques, including:

- The coastal battlefield reconnaissance and analysis system (COBRA) carried by a UAV which uses passive multispectral video and a ground processing station to automatically detect minefields, to manually detect obstacles and fortifications, and to display their locations in near real time from the surf zone inland.
- An adaptation of the Magic Lantern system which uses gated lidar imaging to rapidly detect, classify, and localize mines and obstacles in the surf zone and craft landing zone.
- A new airborne standoff minefield detection system carried by a UAV that employs electro-optical sensors linked to a ground control station to detect and identify the boundaries of anti-tank minefields in near real time to assist maneuver planning.
- Close-in man-portable mine detectors with advanced infrared thermal imaging and ground penetrating radar to detect reliably metallic and nonmetallic mines.



These new, integrated mine detection systems facilitated planning and helped determine the pace and timing of the assaults, as well as the specific countermine forces necessary to support the operation. Demonstration of supporting communication links and the development of a common tactical picture received particular emphasis in the pre-assault phase. Mine and countermine communication links and information processing and display systems received and assimilated data from sensor and collector systems, processed and displayed the data, and transmitted relevant information to commanders and operational forces.

Prior to and during the amphibious and airborne assaults, priority operations included mine and obstacle neutralization in shallow water through the beach zone and the marking of mines and obstacles or areas clear of mines and obstacles. Several new systems designed to breach or clear minefields and obstacles were used, including:

- The joint amphibious mine clearance system, which used remote-controlled tractors employing mechanical, explosive, and electromagnetic countermine systems to rapidly and reliably breach, clear, and mark mines and obstacles from the high water mark through the craft landing zone.
- The Explosive Neutralization Advanced Technology Demonstration, using air-cushioned landing craft as the host platform and employing an autonomous craft control system and a new fire control system to improve the accuracy and placement of explosive line charges and surf zone arrays to breach amphibious assault lanes through very shallow water/surf zone minefields.

- The Power Blade, combining a remote-controlled tractor with a commercial blade-type system. This approach demonstrated a rapid and highly reliable mine and heavy obstacle breaching and clearing capability from the six-foot depth in the surf zone to across the beach.
- An off-route smart mine clearance system operating on land, employing acoustic and seismic activation systems and offboard infrared decoys from an armored personnel carrier to replicate the critical signatures of target vehicles and cause a launch and subsequent destruction of smart mine munitions.

Neutralization of mines and obstacles, both at sea and on land, was undertaken only to the extent necessary to successfully carry out the mission. Operations occurred in several areas at the same time, as will occur in an actual assault. Effective and rapid mine and obstacle clearance was a key factor in facilitating the rapid buildup of combat power ashore and the subsequent successful breakout from the amphibious landing area.

The commander of the amphibious forces employed a tailored C⁴I system to leverage the individual capabilities of new and existing systems to display a common operational picture. The Joint Countermine Operational Simulation system was used by the commander's staff for course of action analysis and to visualize and brief the assault plan prior to the assaults.

PLANNING, PROGRAMMING, AND BUDGETING

In FY 1998, milestones for the JCM ACTD include demonstrating the ability to conduct seamless operations from deep water, through the beach to land objectives.

Naval Fire Support—The Ring of Fire Concept

THREAT AND MISSION

With *Joint Vision 2010* and the Marine Corps concept of Operational Maneuver from the Sea emphasizing a need for joint fires in the littoral battlespace, the Navy is exploring new battlefield operational concepts to provide effective naval fire support to joint forces ashore. One concept being examined is the Navy's Ring of Fire, designed to provide flexible and distributed firepower from naval forces for offshore support of operations on land.

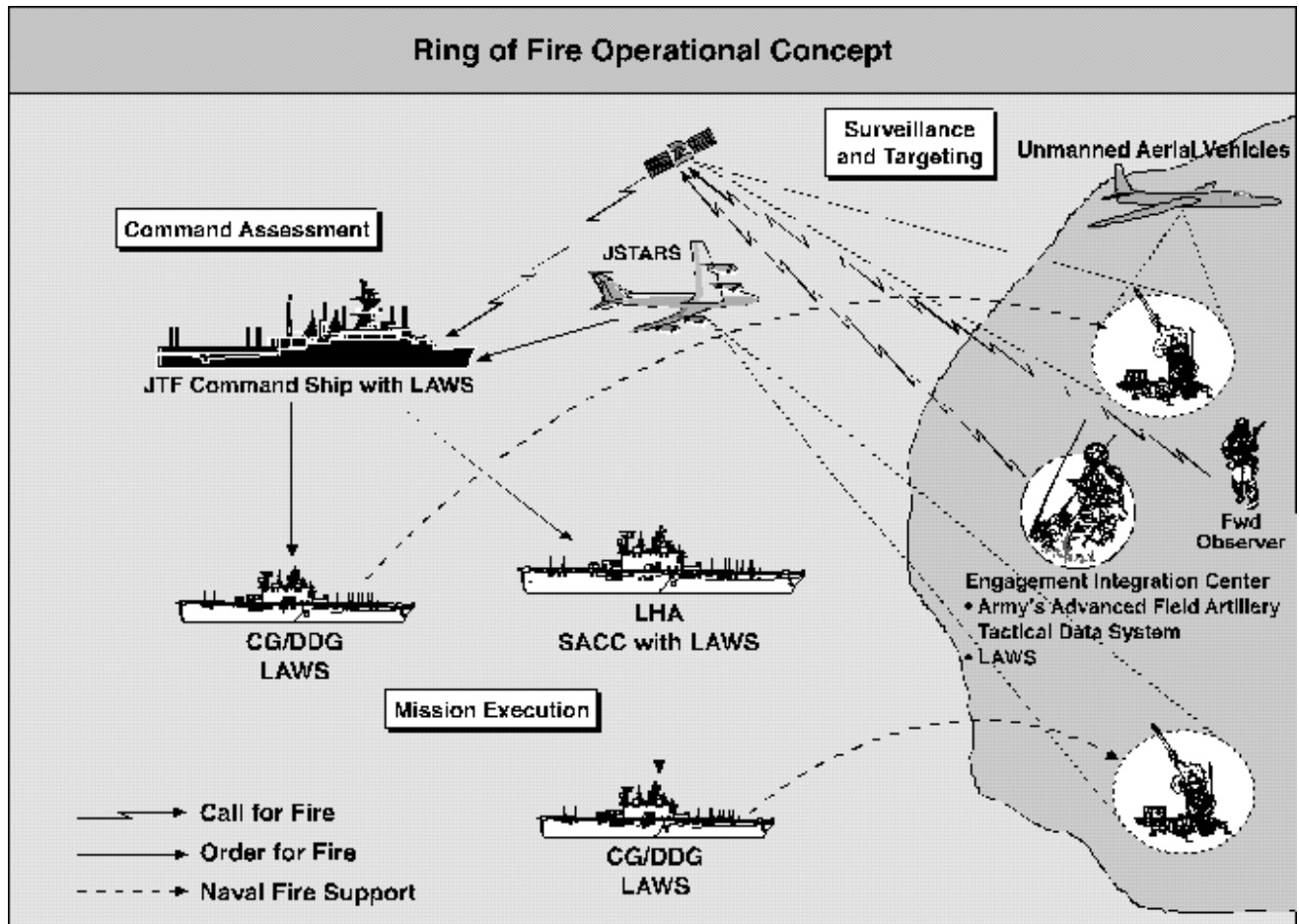
OPERATIONAL CONCEPT

The Ring of Fire end-to-end battlefield operational concept will use a series of Land Attack Weapons System (LAWS) to link together a group of naval platforms within range of a given objective area ashore to provide a seamless integration among the available weapons launchers. As a platform checks into the ring, its ordnance inventory is entered into the LAWS data base containing the overall force inventory. It is made available for apportionment to different mission areas in accordance with the operational commander's guidance. When either a scheduled fire support mission or short notice fire mission is tasked, the joint task force (JTF) commander can use his LAWS to automatically designate a platform and the type of ordnance to be used to

complete the mission. The designated platform receives the mission and its land attack weapon system provides the solution to shoot the specified ordnance at the proper time. Data on target location can come from a number of sources. For example, forward observers in the field using a hand-held computer configured to digitally pass preformatted messages through a radio can quickly and accurately call for fires. Other theater sensors like UAVs or JSTARS could provide surveillance and reconnaissance locating data on enemy formations directly to commanders at sea.

The Ring of Fire concept will rely upon a digital means via the land attack weapons system to assign fire missions, eliminating many of the errors and difficulties associated with voice tasking and reducing the time from a request for fire support to ordnance on target. Success will depend upon the development of accurate targeting information and the capability to transmit this information rapidly to operational commanders and fire support units at sea. To enable rapid, reliable multiple tasking, weapons systems and fire control systems must be internetted to permit the timely flow of accurate surveillance information, requests for fire, and command and control direction among units. With the development of long-range munitions, multimission ships interconnected via LAWS will not be restricted to operating in small fire support areas that leave them vulnerable to attack and limit their availability to perform other operational tasks. Consequently, a ship may be assigned during any given period to more than one warfare or component commander for operational use and the ordnance of that ship may also be used for more than one operational task. Some ordnance may be apportioned for direct support missions to be delivered relatively close to friendly forces, while others may be made available to the theater commander to shape the battle by destroying targets deeper in the enemy rear area. Automating some of the decision making at the Engagement Integration Center expedites the process of passing fire missions from the sensor through command assessment and assignment to the shooter.

With this concept, a ship that is located in the amphibious operating area to provide force protection can concentrate on protecting itself and other assigned forces. A ship that is entering the amphibious operating area and the Ring of Fire can be designated to execute a fire support mission by firing allocated weapons.



Central to the execution of this battlefield operational concept is the development of the Land Attack Weapons System that conducts naval fire support in what has been described as a network-centric approach to warfare. By dynamically allocating the firepower from several ships rather than allocating ships and aircraft to different missions, the force's collective firepower can be better integrated to achieve specific target objectives.

The Ring of Fire battlefield operational concept was demonstrated in Fleet Battle Experiment (FBE) Bravo in September 1997. This was the second in a series of experiments designed to examine emerging systems and technologies using innovative operational concepts in support of *Joint Vision 2010* and *Forward . . . From the Sea*, the naval operational concept. FBE Bravo investigated precision fires with a major focus on the Ring of Fire. LAWS was installed aboard JTF command ship (USS Coronado), in the Supporting Arms Coordination Center (SACC) carried on USS Peleliu, and in a fire support ship, USS Russell. The LAWS unit aboard the command ship was the master unit that received all requests for shore fire support.

During FBE Bravo, surveillance and targeting was conducted by the Forward Observer/Forward Air Controller (FOFAC), who determined target coordinates and using a hand-held computer, passed digital targeting information directly to the JTF command ship via satellite. The master LAWS aboard the command ship paired the target with a specific platform or weapon and transmitted the mission order to a LAWS-equipped fire support ship to execute the fire support

mission. The Army's Advanced Field Artillery Tactical Data System was also integrated into the local area network and was used to relay target information from the FOFAC to LAWS.

FBE Bravo successfully demonstrated that the Ring of Fire concept using LAWS was scaleable to the tactical situation, could apply a distributed arsenal of weapons to targets, and could respond to high rates of digital calls for fire. The Navy is currently evaluating the results of the two Ring of Fire demonstrations to identify its implications to future littoral warfighting.

ORGANIZATIONAL AND FORCE EMPLOYMENT CONCEPTS

In addition to developing new battlefield operational concepts such as those discussed above, DoD is also conducting concept development of a broader nature. The Services are exploring new organizational arrangements and new concepts of force employment to meet future key security challenges. Several examples follow.

New Marine Corps Concept for Military Operations On Urban Terrain

THREAT AND MISSION

Conducting military operations in an urban environment poses many challenges. Built-up areas create a very rugged urban terrain that seriously limits observation distances, engagement ranges, weapons effectiveness, and mobility, thereby forcing extremely close combat. Command and control is extremely difficult because leaders cannot easily observe the battlespace and radio communication is subject to interference caused by man-made structures. The presence of large numbers of civilians requires special measures to prevent noncombatant casualties. Nevertheless, in the coming years, land forces will almost certainly be called upon to carry out various types of military operations, including humanitarian assistance operations, peace operations, and high-intensity combat. These operations may occur simultaneously in adjacent neighborhoods. Overcoming these challenges will require new and innovative ways for conducting military operations in urban terrain.

OPERATIONAL CONCEPT

Historically, military operations on urban terrain have been attrition-style operations, relying upon overwhelming firepower to pulverize the area and destroy an enemy. Fierce and continuous close combat resulted in great material destruction and high casualties among combatants and noncombatants alike. This level of destruction is not acceptable in a wide range of situations. Alternative capabilities are needed that permit the penetration of urban areas in order to execute a discrete set of limited operations with minimal collateral damage. To meet this challenge, the Marine Corps is developing and testing new battlefield operational concepts that apply close coordination of dispersed small units employing maneuver warfare principles in urban environments.

In maneuver warfare, strength is applied against the enemy's weaknesses, using rapid tempo to shatter the enemy's cohesion, organization, command, and psychological balance. In urban

environments, Marines plan to take advantage of the peculiarities of the surroundings to develop and maintain superior operating tempo, creating a cascading effect that overwhelms the enemy.

Enhanced automated awareness on the urban battlefield based on a variety of new reconnaissance sensors will allow Marines in a built-up area to gather information despite the presence of terrain-masking features that obscure their fields of view. This capability will allow an individual Marine or a unit to collect and accurately assess information regarding the terrain and the presence of friendly, enemy, and noncombatant personnel. Much of the volume of a major city is interior—the space found inside structures above or under the ground. Land forces need the capability to gather surveillance information through walls and to detect the presence and shape of tunnels and sewers. Surveillance and reconnaissance systems, including specifically designed UAVs carrying electro-optical and infrared sensors, and reconnaissance patrols with tailored radars, infrared and optical devices will collect information and disseminate it to commanders.

The resulting information must be rapidly fused into a common tactical picture available to all operating units in near real-time. Although all combat units will probably be involved in urban battle, it is likely to be conducted primarily by dispersed teams or squads of dismounted infantry in coordinated operations. Information must flow to these basic tactical units. Accordingly, the focus of information systems in urban operations is on enabling lateral coordination and opportunistic decision making at the small unit level.

Command and control systems for military operations on urban terrain must be capable of representing the three-dimensional nature of urban terrain. Associated communications devices must provide reliable communications paths between and through structures, streets, and subterranean features like sewers or subway tunnels. Computer-generated map products need to be developed to provide a graphic representation of the terrain. These products must be quickly updated to reflect changes caused by combat action. Command and control systems must provide for the retrieval, exchange, storage, display, and manipulation of the large quantities of data required for such representations.

Mobility and countermobility capabilities must be developed that can allow U.S. forces to gain control of movement throughout the multiple dimensions of urban terrain. For surface movement, Marines will readily create avenues of approach through structures and along rubble-strewn streets. Below the surface, Marines will exploit the many forms of subterranean architecture which exist in modern cities—subways, sewers, and other underground pathways. Above the surface, Marines will move through and across the upper stories of buildings, crossing streets and alleys high above the ground, often without the aid of aircraft. The most complex mobility challenge Marines will face will be to provide vertical mobility, conducted between the sub-surface, surface, and above-surface zones.

In an urban environment, Marines plan to apply measured firepower which will deny the enemy the protection he will seek from urban structures, while reducing the risk of injury to nearby noncombatants and infrastructure. Marines will possess the ability to successfully engage enemy forces located within buildings or rubble, and they will conduct engagements between the street level and the subways. Nonlethal weapons will be used to help clear structures shared by enemy

troops and noncombatants. The overall fire support system must be able to coordinate the use of a wide range of weapons, including munitions with variable penetration and explosive characteristics, and direct lethal and nonlethal fires against different targets located very near one another.

In urban combat, Marines will use force protection measures to reduce the risk of casualties while facilitating rapid maneuver. Individual and collective protection might serve to lower the incidence of casualties. Protective measures will include special medical capabilities. Land forces may be exposed to a wide variety of infectious diseases in tomorrow's urban environment which might be avoided by the use of antibiotic body-covering ointments or personal air filtration systems.

Maneuver warfare is based on rapid tempo. Such tempo is tied closely to logistics, which sets the bounds for what is operationally possible. In future urban operations, the logistics system must be adapted to the characteristics of the environment to enhance tempo. The two most distinctive features of urban operations—built-up terrain and the presence of a large number of noncombatants—will both impact logistics. Sustainability efforts must provide for supply, maintenance, transportation, health services, engineering, and services under the special conditions of future military operations in urban terrain. In some cases, the urban environment itself might be subject to exploitation for purposes of logistics support. Relevant supplies might be available within the contested area, either for use by Marine units or to provide for the needs of noncombatants or enemy prisoners of war. Indigenous facilities and infrastructure (hospitals, vehicle maintenance depots, and communications systems), as well as heavy equipment and civilian vehicles, could serve the needs of the Marine Air-Ground Task Force. Subject to security considerations and the laws of armed conflict, local residents with special expertise might be able to provide some assistance.

Conducting effective military operations on urban terrain will require highly flexible concepts, which, in turn, will require highly flexible organizational arrangements. All units must be capable of readily disassembling into a number of independently functioning component parts and then reassembling again, without losing momentum. Most importantly, commanders must be able to rapidly change the organization and capabilities of any unit to gain maximum tactical advantage as the situation develops. As operations progress, the force must be able to change shape as special assets shift from one unit to another. In this way, leaders will smoothly adjust the focus of effort to maintain pressure against critical enemy vulnerabilities, while bypassing and isolating the enemy's positions of strength.

Army Force XXI Operations

THREAT AND MISSION

The Army has a long history of developing innovative approaches to future warfighting challenges. Prior to World War II, General George C. Marshall began the Louisiana Maneuvers to explore new concepts for the employment of large forces in combat. As the strategic environment changed in the early 1990s, the Army revived the Louisiana Maneuvers as a means to keep ahead of the rapid pace of change. This effort has evolved into the Army Battle Lab

program, discussed in more detail in Chapter 15, which helps identify concepts and requirements for new doctrine, training, leader development, organizations, materiel, and soldier systems.

The future Army, Force XXI and its follow-on Army After Next, must be designed with organizations and capabilities that will allow it to be rapidly tailored, strategically deployable, and effectively employable in joint and multinational operations. Current developmental efforts include digitized heavy forces capable of rapidly processing and acting on tactical information to enable effective operations in a variety of environments. Future work on digitized light forces will build on this base. Innovative approaches to challenges, such as military operations in urban terrain being developed in concert with the Marine Corps, are being explored in Force XXI operations and will help achieve the necessary capabilities for the Army After Next to meet critical warfighting challenges in the 21st century.

OPERATIONAL CONCEPT

The land forces required to meet future security challenges must be able to respond across the spectrum of possible military operations. The Army's concept of operations for Army XXI incorporates the full life cycle of modern military operations, from initial receipt of mission through return to home station. This conceptual framework serves to identify both the enduring characteristics of Force XXI operations, the many tasks armies have always performed in war and other military operations, as well as to identify areas where new technologies and new concepts can be combined for truly revolutionary increases in overall capabilities. The concept describes six operational capabilities that Army XXI will develop to meet the challenges of the 21st century.

- **Project the Force.** Force XXI will be a power projection Army. No matter where future conflicts or military operations take place, a portion of the force will be required to deploy to the theater. Future adversaries may not permit U.S. forces the luxury of a long period to build-up forces before combat operations begin. Army XXI must have modularity that establishes a means to provide interchangeable, expandable, and tailored force elements that can enable rapid and effective response to the changing situations and local conditions. Mission planning and rehearsal will be conducted simultaneously with the build-up of decisive forces, as automated systems and simulations, capable of operating from ships and aircraft, provide the capability to plan, coordinate, and war game possible courses of action while forces are en route. The result will be a cohesive joint team trained and ready for effective execution immediately upon arrival in theater. Streamlined logistics, characterized by Total Asset Visibility and Split-Based operations, which provides supplies direct from the source to the division in the field, will support early operations upon arrival in theater, thus eliminating the need to build large logistical concentrations before decisive operations can begin.
- **Protect the Force.** The Force XXI approach to force protection will be a holistic one, incorporating organizational, materiel, and procedural solutions to the challenge of protecting soldiers, their information, and their equipment across the full range of operating environments. Solutions to the many challenges of force protection are being developed through both experimentation and the application of practical experience in

contingency operations. Army digital capabilities enhance these solutions. Common situational awareness enables early and accurate Intelligence Preparation of the Battlespace to determine the likely threats and likely methods of attack. Situational awareness obtained by linking various force elements together in a digital information network also facilitates greater dispersion of vulnerable assets, thereby increasing enemy targeting difficulties.

- **Gain Information Dominance.** Dominating information operations means creating a disparity between what friendly forces know about the battlespace and operations within it and what the enemy knows. If that disparity is great enough, friendly soldiers and leaders at each echelon are making informed decisions while the enemy is guessing. To achieve information dominance, Army XXI must have improved sensors to deny enemy forces the ability to hide behind terrain features or take advantage of adverse weather conditions. The force must also be capable of accurately passing information at high speed from sensors to shooters, and to the command and control centers that synchronize the broad scope of operations. Army XXI will possess this capability through the infusion of digital upgrades to current systems and the rapid fielding of new digital information networks at all echelons.

- **Shape the Battlespace.** The goal of shaping the battlespace is best described as setting the conditions for success by eliminating the enemy's capability to fight in a coherent manner before committing forces to decisive operations. Force XXI will go well beyond the traditional preparatory fires or deep engagement of targets. Vastly improved capabilities of long-range missiles with smart submunitions, precision weapons delivered throughout the battlespace, and attack helicopters capable of operations deep within enemy forces, integrated with an air campaign, are critical to shaping the battlespace.

- **Decisive Operations.** Decisive operations in war are military operations that present the enemy with no hope of victory. In smaller-scale contingencies, accomplishing military objectives rapidly with minimum expenditure of scarce resources are decisive. Decisive operations will require the precise and rapid application of military force, in synchronized operations across the spectrum of possible conflict. Such simultaneous operations require great precision, enabled by C⁴ digitization that provides soldiers and commanders at each echelon the information required to make better battlefield decisions at a pace greater than the enemy's ability to respond. Striking the enemy at multiple critical points simultaneously will destroy essential forces and functions, offering the enemy no effective response. Force XXI operations must be fully integrated as the land force commander draws from a suite of complementary capabilities of the Services, allies, partners, and other government and nongovernment organizations.

- **Sustain the Force.** Sustainment remains an ongoing effort throughout the entire range of Force XXI operations and seeks to seize the initiative, dictate the tempo, and maintain that tempo over time through improved logistics. Force XXI sustainment is a combined arms effort, not just the responsibility of the logistician. New organizational arrangements aimed at developing lighter forces should strive to reduce logistics requirements. Anticipatory logistics enabled by digitization are key to sustainment.

Capabilities like Total Asset Visibility (TAV), implemented in advanced warfighting experiments and refined during operations in Somalia, Macedonia, and Haiti, increase the efficiency and timeliness of logistics operations. Common situational awareness together with TAV to enable logisticians to make informed decisions, allowing Army elements to execute proactive logistics. The total effect of the Army XXI improvements in logistics management and logistical information technology will be to enable military operations without the burden of traditional logistical stockpiles.

THE WAY AHEAD

The Force XXI operational concept is an evolving concept, the result of the continuous integration of experimentation, experience, and conceptual thought. This concept represents a way point along the path to Army XXI, the Army of the 21st century. Further developmental work is ongoing to create the capabilities to execute these concepts. Central to the developmental effort was the brigade-level AWE, Task Force XXI, at the National Training Center, California, in March 1997 and the division-level AWE, Division XXI, at Fort Hood, Texas, in November 1997. Along with other AWEs, these experiments will allow the Army, in concert with the other Services, to refine concepts and produce a clearer conceptual framework for full spectrum dominance.

The Air Force's Air Expeditionary Forces

THREAT AND MISSION

The Air Force is currently implementing the Air Expeditionary Force (AEF) concept to provide a light, rapidly deployable, and highly capable force for the nation in peacetime, crisis, and war. The primary AEF mission is to provide regional commanders in chief (CINCs) and joint force commanders with air and space forces which can carry out wide ranging airpower options and to meet specific theater needs across the full spectrum of military response options. Humanitarian relief in Africa, disaster relief in South America, augmentation of forces in Southwest Asia, and the conduct of timely attacks to halt invading forces on the opening day of a major theater war are a few examples of the varied missions AEFs are designed to undertake. Across the spectrum of possible military operations, a rapid response may deter conflict or make the difference between a quick, efficient victory and a protracted, costly engagement. Furthermore, the regular deployment of Air Expeditionary Forces in individual theaters helps strengthen mutually beneficial cooperative defense relationships and improves the ability of the United States to remain globally engaged.

OPERATIONAL CONCEPT

The key to U.S. global dominance is the ability to project power quickly any place in the world. This global response can be executed with rapid projection of an AEF that can deploy or reposition to a crisis within 48 hours. With focused and agile combat logistics, these forces can demonstrate U.S. resolve through mere physical presence or the conduct of specific operations. The reduced footprint of an expeditionary force reduces the vulnerability of U.S. forces in potentially hostile regions—especially those containing terrorist forces.

Air Expeditionary Forces can be tailored to match the requirements of the situation. For example, in a humanitarian relief AEF, airlift and special operations aircraft would predominate, while in a force projection AEF a tailored mix of air superiority aircraft, precision strike platforms, and assets to suppress enemy air defenses would likely be employed. In a major theater war, a force enhancement AEF can respond as a flexible deterrent option at the outset of a serious crisis, as a precursor to execution of an operational plan by a much larger force. In some cases, a contingent of long-range bombers, originating from the continental United States or from a number of forward-deployed sites, could be added to a force enhancement AEF to promote the capability to conduct precise attacks on a range of targets in the early stages of a conflict.

In all cases, the various types of AEF will make use of air and space-based assets that provide C⁴ISR to maintain the requisite situational awareness and connectivity while forward deployed. The AEF commander will be able to use modern global communications to reach back to home station or anywhere else in the world for required support that would have previously been forward deployed. This reach-back capability distinguishes the modern day AEF from past rapid deployment force packages.

Global connectivity and internetted computer systems will enable AEFs to operate with lean sustainment logistics and a minimum forward-deployed footprint of materiel and personnel, supported by time-definite delivery of spare parts and other critical supplies. Commanders will also be able to track people, inventory, munitions, and spare parts efficiently, permitting optimum use of scarce long-range and theater mobility assets. This, in turn, will reduce the timeline for employment and the potential for casualties. Effective use of reach-back and modern information processing will also provide the basis for dynamic battlespace assessment, timely operational planning, and mission execution in near real-time. Intelligence analysts and assorted data bases, as well as back-up planners and modern campaign and mission planning tools, will all be available to the AEF through the reach-back method.

One key role of AEFs will be to enhance deterrence in crisis. Force enhancement AEFs will include intelligence and reconnaissance assets that help the CINC or joint task force commander achieve superior real-time awareness of the theater. In addition to its own intelligence, analysis, and targeting assets, such an AEF will be directly linked to surveillance, intelligence assessment, and command and control systems to find, fix, track, and target adversary forces. This dominant battlespace knowledge capability, when combined with a force capable of prompt and decisive air strikes, will serve as a credible deterrent by denying would-be aggressors the prospect of success.

Building on the dominant battlespace knowledge associated with a force enhancement AEF, a force projection AEF can be structured to carry out devastating attacks against an aggressor. The rapid, precise application of U.S. airpower, leveraged by space assets, can rapidly halt an initial enemy offensive, thereby denying an enemy any fait accompli for political bargaining, and possibly delivering a serious psychological blow to the adversary. By conducting focused, precision attacks on command and control infrastructure, a force projection AEF can also hold at risk the enemy's ability to control its fielded forces, as well as the internal security forces that stabilize its regime. Assuming the adversary government is authoritarian, the impact of threatening the regime may result in concessions that reduce the effectiveness of enemy forces.

This strategy was pivotal in Bosnia, where NATO air strikes helped convince Bosnian Serb leaders to remove heavy weaponry from the Sarajevo exclusion zone.

During 1996 and 1997, the United States deployed six AEFs to different bases in Southwest Asia to support the United Nations sanctions against Iraq. These deployments demonstrated the flexibility and effectiveness of first generation AEFs.

CONCLUSION

A few of the promising new battlefield operational concepts and new organizational configurations being developed in the Services and elsewhere in the Department of Defense have been described here. To manage its fiscal and personnel resources, the Department must continue to place major emphasis on the development of new operational concepts that help ensure mission success on the battlefield. However, it is essential that before significant portions of the defense budget are committed to programming for revised organizational arrangements or the procurement of new technologies, new operational concepts be fully developed in joint and Service battle labs and validated in warfighting experiments. The Department remains committed to developing and then incorporating new operational concepts in the U.S. armed forces that help transform their ability to meet the challenges of the 21st century.

Chapter 15

IMPLEMENTATION

The Department's efforts to transform U.S. military forces for the 21st century have thus far focused on establishing a process that will effectively merge quality fighting forces, leading edge technologies, and new operational concepts such as those discussed in Chapter 14 to promote the integrated development of new operational capabilities. A key element that distinguishes this transformation effort from a more traditional evolution of military capabilities is the concurrent development of new concepts and doctrine, as well as organizational configurations that will maximize the utility of new technologies.

The broad operational concepts and other key aspects of *Joint Vision 2010* provide a common framework for the Services as they develop their capabilities to carry out a wide range of joint operations to meet the demands of a challenging and uncertain future. The implementation of *Joint Vision 2010* is well under way and involves the commanders in chief (CINCs), the Services, and joint organizations that must be meaningful participants in developing, testing, and integrating these new concepts.

The vital first step in the process of transformation is to increase the information processing capabilities of current systems and those under development to help provide U.S. forces with information superiority. The Department is undertaking substantial testing and experimentation efforts to determine how forces that possess information superiority can more effectively accomplish current missions as well as gain proficiency—indeed dominance—in new missions.

The transformation of U.S. military forces goes well beyond gaining information superiority and developing new technologies. Through a wide variety of analyses, wargames, studies, experiments, and exercises, the Department is systematically and aggressively investigating new operational concepts, doctrines, and organizational approaches that will enable U.S. forces to maintain full spectrum dominance of the battlespace well into the 21st century. Many of the activities associated with implementing the ongoing transformation of U.S. military forces are described in the following sections.

ASSURING INFORMATION SUPERIORITY

The Department is already well along the path to achieving significant improvements in U.S. military capabilities by successfully harnessing new information technologies. Programs are under way throughout DoD to improve the capabilities of current weapon systems, platforms, and communications systems through aggressive exploitation of information technology. For example, the Army will field a fully digitized heavy division by 2000. This division will be capable of rapidly moving critical battlespace information among its units, enabling them to overwhelm opposing forces. A digitized corps will follow by 2004. The Navy is rapidly implementing the results of its Cooperative Engagement Capability experiments that net and integrate radar tracking data from sensors carried on both airborne and surface platforms into a system of systems that permits airborne and surface-based shooters to jointly mount effective air, cruise missile, and ballistic missile defense. The Department has committed major resources to such implementation efforts.

A series of analytic assessment efforts have provided senior decision makers with key insights into the increased combat power that can be generated with prudent and balanced investments in the building blocks of information superiority. For example, the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Mission Assessment, and several sensor-to-shooter studies, improved the Department's understanding of the return on investment in various types of systems to create a C⁴ISR common backbone. The C⁴ISR Decision Support Center provides a continuing capability for conducting cost and performance trade-off analyses on complex C⁴ISR issues.

Network Centric Warfare

Just as economic success is increasingly determined by the ability to rapidly acquire, process, and act on information, future military success will be determined increasingly by the ability of joint and combined forces to gain battlespace awareness and exploit it faster and more effectively than adversaries. The Department is working to provide a secure, open C⁴ISR network architecture that has three closely connected parts: the sensor grid, the information grid, and the engagement grid.

The Department is capitalizing on its investment in surveillance and reconnaissance capabilities by linking their output into coherent sensor grids. For example, the sensor grid embedded in the Navy's Cooperative Engagement Capability has demonstrated the significant performance increase associated with a shift to network-centric operational architectures that link distant sensors to the appropriate engagement platform. Future sensor grids will feature a variety of new imaging and signals intelligence sensors, currently in advanced stages of development, deployed aboard the Global Hawk, DarkStar, and Predator unmanned aerial vehicles (UAVs), as well as new space-based sensor grids, like the high and low orbit elements of the Space-Based InfraRed System (SBIRS).

The information grid is an electronic network that stores, correlates, and relays the data needed to provide dominant awareness of the battlespace to commanders and forces. Through battle command centers that task and synchronize the operations of combat and support elements, it links multiple intelligence, surveillance, and reconnaissance sensor platforms and assessment centers that determine friendly and enemy locations with the attack systems that will engage hostile forces. The grid is comprised of computational nodes, communications links, and deployed applications that rely upon voice communications, data transfer, and network information. Examples of ongoing initiatives in this area include the Defense Message System, which will provide commanders and forces a secure means of communication on a worldwide basis; the Programmable Modular Communications System, which will allow all U.S. forces operating in a given area to talk to each other in real-time; and various new types of satellite communications, including the jam-resistant Milstar constellation and the Global Broadcast System, which will provide various types of information to the forces in the field. The recently deployed Global Command and Control System (GCCS) provides commanders with a wide range of software applications for command and control, and support that are deployed at the computational nodes of the information grid. Network management is crucial to an effective information grid, especially in monitoring and controlling network traffic, managing the assignment of frequencies, and managing communications security.

The Department has made important progress in the development of engagement grids that link with information grids and multiple sensor grids to forces that can rapidly and decisively carry out the assigned missions. Exciting new capabilities for employing counter-battery fire against mobile enemy multiple rocket launcher and artillery systems have been demonstrated by the Precision/Rapid Counter-Multiple Rocket Launcher Advanced Concept Technology Demonstration conducted in 1997.

As sensor grids, information grids, and engagement grids are networked together, commanders will increasingly be able to employ every element of their force for maximum military effectiveness. Such an integration of capabilities through the use of computer-based networks, known as network-centric warfare, offers the possibility of revolutionary improvement in warfighting capabilities.

Information Operations

Information and information technologies are so central to global military, civil, and economic activities that information itself is bound to become an object for future competition and even conflict. The United States has embraced modern computer-based information networks. The U.S. economy and national life are increasingly dependent on information in digital, electronic, or optical form and on the national infrastructure that handles such information. The rapid movement and use of information, employing networked computers, are spurring national and international economic growth. The Department's adaptation of information technology to military uses is greatly increasing the capability of U.S. forces, but also making DoD more and more dependent on these same technologies.

The DoD Information Operations (IO) Master Plan establishes the Department's vision for information operations and lays out the processes for dealing with IO challenges. It provides the baseline description of IO policy, guidance, goals, objectives, initiatives, and strategies, as well as proposed timelines for achieving these. It is a management tool for addressing issues and opportunities, as well as identifying and correcting voids and discrepancies.

Information operations fall into two categories. Defensive IO, including information assurance/security efforts, defend the information and information systems required for joint force operations. Offensive IO exploit vulnerabilities in the information systems of adversaries to reduce their overall capabilities. Information operations concepts and policies are captured in a series of DoD directives, as well as security guidance for information operations and special information operations.

Defensive IO, or information assurance, protects U.S. and allied forces' globally distributed communications and information processing networks from interference or exploitation by an adversary. The Department has conducted education and training to increase awareness of information assurance, and conducted wargames and exercises to increase warfighters' experience in applying IO to military operations. The 1997 Eligible Receiver exercise, sponsored by the Joint Staff, provided vivid evidence of the challenges associated with defending against a coordinated IO attack on key elements of the defense information infrastructure. This exercise highlighted the need to quickly detect and recognize an IO attack, to promptly warn the defense

information infrastructure that an attack is under way, and to quickly coordinate joint responses to such attacks.

Offensive information operations help U.S. forces to penetrate, manipulate, or deny an adversary's use of information in order to hinder the battlespace awareness and operations of enemy forces. Offensive IO requires the complete integration of technology, intelligence, and operational concepts, as well as forces trained in the conduct of information warfare. The United States Atlantic Command (USACOM) exercise Evident Surprise focused on the planning activities for successful conduct of an IO campaign, highlighting the interagency coordination process required to deconflict and execute offensive information operations in a future joint environment.

Intelligence plays a central role in both offensive and defensive information operations, providing assessments of adversary intentions and offensive capabilities, as well as the technical data on adversary information systems and socio-political assessments, all of which are required for effective offensive IO. The Intelligence Community recently published the first National Intelligence Estimate (NIE) on information operations. The NIE will be updated periodically to keep up with rapid changes in technological developments and geopolitical trends. The Department established the Information Operations Technology Center (IOTC) at Fort Meade, Maryland, to enhance cooperation between the Department and the Intelligence Community in developing capabilities to take advantage of advances in computers, telecommunications, networks, and other information technologies.

Enhancing C⁴ISR Interoperability

The Department established the Joint C⁴ISR Battle Center in July 1997 at Suffolk, Virginia, to provide the combatant commands with a joint capability and experimental environment at the joint task force (JTF) level. The Center assists JTF training exercises and conducts tests designed to assess joint capabilities and synchronization, foster C⁴ISR interoperability, and enable the rapid insertion of new technology into the operating forces that will fully support joint operations.

The Joint Interoperability Test Command (JITC) at Fort Huachuca, Arizona, performs several critical missions. The command provides command, control, communications, computers, and intelligence (C⁴I) operational and technical assistance to the warfighting commands. Teams of experts from the command deploy during selected joint exercises to assist in on-site resolution of C⁴I interoperability problems. JITC operates a 24-hour hotline to answer joint C⁴I interoperability issues, publishes C⁴ISR lessons learned on a quarterly basis, and operates a worldwide web homepage. The JITC is also the sole authority for DoD interoperability certification of C⁴I systems, assuring that interoperability concerns are addressed early in the design process and supported throughout the operational life of a system. The JITC tested over 259 systems for interoperability during FY 1997 and plans to complete more than 290 tests in FY 1998. JITC provides operational test and evaluation for DoD procured and managed C⁴I systems. JITC has cooperative agreements with research and development centers in industry and universities that ensure the command remains on the leading edge of interoperability technology.

The Military Communications Electronics Board, composed of senior leaders in the communications field from the Joint Staff, the Services, and other U.S. government agencies, is responsible, in addition to its other duties, for assuring that allied and coalition partners can operate in conjunction with U.S. forces. The Board routinely evaluates investment priorities to ensure information superiority in allied and coalition operations.

TECHNOLOGY DEVELOPMENT AND ACQUISITION

U.S. technological superiority is essential to achieve the full spectrum dominance envisioned by *Joint Vision 2010*. To maintain this technological superiority, the DoD Science and Technology (S&T) program continues to invent, develop, and harness technology to realize new warfighting capabilities. Combined with new operational concepts, the S&T program is a powerful instrument for improving military capabilities.

To insure continued U.S. military preeminence, the Department must always invest in the next generation of defense technologies. Tomorrow's capabilities depend in part on today's S&T investments. The modernization of U.S. forces, the future ability to prevent, deter or defeat armed threats, and the achievement of *Joint Vision 2010* capabilities are all premised on the technological superiority of U.S. forces. Advanced military capabilities and concepts do not spring into being fully developed. They are preceded by years of investment in enabling technologies which are integrated into new systems and employed using emerging operational concepts.

The Department is conducting an aggressive S&T program to ensure that future U.S. forces have the combat edge provided by superior technology. Four publications—the *Defense Science and Technology Strategy*, its supporting *Basic Research Plan*, the *Defense Technology Area Plan*, and the *Joint Warfighting Science and Technology Plan*—lay out the Department's science and technology vision, strategic plan, and objectives for defense planners, programmers, and those who develop defense science and technology. The *Basic Research Plan* presents the Department's objectives and investment strategy for DoD-sponsored basic research performed by universities, industry, and service laboratories. The plan highlights six particularly promising technologies: biomimetics, nanoscience, smart structures, mobile wireless communications, intelligent systems, and compact power sources. The *Defense Technology Area Plan* looks across service and defense agency investments and describes the Department's applied research and advanced technology development programs. Defense Technology Objectives focus these investments and describe the specific benefits derived from each technological advance. There will be 346 Defense Technology Objectives associated with the FY 1999 President's Budget. Nineteen are scheduled to be completed by the end of FY 1998 and 36 by the end of FY 1999.

The *Joint Warfighting Science and Technology Plan* takes a joint perspective, looking horizontally across the Services and defense agencies to ensure that DoD S&T programs address priority future joint warfighting capabilities. Published annually, this plan identifies ten Joint Warfighting Capabilities Objectives (JWCOs) associated with critical capabilities needed for U.S. forces to maintain a clear cut warfighting advantage. The JWCOs, developed by the Joint Staff in collaboration with the Office of the Secretary of Defense and the S&T executives of each Service, are focused on supporting the operational concepts of *Joint Vision 2010*. The 1998 *Joint*

Warfighting Science and Technology Plan contains the following JWCOs: Information Superiority, Precision Force, Combat Identification, Joint Theater Missile Defense, Military Operations in Urban Terrain, Joint Readiness and Logistics and Sustainment of Strategic Systems, Electronic Combat, Chemical-Biological Warfare Defense and Protection and Counter Weapons of Mass Destruction, Combating Terrorism, and Force Projection/Dominant Maneuver.

Advance Concept Technology Demonstrations

Marrying new operational concepts with new technologies, advanced concept technology demonstrations (ACTDs) are aimed at rapidly fielding new systems to evaluate their military utility—generally within two to four years. The ACTD represents DoD's approach to capturing and harnessing technology and innovation rapidly for military use at reduced cost. ACTDs are focused on three principal objectives: to gain an operator's understanding and evaluation of the military utility of new technology applications before committing to acquisition; to develop corresponding battlefield operational concepts and doctrine that make the best use of the new capability in the joint warfighting arena; and to provide new capabilities to the combatant forces. ACTDs are designed to foster directly an alliance between the technologists and the joint warfighters, eliminating barriers and improving the management of these critical efforts.

Some 40 ACTDs are now under way, with six more already completed, all addressing key JWCO challenges. Twelve ACTDs are planned for completion in FY 1998. Planned results for FY 1999 are outlined in justification material provided to Congress in support of the President's Budget. ACTDs focus on critical military needs as determined by the Joint Requirements Oversight Council (JROC) and respond to those needs with near-term solutions based on mature or nearly mature technologies. The involvement of the JROC in the ACTD initiation process ensures a sharp focus on development of critical operational capabilities highlighted in *Joint Vision 2010*. By limiting consideration to mature or nearly mature technologies, the ACTD avoids the time and risks associated with technology development, concentrating instead on the integration of various technologies and demonstration activities. There is also strong emphasis on the use of commercial technologies to leverage industry investments and to gain the benefit of commercially available spares and product improvements. This approach permits an early user evaluation of solutions to critical military needs on a greatly reduced schedule, and at a significantly lower cost.

The evaluation of military utility is the heart of the ACTD process. After the proposed solution to the military need has been designed, fieldable prototypes are fabricated in sufficient quantity to permit operational utility to be determined. This is typically accomplished by evaluating a minimum operational capability in field exercises against realistic opposing forces. The evaluation of utility includes effectiveness of individual units, suitability for use by troops, and overall impact on the outcome of the conflict. As a result of these exercises, the user is able to refine both the concept of operations and the operational requirements for the system, and to assess the overall value of the proposed concept to warfighting capability. This process significantly improves the quality of subsequent acquisition decisions. It also allows the test systems that were evaluated in the ACTD to remain with the operating forces in the field after the evaluation is completed, providing an early interim capability.

A recent ACTD with immediate operational impact involved the Predator UAV deployed with U.S. forces in Bosnia. The Predator is a fully autonomous, relatively low cost UAV that takes advantage of available technology to provide continuous, near all-weather day/night coverage with optical, infrared, and radar sensors. The ACTD began in November 1993 with an ambitious 30-month schedule. In March 1996, the Predator was flying operational missions protecting allied forces in Bosnia. At the conclusion of the ACTD in September 1996, the system was transferred to the USAF's recently reactivated 11th Reconnaissance Squadron deployed to the region, where it remains today, providing improved information to the NATO Stabilization Force in Bosnia. In August 1997, the Predator entered production, just four years after ACTD initiation.

JOINT/SERVICE BATTLE LABS

Battle Lab Concept

Over the past few years, the Services and the Joint Staff have created a series of battle labs to develop new concepts and capabilities to carry out critical missions and tasks to meet current and future challenges. The joint and Service battle labs are the Department's test bed for exploring ways for 21st century military forces to maximize their effectiveness across the spectrum of future military operations.

The Joint Warfighting Center

The Joint Warfighting Center, operated by the Joint Staff at Fort Monroe, Virginia, guides the development and assessment of concepts and capabilities needed for joint warfighting in the future. In May 1997, it published the *Concept for Future Joint Operations*, which serves as the intellectual foundation for *Joint Vision 2010* implementation. The Joint Warfighting Center (JWFC) is coordinating ongoing assessments of several innovative approaches to warfighting. The Center uses computer modeling, state-of-the-art simulations, and real-world joint exercises to investigate new operational concepts, technologies, information processes, and organizational arrangements. While still in its early stages, the JWFC has helped develop the common conception of future joint warfighting that underlies many of the new joint experiments.

The Joint C⁴ISR Battle Center

In addition to working to assure C⁴ISR interoperability, the Joint C⁴ISR Battle Center (JBC) at Suffolk, Virginia, provides combatant commands at the joint task force level with joint assessments and an experimentation environment. Its Federated Battle Lab Project establishes a distributed, collaborative C⁴ISR experimentation environment between the JBC, the Services, DoD agencies, CINCs, battle labs, and the Joint Interoperability Test Center. The Federated Battle Lab represents a major step towards the creation of a virtual joint experimentation environment. The cyberspace linking of each Service's battle labs will enable more rapid development of joint concepts and equally rapid initial testing and experimentation utilizing state-of-the-art models and simulations, without duplicating efforts.

Service Battle Labs

The Army's battle lab program is an integral part of the Force XXI process to determine the shape and size of land maneuver forces for the 21st century. Army battle labs accelerate the combat development process by determining operational requirements faster and better through warfighting experiments. The battle labs enable users, developers, and industry to work together to exploit technological advancements and synchronize advanced warfighting concepts.

Currently, there are ten Army battle labs: Mounted Battlespace; Dismounted Battlespace; Command and Control at Forts Gordon, Leavenworth, and Huachuca; Depth and Simultaneous Attack; Combat Service Support; Maneuver Support; Air Maneuver; and Space and Missile Defense. All ten operate under the direction of the Army's Training and Doctrine Command.

One of the many innovative concepts and technologies that has emerged from the Army's battle lab efforts is the Advanced Precision Airborne Delivery System (APADS). APADS was initially conceived as a way for delivery aircraft to execute airdrop missions while remaining out of the engagement range of most air defense systems. Working together with the Air Force, the United States Special Operations Command, and the Marine Corps Warfighting Lab, the battle labs used off-the-shelf guidance systems and parafoils in an aggressive 15-month program. This effort resulted in an effective operational capability to accurately deliver equipment and supplies for humanitarian and disaster relief purposes, as well as during conflict, with significantly reduced risk to the delivery aircraft.

In order to investigate technology and operational concept advances under real world conditions, the Navy is employing fleet units as At-Sea Battle Labs. Navy Fleet Battle Experiments are integrated into regular fleet training exercises to explore capabilities represented by technology and new warfighting ideas, with assistance provided by the Maritime Battle Center and the Naval Doctrine Command.

The Navy's Maritime Battle Center is designed to manage the innovation process and provide the oversight required to translate promising concepts into new operational capabilities, which can in turn be tested as fleet battle experiments. Planning responsibilities include building the scenario, establishing objectives, developing measures of effectiveness, analyzing results from experiments, and briefing senior Navy leadership on potential new capabilities illustrated by experiment results.

The Marine Corps Warfighting Lab provides an institutional mechanism for investigation, innovation, and experimentation in six functional areas: command and control; fires and targeting; mobility and maneuver; survivability; sustainment; and training, education and manpower. The lab developed Sea Dragon, a five-year experimentation plan with three phases: Hunter Warrior (completed in March 1997), Urban Warrior, and Capable Warrior. Each phase starts with limited objective experiments and ends with an integrating advanced warfighting experiment.

Urban Warrior, now under way, will be conducted in two phases and along six experimental tracks. The first phase will be conducted primarily on the East Coast with II Marine

Expeditionary Forces and will end in September 1998 with a Culminating Phase Experiment. The second phase will commence in October 1988 on the West Coast with I Marine Expeditionary Force and will terminate in an Advanced Warfighting Experiment on the West Coast during the Spring of 1999.

The Marine Corps Warfighting Lab works very closely with the Navy's Fleet Battle Experiments. Hunter Warrior and Fleet Battle Experiment Alpha, for example, were conducted concurrently with a number of overlapping activities. The Urban Warrior Advanced Warfighting Experiment (AWE) will integrate results from the Military Operations in Urbanized Terrain ACTD conducted with the Army's Dismounted Battlespace Battle Lab and the Extended Littoral Battlefield ACTD.

The lab is also actively involved in non-lethal weapons development and experimentation. The 1992-1994 U.S. deployments to Somalia indicated the need for non-lethal weapons and illustrated the utility of this class of weapons in order to provide the military commander with realistic options. Over the course of a year, the lab developed a capability to effectively deliver non-lethal agents remotely using a UAV and conducted several limited objective experiments involving a wide range of potential operational non-lethal agents and munitions.

In 1997, the Air Force established six battle labs with the mission of identifying innovative ideas, assessing their merit, and validating innovative operational concepts that have the potential to impact future Air Force training, doctrine, requirements, and acquisition programs. The six battle labs are: the Air Expeditionary Force Battlelab, the Command and Control Battle Management Battlelab, the Force Protection Battlelab, the Information Warfare Battlelab, the Space Battlelab, and the Unmanned Aerial Vehicle Battlelab.

Assessing the merit of a new concept for operations requires the integration of battle lab and field expertise with existing and emerging operational capabilities. Validated ideas and concepts that satisfy an operational requirement are presented to senior Air Force decision makers, offering them the opportunity to revise Air Force doctrine, organization, requirements, training, or acquisition programs. Ultimately, however, the primary focus of a battle lab initiative is to quickly investigate a concept's merit and measure its ability to support the Air Force's core competencies and *Joint Vision 2010* for the next century.

WARGAMING

While force exercises and experiments typically test capabilities that could be employed within five to ten years, wargames generally focus on improving understanding of the security environment and the relative merits of alternative means of meeting critical military challenges over the longer term. Wargames are carefully constructed simulations in which experienced civilian and military players, normally organized into teams representing various nations, must make decisions regarding the use of force in the context of a future conflict scenario. Wargames are primarily conducted at DoD's senior service colleges, and are a critical tool in ensuring that senior decision makers and joint force commanders and staffs are able to maximize warfighting capabilities in the 21st century.

Each of the services is active in wargaming. The Army sponsors a series of wargames entitled Army After Next at the Army War College, Carlisle Barracks, Pennsylvania. These wargames focus on operational concepts for warfare in the 2020 time frame.

The Navy sponsors an annual summer wargame at the Naval War College, Newport, Rhode Island. This game examines U.S. policy, strategy, and operational concepts in the context of global and regional trends, issues, and crises. The 1997 wargame examined the future of joint warfare in the context of potential conflicts in two regions of the world.

The Air Force has begun a series of wargames entitled Global Engagement at the Air War College, Maxwell Air Force Base, Alabama. These wargames are intended to illuminate the capability of joint air and space power.

The Marine Corps has conducted a series of wargames on Revolution in Military Affairs and Urban Warfare at the Marine Corps War College, Quantico, Virginia. These wargames focused on identifying the capabilities required to implement future Marine Corps concepts.

Many of the Department's efforts to explore operational concepts and forces for beyond 2010 are facilitated by the Office of Net Assessment, which sponsors various wargames and related workshops, conferences, bilateral discussions, and independent assessments. Through Net Assessment, the department also stays deeply involved in the analytical efforts of allies and friends, i.e., France, Germany, Sweden, Japan, and Australia.

JOINT FORCE EXPERIMENTS

Joint experimentation is critical to gaining insights into future operational concepts and validating the ability of new battlefield operational concepts to provide required capabilities. The Joint Training System is the Chairman of the Joint Chiefs of Staff's program to shape the way the armed forces plan, think, and train for future military operations. This system translates the *Joint Vision 2010* concepts into an achievable process. It improves the synergy of the overall effort by guiding the co-evolution of joint doctrine, agile organizational structures, training, exercises, and enhanced experimentation that turns future concepts into focused capabilities.

Part of the Joint Training System, the Joint Simulation System (JSIMS), is guiding training simulation for the future. JSIMS is a simulation network that will assist in training units and staffs, joint task forces, CINC staffs, and interagency personnel. It will globally connect training audiences to allow distance training without deployment. The intrinsic assessment capabilities of JSIMS will enhance the exploration and evaluation of new operational concepts and joint force experimentation.

The United States Atlantic Command has already begun to combine joint force experimentation with joint force training. This serves to reduce the already significant strain on operating forces, since a single exercise serves the dual function of training and experimentation. An excellent example of this was USACOM's exercise Unified Endeavor, conducted in October and November 1997. The exercise was designed to train the USACOM commander and staff, the joint task force commander and staff, the joint intelligence center, and component commanders.

Additionally, the exercise involved a parallel lead nation command structure, with United Kingdom forces falling under U.S. tactical control while the United Kingdom retained its national command structure. The exercise also served as the vehicle for evaluating two ACTDs on the synthetic theater of war and on the joint countermine concept.

Acting in its role as a joint force integrator, USACOM also conducted Exercise Roving Sands at Fort Bliss, Texas, in April 1997. Roving Sands was a joint tactical air operations exercise employing Army, Air Force, Navy, Marine Corps, and allied forces operating under the command of a joint task force. The exercise trained participants in the conduct of joint suppression of enemy air defenses, the integration of joint tactical firepower, and both active and passive tactical missile defense operations. Due to the high concentration of joint forces, Roving Sands proved to be an excellent vehicle for experimentation as well, demonstrating the operational effectiveness of several advanced tactical ballistic missile defense concepts.

The Department plans to conduct a series of other joint force experiments to evaluate the impact of various concepts, doctrines, technologies, and organizations on the warfighting capability of joint and combined forces. DoD will leverage the significant experience that USACOM has in planning, coordinating, and conducting this type of exercise/experiment, as well as the Service contributions.

ADVANCED WARFIGHTING EXPERIMENTS

AWEs are large-scale warfighting experiments that explore emerging operational concepts and new technologies in an end-to-end manner. They enable organization, doctrine, and systems to be varied in a more controlled manner than during joint exercises in order to explore new operational concepts for generating joint combat power. The compelling need for AWEs arises from the fact that organization, doctrine, training, and leadership must co-evolve with systems and technology to fully realize the improvement in joint combat power envisioned in the Revolution in Military Affairs. AWEs are Department-wide joint efforts that often require years of preparation to create both a surrogate material capability to simulate future systems and a joint force that is fully trained in the new doctrine for employment of that future capability.

Army Force XXI Advanced Warfighting Experiments

In March 1997, the Army conducted the Task Force XXI AWE at the National Training Center. Conducted in a realistic joint force environment, the experiment was designed to determine if intelligence from advanced surveillance and reconnaissance systems, passed rapidly throughout the force by digitized information systems, would allow a brigade to increase the tempo of operations beyond the enemy's ability to respond effectively, and thereby increase its lethality and survivability. The joint experiment showed that aerial intelligence collection assets provided by the Air Force (UAVs and JSTARS) could significantly augment organic brigade tactical reconnaissance, allowing ground force commanders to have a better understanding of the enemy and friendly situation than ever before. The improved joint situational awareness enabled the brigade to significantly improve its performance. In addition, air defense artillery sensors and shooters participating in this experiment, using the Enhanced Position Location Reporting System, demonstrated significantly increased lethality against hostile aircraft.

The advanced warfighting experiment conducted in November 1997 at Fort Hood, Texas, utilized USACOM's Air Force units and the Army's 4th Infantry Division (Mechanized) as an Experimental Force, as well as active and Reserve component support units from the Army's III Corps. The experiment investigated the ability of a mechanized infantry division based joint force to capitalize on new intelligence, surveillance, and reconnaissance sensors and new information processing capabilities, operating at an increased tempo with increased lethality and survivability. The results of this and six previous Army AWEs served to validate design requirements, operational concepts, battle command and information requirements, and combat service support concepts for joint land forces with greatly enhanced information processing capabilities.

Navy Fleet Battle Experiments

Fleet battle experiments are intended to gain an understanding of how technology may affect future naval roles. The Fleet Battle Experimentation Plan, executed by the Maritime Battle Center, consists of two experiments per year with specific warfare themes and objectives assigned to each experiment. This plan was initiated in 1997 with Fleet Battle Experiment Alpha, conducted in conjunction with the Marine Corps Hunter Warrior Experiment in March, and Fleet Battle Experiment Bravo in September. Fleet Battle Experiment Bravo evaluated two new concepts: the Ring of Fire described in Chapter 14, and Silent Fury, designed to test joint task force targeting of Global Positioning System guided weapons and supporting C⁴ISR architecture needs.

Marine Corps Sea Dragon Experiments

During the spring of 1997, the Marine Corps completed the first phase of the Warrior series of concept based experiments with the Hunter Warrior Advanced Warfighting Experiment. Hunter Warrior was designed to examine extended, dispersed battlespace concepts, and the contribution that a Marine Air-Ground Task Force could make at the operational level of war if provided selected conceptual and technological improvements. Through the use of enhanced targeting, precision fires, C⁴I enhancements, and a limited deep operational maneuver capability, a sea-based Marine force operating as part of a naval task force was able to demonstrate a capability to shape the battlefield beyond current force employment options. In the process, the experiment explored the potential impact of a digitized battlefield using palm top computers and state-of-the-art commercial communications capability, tactical UAVs for reconnaissance and target acquisition, ship-to-unit sustainment, and advanced computerized decision aids for operational maneuver from the sea.

Building on Hunter Warrior, the Urban Warrior phase of experiments will investigate a range of further enhancements aimed at ensuring that forward afloat forces can effectively respond to a crisis.

Air Force Expeditionary Forces Experiment

In 1998, the Air Force will conduct the first of a planned annual series of advanced warfighting experiments. Expeditionary Forces Experiment 98 will experiment with revolutionary

technologies while testing new operational concepts in a simulated wartime environment. The experiment will fully integrate real-time actual aircraft missions, modeling and simulation elements, and advanced technology insertions into a seamless warfighting environment. The first scenario will focus on the rapid deployment and employment of a robust air expeditionary force into a simulated combat environment to conduct offensive air operations. New concept examples include rapid strategic mobility through collaborative deployment planning; dynamic assessment, planning and execution through near real-time sensor-to-decision maker-to-shooter capabilities; joint forces air component commander en route employment planning; distributed air operation center concepts; and agile combat support using in-transit visibility and total asset visibility.

CONCLUSION

The transformation of U.S. forces for the next century is a continuous process—training and equipping today’s forces to employ new technologies and innovative operational approaches, conducting advanced concept technology demonstrations and advanced warfighting experiments to develop and test improvements that will be fielded within the next several years, and taking the first conceptual steps to devise the technological and operational concept bases for the force that will be fielded in the second decade of the next century and thereafter. The Department’s plan for implementation of this transformation ensures progress on all three temporal fronts. Focusing the Department’s resources on the accomplishment of a particular mission has led to phenomenal success in the past. Just such a focused process is now working to ensure the transformation of U.S. forces for the next century.

Chapter 16

DEFENSE REFORM

DoD's current organization, infrastructure, legal and regulatory structure, and business practices were developed over the course of the Cold War, often through accretion. The Cold War was an era of great danger but relative stability. In contrast, the new era is one of rapid change and unpredictability. U.S. forces and the private sector defense industry have made great strides in adjusting to this dynamic new world, becoming more agile and responsive. But much of the rest of the defense establishment remains frozen in Cold War structures and practices.

DoD has labored under support systems and business practices that are at least a generation out of step with modern corporate America. DoD support systems and practices that were once state-of-the-art are now antiquated compared with the systems and practices in place in the corporate world, while other systems were developed in their own defense-unique culture and have never corresponded with the best business practices of the private sector. DoD's reform processes have covered many areas in the past year. Three major reform efforts are the Defense Reform Initiative, the Management Reform Memoranda, and the Acquisition Reform Reinvention Goals for 2000.

THE DEFENSE REFORM INITIATIVE

On November 10, 1997, the Secretary of Defense announced a sweeping program to reform the business of the Department of Defense, from corporate headquarters at the Pentagon to the many agencies that support service members and their families. The Defense Reform Initiative requires the Department to adopt those business practices that American industry has successfully used to become leaner and more flexible in order to remain competitive. The resulting savings will help fund the Revolution in Military Affairs, including the development and procurement of a new generation of information-based weapons systems needed to ensure American military superiority in the future. The Defense Reform Initiative contains initiatives categorized in four major areas:

- **Reengineer.** Adopt modern business practices to achieve world-class standards of performance.
- **Consolidate.** Streamline organizations to remove redundancy and maximize synergy.
- **Compete.** Apply market mechanisms to improve quality, reduce costs, and respond to customer needs.
- **Eliminate.** Reduce excess support structures to free resources and focus on core competencies.

Reengineering

Over the past decade, the American commercial sector has reorganized, restructured, and adopted revolutionary new business and management practices in order to ensure its competitive

edge in the rapidly changing global marketplace. It has worked. Today, American business is the envy of the world and productivity is at an all-time high. Now the Department of Defense must adopt and adapt the lessons of the private sector if America's armed forces are to maintain their competitive edge in the rapidly changing global security arena.

HIGHLIGHTS—BEST BUSINESS PRACTICES

DoD's Revolution in Business Affairs includes reengineering business processes and adopting and adapting the best business practices of the private sector to the business of defense. The Defense Reform Initiative established the following goals:

- By January 1, 2000, all aspects of the contracting process for major weapons systems will be paper free.
- By FY 2000, 90 percent of DoD purchases under \$2,500 will be made using the government-wide purchase card (almost one half of all purchases).
- DoD will expand the use of electronic catalogs and electronic shopping malls to put buying decisions into the hands of the people who need the products.
- Creating paper free systems for weapons support and logistics.
- By July 1, 1998, DoD will discontinue volume printing of all DoD-wide regulations and instructions and will make them available exclusively through the Internet or CD-ROM.
- By January 1, 1999, prime vendor contracts for maintenance, repair, and operating materials will be available for every major installation in the United States.
- Reengineering the travel system, incorporating state-of-the-art business procedures and techniques.
- Replacing the traditional military just-in-case mindset for logistics with the modern business just-in-time mindset.
- Reengineering the DoD system for moving household goods, making streamlined procedures available to all military personnel.

Applying the lessons of the business world to the business of defense is a centerpiece of the Department's reform plan. The security environment of the 21st century demands that DoD reengineer, leveraging the opportunities provided by information technologies to build a Department that is every bit as lean, efficient, and responsive as American corporations.

Consolidate

American business has learned that reengineering business practices requires the concomitant reengineering of the business headquarters. There are three central principles guiding the

changes: Department headquarters should be flexible enough to deal with future challenges; the Office of the Secretary of Defense (OSD) should focus on corporate-level tasks; and operational management tasks should be pushed to the lowest appropriate level. As a result, all headquarters structures should be thinned, flattened, and streamlined, both to avoid the temptation to take on new non-core responsibilities and to provide the resources to organizations receiving the devolved functions.

HIGHLIGHTS—REORGANIZATION

As a result of reorganization:

- OSD and associated activities personnel will be reduced 33 percent from FY 1996 levels over the next 18 months. Defense agencies personnel will be reduced 21 percent over the next five years.
- Personnel in DoD field activities and other operating organizations reporting to OSD will be reduced 36 percent over the next two years.
- The Joint Staff and associated activities personnel will be reduced 29 percent from FY 1996 levels by the end of FY 2003.
- All other headquarters elements, including the headquarters of the military departments and their major commands, will be reduced 10 percent from their FY 1998 levels by the end of FY 2003.
- The headquarters of the Combatant Commands will be reduced by 7 percent by the end of FY 2003.

In addition these actions will:

- Reduce Presidentially appointed, Senate-confirmed positions in OSD by 9 percent.
- Eliminate the entire category of Defense Support Activities.
- Reduce the number of nonintelligence defense agencies by 8 percent.
- Reduce the number of DoD field activities by 22 percent.

These organizational changes will enable the Secretary of Defense to more effectively fulfill his responsibilities to the President and the American people. They will improve oversight of the Department and ensure civilian control while enhancing civilian-military relationships. The reforms will empower managers at lower levels and free policymakers from operational responsibilities. They will free up resources to meet new challenges and ensure that DoD continues to have quality civilian and military personnel who are well prepared to respond to the changes of the future.

Competition

Competition is the driving force in the American economy. It forces organizations to improve quality, reduce costs, and focus on customers' needs. Competition offers these same benefits to DoD and plays a critical role in the reform effort. U.S. bases and forces require support in a number of service areas. Buildings must be maintained; equipment must be repaired; checks must be written. Many of these activities are now performed by uniformed personnel or civilian government workers. Often, there is no reason why this work cannot be performed by the private sector. In such cases, following the example of America's leading firms, DoD will benefit greatly by introducing the dynamic forces of competition into the procurement of support activities.

Within the Department of Defense, experience has shown that competition has yielded both significant savings and increased readiness. In response to the Quadrennial Defense Review, the Department initiated competitions involving more than 34,000 positions which will be completed between FY 1997 and FY 2000 and will pursue competitions for 30,000 positions in each of the next five fiscal years. By 1999, the Department will evaluate its entire military and civilian work force to identify which other functions are commercial in nature and could be competed.

OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-76

To ensure that competitions between the public and private sectors occur on a level playing field, the government has established a formal process, outlined in Office of Management and Budget (OMB) Circular A-76 and its revised Supplement. The Supplement sets forth detailed, how-to procedures for conducting cost comparisons to determine whether commercial activities should be performed in-house, or by the private sector. The process mandates competition between the government organization currently doing the work and the private sector. As part of the process, the public sector organization is able to re-form into a Most Efficient Organization to compete. In order to win a competition, a private sector bid must be at least 10 percent lower than the public sector bid.

In March 1996, OMB revised the A-76 process providing for streamlined cost comparisons, fixed overhead rate for in-house cost estimates, and several technical changes to standardize work to compare like units to each other. By describing the work in standard terms, i.e., full-time equivalents (FTEs), a fair comparison can be made. FTEs are equal to one work-year for a given job.

HIGHLIGHTS—STREAMLINING THROUGH COMPETITION

DoD will increasingly rely on the competitive powers of the marketplace. This means:

- By 1999, DoD will evaluate the entire military and civilian work force to identify which functions are commercial in nature and could be opened up for competition. In particular, the Department is looking at competing the following functions: civilian pay, military retiree and annuitant pay, personnel services, disposal of surplus property, national stockpile sales, management of leased property, and drug testing laboratories.

- DoD will continue to pursue public-private competitions for depot maintenance work to the full extent allowed by law.

Eliminate

The Department is encumbered with facilities no longer needed. These facilities drain resources that could otherwise be spent on modernization. To this end, a three-pronged strategy is required: close excess infrastructure; consolidate or restructure the operation of support activities; and demolish unneeded buildings.

During the 1980s, American corporations reduced their plant and office space as part of their effort to reorganize, restructure, and reform their business practices. DoD needs to make similar infrastructure reductions.

The Defense Reform Initiative calls for the following:

- DoD will seek congressional authorization for two additional rounds of Base Realignment and Closure in 2001 and 2005.
- DoD will consolidate, restructure, and regionalize many of its support agencies to achieve economies of scale.
- DoD will seek permanent legislative authority to privatize family housing construction.
- By January 1, 2000, DoD will initiate privatization of all utility systems except those needed for unique security reasons or when privatization is uneconomical.
- The newly renamed Defense Energy Support Center shall outline a blueprint for three regional demonstrations of integrated energy management, including supply and demand management.

The Defense Reform Initiative and a commitment to continual reform are essential to ensuring that defense enterprise and military forces are fully modern, in every sense, and fully capable of executing their elements of the strategy.

Defense Management Council

Chaired by the Deputy Secretary, the Defense Management Council is the Secretary's primary mechanism for ensuring that defense reform initiatives are carried out. The Council will be responsible for recommending major reforms still needed, ensuring the implementation of those already identified, and continuing oversight of the defense agencies. The Council's duties include:

- To negotiate performance contracts with the heads of the defense agencies and to monitor performance against those contracts.

- To monitor progress with the business practice changes outlined in the Defense Reform Initiative.
- To monitor progress with the A-76 competitive evaluations.
- To examine follow-up opportunities for consolidation of management activities in the military departments and defense agencies.
- To consult with business leaders to seek new solutions to management problems, reengineer business practices, and streamline operations.

MANAGEMENT REFORM MEMORANDA

Early in 1997, the Deputy Secretary issued a series of 17 Management Reform Memoranda covering a wide range of areas. The purpose of the effort is to achieve additional streamlining of DoD infrastructure and reengineer numerous DoD business processes. These initiatives will result in sweeping changes in such areas as acquisition, education, information sharing, transportation, travel, and facilities and property management. The Defense Management Council is charged with overseeing implementation of the Management Reform Memoranda.

DOD ACQUISITION YEAR 2000 GOALS

Department of Defense Acquisition has identified 12 specific goals as the cornerstones of its National Performance Review Reinvention Impact Center to focus reformation of business affairs over the next three years. Premised on the objectives of the President and Vice President's *Blair House Papers* of delivering great service, fostering partnership, and internal reinvention, each goal identifies a measurable outcome with significant return to the Department in terms of reducing cost and time. Achieving the goals will enable the Department to increase its investment accounts and realize required modernization without requiring a topline increase in budget authority. The following are the 12 goals which are further examined in future chapters.

Delivering Great Service

Goal 1: Deliver new major defense systems to the users in 25 percent less time.

Goal 2: Achieve visibility of 90 percent of DoD materiel assets while resupplying military peacekeepers and warfighters and reducing average order to receipt time by 50 percent.

Goal 3: Simplify purchasing and payment through use of purchase card transactions for 90 percent of all DoD micropurchases while reengineering the processes for requisitioning, funding, and ordering.

Goal 4: Create a world-class learning organization by offering 40 or more hours annually of continuing education and training to the DoD acquisition related work force.

Fostering Partnership

Goal 5: With no topline budget change, achieve annual defense procurement of at least \$54 billion toward a goal of \$60 billion in 2001.

Goal 6: In the spirit of fostering partnerships and community solutions, DoD will complete disposal of 50 percent of the surplus property baseline and privatize 30,000 housing units.

Goal 7: Decrease paper transactions by 50 percent through electronic commerce and electronic data interchange.

Goal 8: Reduce total release of toxic chemicals by a further 20 percent.

Internal Reinvention

Goal 9: Eliminate layers of management through streamlined processes while reducing the DoD acquisition related work force by 15 percent.

Goal 10: Define requirements and establish an implementation plan for a cost accounting system that provides routine visibility into weapon system life-cycle costs through activity based costing and management. The system must deliver timely, integrated data for management purposes to permit understanding of total weapon costs; provide a basis for estimating costs of future systems; and feed other tools for life-cycle cost management.

Goal 11: Dispose of \$2.2 billion in excess National Defense Stockpile inventories and \$3 billion in unneeded government property while reducing supply inventory by \$12 billion.

Goal 12: Minimize cost growth in major defense acquisition programs to no greater than 1 percent annually.

CONCLUSION

The goals established in the three defense reform efforts above are predicated upon the functions currently performed by the Department. These functions may change as a result of the plan the Secretary is required to submit to Congress in accordance with the requirements of Section 912 of the National Defense Authorization Act of 1998. Should the functions performed by the Department change, the goals will be adjusted. In addition, new goals may be established as the Department continuously improves its business processes in order to ensure that the Department has both the resources and infrastructure it needs to meet the challenges of the 21st century.

Chapter 17

FINANCIAL MANAGEMENT REFORM

During the last four years, improvement of the Department's financial management has been a top priority. DoD leaders have undertaken the most comprehensive reform of financial management systems and practices in DoD history. Progress has been substantial, but more work still lies ahead.

The Department's financial management reforms aim to streamline and redesign DoD financial processes and organizations in order to make them optimally effective and to cut costs. Reforms also seek to ensure that DoD financial management fulfills the needs of its leaders, satisfies statutory requirements, minimizes the potential for fraud, and provides superior customer service.

PROBLEMS AND CAUSES

Since its formation in 1947, DoD has had a decentralized mode of operation. A benefit of that has been high effectiveness and initiative within the military departments and the other organizational components of the Department. Until recent reforms, however, a drawback has been that these DoD components managed their own budget, finance, and accounting systems. As a result, they developed their own processes and business practices, geared to their specific mission without the requirement for compatibility with other DoD operations. But as defense missions became more complex and DoD organizations were required to interact more frequently, system incompatibility and lack of standardization took a toll. Rather than redesigning its organization or standardizing its multitude of systems, the Department developed increasingly complex business practices to link its systems.

Such complexity left the DoD's financial systems prone to error or to demands that could not be met with the systems, personnel, or time available. Moreover, there was an inherent inefficiency in having scores of incompatible organizations performing virtually identical functions on dozens of different financial systems. This chapter highlights reforms to solve these and other DoD financial management problems.

REFORM AND CONSOLIDATION OF FINANCIAL MANAGEMENT OPERATIONS

The Defense Finance and Accounting Service and the Consolidation of Financial Management Operations

Since its activation in January 1991, the Defense Finance and Accounting Service (DFAS) has been the Department's pivotal agent for financial management reform and consolidation. DFAS now processes a monthly average of nearly 9 million payments to DoD personnel; 2 million commercial invoices; 675,000 travel vouchers/settlements; 550,000 savings bond issuances; and 340,000 transportation bills of lading, with total monthly disbursements averaging \$22.2 billion. Through consolidation and process improvements, DFAS has generated savings in operating costs totaling nearly \$1 billion through the end of FY 1997.

Before consolidation began in FY 1994, the Department's financial management operations were conducted at over 330 field installations or sites. By moving to five DFAS Centers and no more than 21 operating locations, the Department has been able to eliminate redundancy and unnecessary management layers, facilitate standardization, improve and speed up operations and service to customers, increase productivity, and enhance financial management support to DoD decision makers. The Defense Reform Initiative calls for DFAS to make further consolidations.

Expanding Competition to Improve Services and Reduce Cost

DoD financial managers are participating in the Administration's effort to use competition within the government and with the private sector to improve support services and save money. For example, during FY 1996 the Department consolidated debt and claims management activities into one location, saving \$8.5 million annually. A facilities, logistics, and administration study, completed in May 1997, will save \$4 million annually. Another A-76 study (on Defense Commissary Vendor Payments) was completed in October 1997, with the government's Most Efficient Organization (MEO) being selected over the private sector vendor. The MEO will be implemented by March 1998, with projected savings expected to exceed \$10.1 million annually.

The Department has active A-76 competition studies in the areas of commissary accounting, DoD transportation accounting, and DoD depot maintenance accounting. Additionally, the Defense Reform Initiative directed DFAS to initiate A-76 studies in the areas of civilian pay and military retiree and annuitant pay.

Consolidation of Finance Systems

There are two types of DoD financial management systems—Finance and Accounting. Finance systems process payments to DoD personnel, retirees, annuitants, and private contractors. Accounting systems record, accumulate, report, and analyze financial activity. The Department has 156 finance and accounting systems, down from 324 in 1991 when DFAS was established.

The number of DoD finance systems has been reduced from 127 in 1991 to 34, with a resulting annual savings of \$77 million. The long-term goal is to cut the number of DoD finance systems to nine.

The consolidations of finance systems has been completed for retiree and annuitant payments and debt management. The Department's ongoing consolidation of other finance systems includes:

- Defense Civilian Pay System (DCPS). As of September 30, 1997, approximately 703,000 civilian payroll accounts had been transferred to DCPS. This represents an elimination of 25 systems and the closing of 348 decentralized payroll offices. By mid-1998, all DoD civilian employees will be paid by DCPS from just three locations.
- Defense Joint Military Pay System (DJMS) and the Marine Corps Total Force System (MCTFS). Today there are five military pay systems, with 78 percent of military members being paid by DJMS and MCTFS. By the end of FY 2001, DJMS will be fully

implemented and all service members will be paid by either DJMS or MCTFS, eliminating an original 22 pay systems.

- Defense Procurement Payment Systems (DPPS). DPPS is currently being developed as a standardized DoD contract and vendor payment system. It will replace the nine current vendor pay systems, as well as the Mechanization of Contract Administration System. Similarly, a standard disbursement system will be selected and improved to replace the current seven systems.

Consolidation of Accounting Systems

The Department has reduced the number of accounting systems from 197 in FY 1991 to 122 in FY 1997. Simultaneously, DoD has been improving the remaining systems to make them compliant with generally accepted accounting principles and capable of producing auditable information as required by the Chief Financial Officer's Act of 1990, as amended. By FY 2003, DoD will reduce the number of accounting systems to no more than 23.

STRENGTHENING INTERNAL CONTROLS

Eliminating Problem Disbursements

A so-called problem disbursement occurs when an expenditure has not been reconciled with official accounting records. DoD problem disbursements have been reduced from \$34.3 billion to \$9.2 billion in less than four years.

Although DoD's problem disbursements have been a serious issue, there is no basis for concluding that the expenditures involved were improper. Each expenditure was made only after a Department official confirmed receipt of the subject goods or services and ensured that the payment was made in accordance with a valid contract. That notwithstanding, DoD has an extensive Business Process Reengineering effort under way to improve its disbursement process.

Prevalidation, the procedure of matching a disbursement to an obligation before (rather than after) a payment is made, has helped to reduce problem disbursements. Thresholds for applying prevalidation have been established at each DFAS center. To eliminate problem disbursements, the DoD plan is to:

- Gradually lower the prevalidation threshold until all payments are prevalidated.
- Provide disbursement voucher information via the DoD Intranet for access and recording by accounting stations.
- Pilot test the matching of payments and accounting data from the current financial management systems using data warehouse techniques.
- Record all accounting events within a DFAS corporate database, providing immediate access to all entitlement, disbursing, and accounting stations.

Contract overpayments are never acceptable, but they occasionally occur. In FY 1993, overpayments on major weapons systems contracts were \$592 million; by FY 1997, they had been reduced to \$113 million. Recovered funds from overpayments are the result of both solicited and unsolicited actions. Solicited actions are the result of audits and unsolicited are outright returns of funds by contractors. This reflects an accuracy rate of 99.8 percent.

Reforming the Contractor Payment Process

For the past 30 years, vouchers for goods and services purchased on government contracts had to be submitted to government contracting officers or the Defense Contract Audit Agency (DCAA) for approval before being sent to a government payment office. This process substantially delayed payments and required extensive effort by DCAA, government contracting officers, and contractors themselves. DCAA now allows direct submission of vouchers to DFAS by qualifying contractors. DCAA continues to provide oversight by periodic review of contractors and by examining a sampling of paid vouchers. This reform will save substantial auditor time, without putting accountability at risk. It also facilitates the transmission of contractor voucher payments using Electronic Data Interchange, another source of savings and efficiency.

Computer Security and Fraud Detection

In June 1994, the Department established Operation Mongoose to detect fraud and reduce the vulnerability of DFAS's computer networks to intrusion. In FY 1997, Operation Mongoose identified over \$2.1 million in suspected fraud and overpayments.

Improved Financial Management Regulations and Procedures

The Department is continuing to standardize, improve, and simplify its financial management regulations and procedures. DoD financial management policy and procedures have been consolidated into a 15 volume DoD Financial Management Regulation (DoDFMR), which is expected to replace thousands of pages of separate DoD component regulations. Because the 15 volumes of the DoDFMR have been posted to a DoD web site, routine large-scale printings and distributions of the volumes have been terminated. The DoDFMR is now available only through the Internet or by the purchase of a CD-ROM or paper copy.

Auditable Financial Statements

The Department is putting into place a financial management systems architecture that is capable of producing auditable financial statements. Additionally, DoD is upgrading the accuracy and timeliness of accounting data and integrating nonfinancial areas that affect financial and accounting data.

Reform Reporting and Valuation of Inventory

The Department is taking aggressive action to improve how it accounts for inventory, in accordance with the Office of Management and Budget Statement of Federal Financial Accounting Standard (SFFAS) Number 3. Conversion of inventories from DoD's standard

(selling) price to the SFFAS requirement of latest acquisition cost, or historical cost, is currently being accomplished. Enhancing inventory management systems to capture proper accounting information will provide for automated inventory valuation, reliable costing of goods sold, and other elements that enable accurate assessment of net operating results.

Reporting and Valuation of Real and Personal Property

DoD's accounting systems were not designed to account for and report on the Department's real and personal property. Instead, financial information for these assets are obtained from various property data systems, which for the most part are not integrated with the accounting systems. To fix this, the Department is deploying a DoD-wide integrated property accounting system. This system will provide for financial control over real and personal property, replace over 150 separate property systems in DoD organizations, and provide necessary data to the accounting systems.

ADOPTING BEST BUSINESS PRACTICES

A critical aspect of the Department's financial management reform is to adapt and adopt successful business practices from the private and government sectors. The goal is to make DoD business practices simpler, more efficient, and less prone to error. This is being achieved by the revision of existing policies and procedures and the increased standardization, consolidation, capabilities, and compatibility of existing systems.

Improving the Exchange of Financial Information

DFAS is promoting the paperless exchange of financial information through:

- Electronic Document Management (EDM) and World Wide Web Applications. One such application is Electronic Document Access, which provides on-line real-time access to documents needed to perform bill paying and accounting operations. Contracts, government bills of lading, and payment vouchers can be stored in an electronic file cabinet and shared between DFAS activities. Another application avoids unnecessary printing of reports by converting them into electronic format for on-line analysis, reconciliation, and reporting. EDM technology is also being used to enhance the control and management of documents needed for bill paying operations, regardless of the format of the document. The EDM system uses imaging (for those documents that must continue to be received in a hard copy) and electronic foldering (for electronic formats), and automates and manages the business process. Together, these technologies will nearly eliminate paper from bill paying and accounting processes while at the same time making essential information available to those who need it in an electronic format.
- Electronic Funds Transfer (EFT). EFT is reducing the cost of disbursements. Over 91 percent of DoD civilian employees and military members paid by DoD have their pay directly deposited into their accounts. The Direct Deposit participation rate for travel payments has increased from 17 to 48 percent. In 1996, 57 percent of the DFAS major

contract payments were by EFT. This accounted for 81 percent (\$54 billion) of total contract dollars disbursed, and this percentage is expected to continue increasing.

- Electronic Data Interchange (EDI). DFAS is using EDI to send remittance information directly to vendors and is currently working to receive and process EDI contracts and contract modifications into finance and accounting systems.

Electronic Audit Working Papers

Audit working papers are key components of audits performed by DCAA. They document DCAA's audit work and are sometimes shared with the customer as backups for audit reports. DCAA recently implemented an automated working paper process to make its audit services better, faster, and cheaper. DCAA acknowledges the audit request, performs the audit, and issues the audit report to the customer electronically. In addition, automating the process improves DCAA's internal communications for supervisory review and report issuance.

As a result of this reform, DCAA can serve customers and obtain feedback on their services faster, helping to reduce the cycle time for negotiations. DCAA's new working paper process also supports DoD's efforts to improve the procurement process and will help achieve DoD's overall goal to become paperless by 2000.

Garnishment Operations

DFAS is continuing the reengineering of the processes by which the Department garnishes the pay of its civilian and military personnel for child support, alimony, commercial debt, and divisions of retired pay. DoD garnishment operations have been consolidated at DFAS Cleveland, which processes about 12,000 garnishment orders per month. Initial reengineering efforts have reduced staffing requirements significantly and are estimated to save \$19 million over a five-year period. Over the next year, DFAS plans to implement major improvements—most notably to integrate EDI and imaging technology, and an integrated garnishment system that will provide an electronic interface with the DFAS pay systems. The first interface with the Defense Civilian Pay System was successfully implemented in August 1997. The remaining interfaces are scheduled to be completed by December 1999.

Government-Wide Purchase Card Expansion

Since starting in 1989, the Department's participation in the government-wide purchase authorization card program has grown to include over 107,000 cardholders with purchases totaling \$2.2 billion for FY 1997. DoD's goal is that by FY 2000 the purchase card will be used for 90 percent of its micropurchases. Expanded use of the government-wide purchase card— together with other of the defense reform initiatives—will allow retail-level inventories to be reduced from \$14 billion in FY 1996 to \$10 billion in FY 2001.

The purchase card streamlines purchase approvals, reduces purchasing and accounting documentation, cuts costs, and speeds up vendor payments. It enables the Department to use bulk commitments and obligations in accounting for purchases, summary accounting for groups of

purchases instead of detailed lines of accounting for each transaction, and an accelerated payment and invoice reconciliation process with the purchase card issuer.

DFAS processes about 10 million commercial invoices per year, over three-quarters of which are below the \$2,500 (micropurchases) threshold for the purchase card. Numerous initiatives are now being pursued to get more of these made with the purchase card. Using an accelerated invoice payment and reconciliation process will enable DFAS to make faster payments, virtually eliminating interest payments. Using summary accounting for groups of purchases will reduce the costs, time, and size of the work force needed to process invoices. The recipient of the benefits of these initiatives is the customer, who will receive procurement efficiencies and lower processing rates for services performed by DFAS.

Travel Reengineering

The Department continues to implement its simplification of the temporary duty travel process for all DoD personnel. Prior to this effort, regulations caused overhead costs to reach as high as 30 percent, compared to a private sector average of 5-10 percent. DoD changed counterproductive practices and designed a seamless, paperless, less costly travel system that supports DoD requirements and provides excellent customer service. The Department also supported passage of the Travel Reform and Savings Act to remove statutory barriers to better business practices. In September 1997, the Vice President's National Performance Review presented DoD's reform team with the Hammer Award in recognition of its efforts to streamline government processes.

New DoD travel policies include:

- The use of simplified entitlements that delegate to appropriate officials the authority to approve exceptions to standard arrangements.
- Expanded use of a government-sponsored, contractor-provided travel card to pay for all expenses related to official business travel (travel advances, airline tickets, taxis, lodging, meals, conference registration fees, and incidentals).
- The removal of the requirement to have travelers obtain paper statements of nonavailability for government lodging and messing.
- The increase from \$25 to \$75 for receipt for business expenses, except for lodging.
- The use of the facsimile machine or electronic record transfer to file the travel voucher for reimbursement processing.
- Expanded use of electronic funds transfer to reimburse travelers.

Before fully deploying its new Defense Travel System (DTS), the Department pilot tested these revised policies at 27 sites, representing each of the Services and several defense agencies. Results from the test show a 48 percent reduction in process steps, 56 percent reduction in

process cost, 48 percent reduction in payment cycle time, and improvement in customer satisfaction of both travelers and their authorizing officials of close to 100 percent on many indicators.

Digital Signature

To achieve the goal of a paperless process, DoD leaders worked with the Departments of Commerce and Energy and the General Accounting Office to develop a software specification that creates a digital signature that is compliant with federal standards. The software specification enables the Department to move to paperless processes. Users will be allowed to sign documents electronically. This process will be tested in the DTS and eventually exported to other functional areas.

Standardization of Data

In addition to consolidating finance and accounting systems, DoD is establishing the DFAS Corporate Information Infrastructure to support:

- Use of common data elements for the collection, storage, and retrieval of finance and accounting data.
- Use of common transactions.
- Movement of common transactions and data among systems.

Also supporting reform is an ambitious effort to standardize and share acquisition data. This effort will greatly improve the interactions between DoD procurement systems and the financial systems that process and account for payments of procurements.

CONCLUSION

The Department's financial management reforms in recent years have been successful and have laid a foundation for even greater improvement. Still ahead are several more years of transition, experimentation, reengineering, and modernization.

Chapter 18

ACQUISITION REFORM

Acquisition reform is a major component of the Department's Defense Reform Initiative and the President's National Performance Goals 2000. Acquisition reform will continue to play an important role in meeting the warfighter's needs, smarter and faster, with products and services that work better and cost less and are obtained from a globally competitive national industrial base.

ACQUISITION REFORM LEGISLATION

DoD has worked and will continue to work with Congress to make improvements and refinements to DoD's acquisition system. Acquisition reform legislative initiatives find their basis in the Section 800 Panel Report, the National Performance Review, and the Defense Reform Initiative. In addition, the Department works closely with industry in developing its legislative program.

Acquisition reform items of interest from the FY 1998 National Defense Authorization Act include:

- Increase eligible personnel able to participate in the acquisition work force demonstration project.
- Reduce the defense acquisition work force by 25,000, with absolute minimum reduction of 10,000.
- Repeal requirement for the Secretary of Defense to obtain guarantees on major weapon systems contracts.
- Secretary of Defense item-by-item and country-by-country waivers of domestic source limitations.
- Requirement for the Secretary of Defense to conduct study of the capacitor and resistor industries in the United States to determine the importance of the industry to national security and the impact on the industry of the removal of tariffs under the Information Technology Agreement.
- Requirement for the Secretary of Defense to ensure 60 percent of all eligible purchases of goods or services less than the micropurchase will be made through streamlined procedures by October 1, 1998, and that 90 percent of such purchases by October 1, 2000.
- Greater flexibility in the use of electronic commerce in federal procurements in uniformly implementing the electronic commerce capability requirements in the Federal Acquisition Streamlining Act of 1994. Due consideration must be given to the use or partial use of existing electronic commerce systems before developing new systems.

ACQUISITION REFORM MESSAGES

To ensure that information about Acquisition reform initiatives gets to the front-line professional, the Department developed a four-part strategy utilizing satellite broadcasts, e-mail (Acquisition Reform NOW), Internet (Acquisition Reform Home Page), and hard copy materials (Acquisition Reform TODAY). Materials are developed on acquisition reform initiatives in conjunction with industry and then provided to the Defense Acquisition University, which incorporates the changes into the University curriculum. In time, additional media will be added to the information distribution system.

DEFENSE ACQUISITION DESKBOOK

The Defense Acquisition Deskbook is an electronic reference system designed to make current and accurate policy and related information readily available to the Defense acquisition community. In addition to serving as a source document for mandatory direction and discretionary guidance, samples, and lessons learned, this consolidation of information is driving significant improvements in several areas of the overall acquisition process. Specific benefits already derived include integration of information from many sources and higher visibility into the quantity of regulatory information.

Integrating a wide range of information has provided the front-line acquisition professional access to practices and experience from across the entire Department. This system now includes contributions from across the Services, defense agencies, and the start of cooperation with the National Aeronautics and Space Administration and the Department of Transportation. This common core of information is tearing down cross-component barriers to cooperation and communications. Additionally, by increasing the visibility of the myriad of regulatory information, the Deskbook is making the inherent redundancies more apparent and serving as a catalyst for the review and reduction of current documentation. The final result is a better informed corps more able to exercise professional judgment.

DEFENSE ACQUISITION REFORM GOALS 2000

The Department has identified 12 specific goals as the cornerstones of its National Performance Review Reinvention Impact Center. Each goal identifies a measurable outcome with significant return to the Department in terms of reducing cost and time. Achieving the Year 2000 Goals will enable the Department to increase its investment accounts and realize required modernization without requiring a topline increase in budget authority. Ten of the 12 goals are discussed in this chapter.

Goal 1: Deliver new major defense systems to the users in 25 percent less time.

The key measure for this goal is the average elapsed time from program start to initial operational capability, measured in months, for all Major Defense Acquisition Programs (MDAPs) in development for a given calendar year. The 1996 baseline is 132 months, which represents the average cycle time for 58 MDAPs started before 1992. Reducing the average elapsed time by 25 percent will necessitate a reduction from 132 to 99 months. Recent efforts in

acquisition reform appear to be succeeding at driving program schedules downward. These efforts include the use of advanced concept technology demonstrations; initiatives to provide program stability through secure, long-term funding; management of program oversight through integrated product teams; and the extensive use of Commercial off-the-Shelf hardware or Non-Developmental Items. Programs initiated after 1992 have a current (predicted) cycle time of 89 months. More work is needed to understand the complex web of factors that lengthen programs. DoD's plan is intended to address crucial scheduling problems and offer concrete steps to ensure that DoD's acquisition cycle time goal can be met, and even exceeded.

Goal 2: Achieve visibility of 90 percent of DoD materiel assets while resupplying military peacekeepers and warfighters and reducing average order to receipt time by 50 percent.

TOTAL ASSET VISIBILITY

During Operations Desert Shield/Storm, the responsiveness of the logistics system was degraded by thousands of duplicate orders placed because operational units had inadequate visibility over the status of their requisitions, particularly for critical items. Moreover, an enormous amount of materiel was shipped to the theater, but was not readily available to U.S. forces because of poor control and visibility of these assets. Such problems reduced the readiness of combat forces. Responding to these problems, DoD designated the Army as executive agent to develop a Joint Total Asset Visibility (TAV) program for DoD.

The goal of these TAV programs is to develop a capability which provides DoD users with timely, accurate information on the location, movement, status, and identity of units, personnel, equipment, and supplies. Much of DoD TAV capability will be achieved by accessing already existing or evolving Service/Agency TAV capabilities and business systems. Asset visibility will be measured as the percentage of DoD worldwide inventory using the Supply System Inventory Report in then-year dollars that are visible to the single Integrated Material Manager. The baseline in 1996 was 50 percent.

LOGISTICS RESPONSE TIME

The time it takes from the date a customer prepares a requisition until the customer acknowledges receipt of the respective item is far too great if the requisition must be satisfied through the wholesale logistics system rather than from assets on hand at the customer's local military installation. Reductions in the wholesale logistics pipeline enable DoD to improve readiness, while reducing inventory and costs. In addition to order-receipt time, the Department is working to reduce cycle times across all elements of the supply chain. These efforts include greater reliance on both electronic contracting to reduce administrative lead times and flexible manufacturing to reduce production lead time. In addition to this National Performance Review goal, DoD has established aggressive goals to reduce the total supply chain lead time from 557 days in 1996 to under 50 days by 2010.

Beginning in 1997, DoD will be measuring the performance of the wholesale logistics pipeline in a uniform manner. Using actual data that shows how the wholesale system responds to specific customers and various types of requisitions, DoD will be able to identify causes of delay in

satisfying customer requirements and take corrective action to expedite the processing of requisitions and the movement of materiel to the armed forces and the activities that support those forces.

The primary objective of current DoD efforts is to build predictability into the performance of the wholesale logistics system, and thereby establish customer confidence in that system. Of equal importance is the fact that the measurement system is expected to be a valuable diagnostic tool for logistics managers. Previous measures have only reflected the performance of the wholesale system relative to selected consumable items. With further experience, DoD may elect to focus on other measures (e.g., the median or mode) if they prove to be better indicators of normal logistics response time.

The key metric for this goal is the elapsed time (in days) from customer requisition to delivery of the materiel utilizing the wholesale system. Data will be assembled on a quarterly basis to monitor progress and guide improvement actions. The average for the reporting periods will be arrayed. The baseline for 1997 was an average logistics response time of 36 days.

Goal 3: Simplify purchasing and payment through use of purchase card transactions for 90 percent of all DoD micropurchases while reengineering the processes for requisitioning, funding, and ordering.

The Army Audit Agency estimates savings of \$92 per transaction when supplies or services are procured with the government-wide purchase card. The Under Secretary of Defense (Comptroller), Principal Deputy Under Secretary of Defense (Acquisition and Technology), and Deputy Under Secretary of Defense (Logistics) have all issued guidance aimed at increasing usage of the purchase card in order to expand these projected savings while simplifying the overall purchasing and payment process and to provide better service. The purchase card was used for 5 million of the 7.7 million DoD micropurchases in FY 1997.

In order to reach the goal of 90 percent usage for micropurchases by the year 2000, several initiatives have been undertaken. Effective October 1, 1997, all contracting officers will be required to use purchase cards for micropurchases except in narrowly defined circumstances. In addition, all military departments and defense agencies have been directed to remove nonessential technical screening requirements and reduce the categories of items which require such screening controls for purchases made with the government-wide purchase card. Use of this card will be expanded, especially in business with the Defense Automated Printing Service.

Departmental performance will be determined by monitoring the number of simplified acquisitions valued within the micropurchase threshold, other than purchase card transactions, as reported to the Federal Procurement Data System (x) and the number of card transactions within the micropurchase threshold as reported by the card issuing financial institution (y). Together, these figures will depict total simplified acquisition micropurchases (z). The performance to the goal will be obtained by dividing the purchase card transactions by the total (y/z).

Goal 4: Create a world-class learning organization by offering 40 or more hours annually of continuing education and training to DoD acquisition related work force.

DoD is committed to providing high quality education and training to DoD acquisition community. Continuing acquisition education and training activities ensure that previously certified acquisition members are familiar with new policies and business practices and maintain the currency that a first-class work force needs. The major objectives are to provide and assure participation in continuing education and training activities for DoD acquisition work force. The primary metrics for this goal, with a baseline year of 1997, are:

- The number of hours of continuing education and training provided.
- The number of acquisition related personnel who participate in continuing education and training activities annually.
- The percentage of acquisition related personnel who have completed 40 hours or more of continuing education and training activities annually.

Goal 5: With no topline budget change, achieve annual defense procurement of at least \$54 billion toward a goal of \$60 billion in 2001.

Since 1988, the Department allowed the weapons modernization accounts to decrease while the force was restructured to meet post-Cold War requirements. Additionally, unanticipated contingency and other unplanned operating expenses caused a steady migration of funds from the investment accounts to Operation and Maintenance accounts. This lower level of investment initially was appropriate as the force was right-sized by retirement of older equipment and systems. Now, equipment has aged to the point that replacement is needed, but the level of procurement expenditures is inadequate. An increase to at least \$54 billion annual procurement in 2000 is needed to achieve the required balance towards a goal of \$60 billion in 2001.

The *Report of the Quadrennial Defense Review* provides an overview of how this will be accomplished. Specifically, this goal will be achieved by realistic operational and support programming; force structure cuts; streamlining infrastructure; and additional base closures. The key metrics for this goal are the procurement account and DoD total obligational authority. The baseline is FY 1997 (\$44.3 billion). Procurement accounts will be arrayed as then-year dollars and as a percent of the total obligational authority.

Goal 7: Decrease paper transactions by 50 percent through electronic commerce and electronic data interchange.

Paper transactions encompass all business and information exchange between DoD and its suppliers. Since 1983, DoD has been reducing its reliance on paper transactions for technical data through the Continuous Acquisition and Life-cycle Support (CALs) program. CALs is DoD's primary proponent for the development of weapon system integrated data environments that enable paperless program management and electronic transactions of program and technical data. In the business area, DoD is implementing electronic contracting procedures. Currently, DoD completes over 30,000 Electronic Commerce/Electronic Data Interchange (EC/EDI) transactions per month across 25 value added networks, and actively support Access America and its specific implementation actions. DoD's electronic commerce program includes

methodologies and solutions that support paperless business applications for program managers in procurement, finance, acquisition, transportation, logistics, and other support activities where cycle time reductions are essential. DoD electronic commerce infrastructure will be interoperable with the evolving federal electronic commerce infrastructure and technologies and will adopt best practices from industry.

This goal reflects DoD's commitment to employing electronic commerce to:

- Reduce cycle times.
- Improve data accuracy and availability.
- Reduce costs (including in-house personnel costs).
- Present a single face to industry.

The goal encompasses the transition of paper transactions that currently occur in the areas of solicitation, contracts, data deliverables, disbursement, and payment to electronic form. The primary metric for this goal is the number of paper transactions as a percent of total transactions in the contracting, data deliverables, government acceptance (DD 250) disbursement, and payment areas. The initial baseline is 17 million transactions in FY 1996. Data will be disaggregated into paper transactions and electronic transactions to calculate the ratio. Data will be assembled on a quarterly basis to monitor progress, report success, and guide improvement actions.

Goal 9: Eliminate layers of management through streamlined processes while reducing DoD acquisition related work force by 15 percent.

DoD is reducing the acquisition work force consistent with current force structuring. The recent report to Congress, *Right-sizing DoD Acquisition Workforce*, responded to concerns that the work force might be too large. As the report indicated, the Department's plan should result in a 25 percent smaller acquisition work force over the period FY 1996 to FY 2000. Section 906 of the National Defense Authorization Act mandated the FY 1996 reduction of 15,000 personnel (acquisition organization less depot skilled trades). The actual reduction was 23,802 (military and civilian). Restructuring efforts will result in elimination of duplicate functions, consolidation of organizations, simplification of procedures, improved professionalism, streamlined processes, and increased efficiency throughout the Department.

Management restructuring and acquisition reform initiatives have streamlined many management tasks and activities, enabling the reduction of manpower requirements at the staff levels and in program offices. The successful implementation of integrated product teams has improved communication and reduced the need for numerous oversight program reviews and evaluations of program activities. As an example, the Defense Acquisition Pilot Programs have experienced significant reductions ranging from 27 to 47 percent in their full-time staffs. Acquisition process improvements will be continuously implemented over the next several years to streamline processes and reduce the manpower requirements. The key metrics for this goal include the

number of personnel in acquisition related work force and the number of layers of management. The baseline year is FY 1997.

Goal 10: Define requirements and establish an implementation plan for a cost accounting system that provides routine visibility into weapon system life-cycle costs through activity based costing and management. The system must deliver timely, integrated data for management purposes to: permit understanding of total weapon costs; provide a basis for estimating costs of future systems; and feed other tools for life cycle cost management.

The primary purpose of this goal is to improve the visibility into total ownership costs. In 1995, DoD established total life-cycle cost as equal to performance with the promulgation of a Cost as an Independent Variable (CAIV) policy. DoD efforts to fully implement CAIV have been hampered by limited visibility into true ownership costs. DoD currently relies on the Visibility and Management of Operating and Support Costs (VAMOSOC) system to provide item level cost insight. However, Service differences in implementation and lack of process costs limit the applicability of VAMOSOC data on a Department-wide basis. To fully implement CAIV and to assist in reducing near-term operational and support costs, process and product costs must be available and visible.

In April 1997, the Service logistics chiefs unanimously reaffirmed the lack of a robust and/or widespread cost accounting system as the single largest impediment to controlling and managing life-cycle cost. In May-June 1997, preliminary planning meetings were conducted to review cost accounting systems issues.

Goal 11: Dispose of \$2.2 billion in excess National Defense Stockpile inventories and \$3 billion in unneeded government property while reducing supply inventory by \$12 billion.

NATIONAL DEFENSE STOCKPILE

The National Defense Stockpile (NDS) inventory is a stock of strategic and critical materials (S&CMs) to meet military, industrial, and essential civilian needs during a national emergency when domestic and foreign supplies are projected to be insufficient. The total current value of the 1997 Stockpile is \$5.3 billion. Since prices of individual commodities in the Stockpile are subject to market fluctuation, the total value of the Stockpile inventory is also subject to change.

The NDS has bought and sold S&CMs based on a biennial Report to Congress on NDS requirements which evaluates the nation's needs for various S&CMs for purposes of national defense. Congress must approve the recommendations in the Report before disposals or acquisitions can occur. With the end of the Cold War, NDS requirements have dropped from \$7 billion to \$43 million.

Excess NDS materials are disposed of through public sale using competitive contracting procedures and, where no market exists, by other disposal methods. Once DoD receives disposal authority from Congress, it prepares an Annual Materials Plan (AMP), which lists the maximum amounts of each material that DoD would sell under ideal market conditions. The Plan is submitted to an inter-agency Market Impact Committee (MIC), which reviews and frequently

recommends changes in disposal levels. The MIC, composed of various federal agency representatives, advises Stockpile managers on the projected domestic and foreign effects of all NDS disposals proposed to be included in AMPs. The MIC also reviews comments received in response to notices of proposed NDS disposals published in the Federal Register. MIC comments and reviews are forwarded to Congress along with proposed AMPs. AMP sales are not permitted until Congress has reviewed each AMP. By law, DoD must make maximum feasible efforts to avoid an undue market disruption. Approximately half the time, actual sales lag behind the maximum amounts in the AMP because of market conditions.

Based on disposal authority granted by Congress, sales from 1991 to 1996 were \$1.8 billion. In 1996, the top selling materials were cobalt, tin, and nickel, accounting for about 60 percent of total sales. Revenues or payments to the government for the material sold usually occur when the buyer takes delivery of the material, which often lags six months or more after contract award. Therefore, in any given calendar year, on average 60 percent of revenues are collected for contract awards in that year. The objectives of this goal is to reduce the Stockpile inventory through disposals of Stockpile materials, mostly through sales. The stated National Performance Review goals are defined in terms of the dollar value of disposals in NDS inventory. This focus on disposals is important because the value of the inventory varies with market price fluctuations. For example, the book value of the NDS inventory declined only \$300 million in the three years between September 1993 and September 1996, notwithstanding actual NDS sales of about \$1.6 billion during the same period. This apparent anomaly is accounted for by wide swings in commodity prices during these years. Cobalt, as a significant measurable example, went from under \$10/lb to nearly \$30/lb due to civil war in Zaire at a time when the Stockpile had more than 40 million pounds of cobalt in its inventory.

GOVERNMENT PROPERTY

There is approximately \$21 billion (acquisition cost) of DoD-owned plant equipment, special tooling, and special test equipment in the possession of defense contractors. Ensuring sound business practices for providing, accounting, controlling, and disposing of government property in the possession of contractors is a long-standing issue within DoD. DoD has established a Government Property in the Possession of Contractors Integrated Process Team to review problems associated with government property in the possession of contractors.

The team provided recommendations to an Executive Review Group regarding proposed policies, procedures, and follow-on actions necessary to improve physical and financial control of government property provided to defense contractors for contract performance. Some of the recommendations affect the public and must be published in the Federal Register to obtain public comment prior to implementation.

DoD will meet its 3-year goal by implementing a strategy to curtail the growth of government property in the possession of contractors and reduce inventories of such property. The strategy builds upon DoD's ongoing acquisition reform efforts directed towards greater use of commercial suppliers, which should result in greater reliance on contractor equipment and less use of government equipment. This strategy includes the following key actions: revising the acquisition regulations if, following public comment, it is feasible to do so, and implementing

guidance to reduce the growth of government property in the possession of contractors; articulating the reduction imperative to both government and industry; and conducting a review of existing inventory and disposal of all unneeded property.

The key measurement for tracking progress towards the goal of reducing excess government property is the total dollar amount of government property in the hands of contractors at the end of the year as measured in FY 1996 constant dollars. The dollar amount of equipment disposed of will also be tracked in FY 1996 constant dollars. The baseline dollar amount of equipment residing with contractors was \$21 billion in 1996.

SUPPLY INVENTORY

The supply inventory is too high to support the declining force structure. From a high point in 1989 of \$107 billion, current plans are to reduce supply inventories to \$48 billion by 2003 (\$56 billion by 2000) (in constant 1995 dollars).

Each military department and the Defense Logistics Agency are reducing supply inventories by improving equipment reliability, reducing logistics response times, acquisition lead times, and other cycle times. They are also reducing supply inventories by improving their requirements processes, by selective outsourcing of weapon system support and other functions, by reducing retention levels in some cases, by having stock shipped directly to the end user by the vendor, and by examining more closely what is being held on the shelf as opposed to disposing of inventory being held in support of weapon systems no longer in use by U.S. forces and those of U.S. allies. The Department continues to draw down supply inventories to match reductions in force structure. The key metric associated with this goal is the value of the supply inventory measured in constant FY 1995 dollars (\$70 billion).

Goal 12: Minimize cost growth in major defense acquisition programs to no greater than 1 percent annually.

Cost growth in major defense acquisition programs is a concern to DoD. Cost growth can be a result of many reasons, including technical risk, schedule slips, and optimistic cost estimating. One of the goals of acquisition reform is to reduce cost growth from all causes.

DoD tracks the rate of cost change in major acquisition programs. It examines the percentage increase or decrease in the total acquisition cost of the common set of acquisition category I programs reported to Congress in Selected Acquisition Reports from one year to the next. Values are adjusted to remove virtually all effects of changes in quantity and inflation rates. The resulting metric measures what current estimates would have been had there been no change in quantity or inflation rates since the last President's Budget.

This goal assumes cost increases are inherently bad, regardless of cause. The purpose of the goal is to focus on the net cost impact on MDAPs of all of the Department's activities, and to encourage the components and the Office of the Secretary of Defense to take whatever steps are necessary to either control cost growth directly or to take action to offset the impacts of forces

DoD does not control. Responses are expected to include both specific cost control initiatives and process changes. The objective is to keep the metric below 1 percent annually.

The key metric for this goal is the annual rate of MDAP cost change. Each year the MDAP total cost change will be calculated for each year by summing the total cost change of common programs between the prior year and the current year (adjusting for quantity and economic changes) and dividing by the total current estimate of the common programs for the prior year. This metric will track MDAPs and provide a Department-wide measure of program efficiency and cost improvements. The baseline year is 1997 (+.04 percent variance).

EXPANDED SINGLE PROCESS INITIATIVE

The Single Process Initiative (SPI) is the continuation of the process begun in June 1994 to transform the Department's acquisition system from a specification, how-to, based environment to a performance-based environment. It is tied to the Department's focus on promoting the integration of the nation's civil and military industrial bases. In 1995, the Secretary of Defense directed DoD to accept the submission of contractor proposals/concept papers to reduce the contractor's multiple, government-directed business or manufacturing processes at a given site to a single process, where possible. By eliminating duplicative processes, the contractor also eliminates duplicative overhead and becomes more competitive in the global marketplace. As this competitiveness increases, DoD realizes two advantages. First, application of the SPI techniques contributes to establishing a reliable source of supply or service to the government that can more readily survive periodic budgetary anomalies. Second, DoD gains access to better and more advanced technologies in which the contractor has the opportunity and incentive to invest, maintain, and improve its global market share. The SPI program also modifies all applicable government contracts via block change procedures to ensure that the mutual benefits associated with this streamlining effort are not offset by administrative expense.

In its second year, SPI is emerging as a formidable vehicle to reduce Total Ownership Cost. DoD has received nearly 1,200 proposed process changes from over 250 contractors DoD-wide, resulting in nearly 700 modified processes and over \$332 million in cost savings/avoidance.

FEDERAL ACQUISITION REGULATION PART 15 REWRITE

The single most significant change to be made to the way DoD solicits, evaluates, and awards government contracts since the Federal Acquisition Streamlining Act is the Federal Acquisition Regulation (FAR) Part 15 Rewrite. A government-wide team, led by DoD, was formed to rewrite the procedures for negotiating contracts. Significant effort was made to work with industry to develop a process which accommodates the needs of all parties. The rule makes changes in four major areas: pre-competitive range communications between offerors and the government; the criteria for advancing an offeror to the competitive range; competitive negotiations; and proposal revisions. The impact of these changes should be a better understanding between the government and the contractor about the government's requirement, a better quality product or service, better pricing, and an overall reduction in cycle times.

OTHER TRANSACTION AUTHORITY

The Department obtained legislation in FY 1997 that extended 10 U.S.C. 2371, section 845 of Public Law 103-160, other transactions authority for certain prototype projects, to the military departments and other designated officials. This authority provides relief from most procurement statutes and the FAR, providing the Department tremendous flexibility in negotiating agreement terms and conditions. DoD designated the defense agencies as authorized users of this authority. Guidelines for the use of this prototype authority were signed on December 14, 1996.

PERFORMANCE-BASED CONTRACTING

The President's Management Council (PMC) identified performance-based contracting (PBC) as an initiative with significant potential payback to the federal government. The PMC believes that by utilizing performance-based descriptions for requirements and a number of other devices in service contracts, a minimum of 15 percent could be saved over nonperformance-based contracting. To implement this initiative, the Department developed training, a checklist for use in PBC contracting, and guidance for incorporation in the Defense Acquisition Deskbook. The Department has submitted a plan to the Office of Federal Procurement Policy for further implementation of PBC. Performance-based contracting is one of the initiatives the Department plans to use to achieve savings to be credited to the modernization accounts.

PERSONNEL DEMONSTRATION

DoD needs a system that allows and encourages flexibility, innovation, and risk management while reducing the amount of energy expended on administering a fair, effective, and responsive personnel management system. In the FY 1996 National Defense Authorization Act, Congress provided for a civilian acquisition work force demonstration project to determine the feasibility or desirability of proposals for improving the personnel management system.

The Secretary of Defense chartered an Army-led process action team to design a demonstration program evaluating new personnel management policies. The team is composed of functional and personnel specialists from the Services and agencies responsible for acquisition, representatives from the Office of the Under Secretary of Defense (Personnel and Readiness), and the Office of Personnel Management. The team has completed a Federal Register notice which creates a system responsive to the Department's needs while supporting the personal and professional development of the work force.

PROGRAM STABILITY

Virtually every major study of the major defense acquisition program process in recent years has cited instability as a key contributor to cost and schedule growth in DoD systems. One of the leading causes of instability is volatile funding profiles. These changing profiles result from a variety of factors and competing Departmental priorities.

Program stretchout is deleterious for two reasons. It increases overall program cost by deviating from carefully planned baselines designed to ensure DoD develops and produces weapon

systems in an efficient manner, and it ties up resources in the outyears that could have been used for other projects. These funding instabilities are the major cause for long-term growth in weapon systems costs and schedules.

As an outcome of the Quadrennial Defense Review, the Department is establishing a prudent outyear acquisition program stability reserve to offset the kinds of cost growth associated with the risk inherent in complex, technologically advanced programs. A reserve of this nature is a more efficient use of resources over the long term since the Department will reduce the destabilizing effects on other programs and the attendant cost growth. Initially, the Department will start at \$250 million in FY 2000 and ramp up to \$1 billion by FY 2003. This reserve will be used to only fund those cost increases that arise due to technical difficulties. It is not intended to pay for increases in program quantities or to fund additional requirements or capabilities.

REQUIREMENTS REFORM

The crafting of performance-based operational requirements documents is a key element of the Department's acquisition reform effort. To ensure the training provided to requirements writers is consistent with that objective, the Joint Requirements Oversight Council Review Board chartered a Requirements Training Tiger Team in July 1997 to investigate. The team consists of members from the Services, the Office of the Secretary of Defense, and the Joint Staff, whose primary focus will be on joint MDAPs with recommendations to all levels of the requirements writing process.

SMALL BUSINESS ISSUES

The Department of Defense recognizes the critical role small, small disadvantaged, and women-owned small businesses play in accomplishment of the defense mission. DoD is committed to fostering small business participation in every aspect of its vendor base. Recognizing the need for increased efficiency and economy driven by continuing resource reductions and the trend to use requirements consolidation as one strategy to obtain cost reductions and streamlining, the Department issued guidance addressing factors that should be taken into account when requirements consolidation is considered. This guidance is aimed at balancing the potential benefits which may result from the consolidation of contract requirements with the Department's commitment to ensure small businesses full participation in DoD's acquisition programs.

STATUTORY REPORT

Section 5001(b) of Federal Acquisition Streamlining Act of 1994 included an annual report requirement to Congress relating to achievement, on average, of 90 percent of cost, performance, and schedule goals for major and non-major programs. DoD was also directed to decrease, by 50 percent or more, the average period for converting emerging technology into operational capability.

As of September 30, 1997, all but five of 85 MDAPs are meeting more than 90 percent of the aggregate number of cost, schedule, and performance goals for that program. The five exceptions are Chemical Demilitarization, Maneuver Control System, Advanced Field Artillery Tactical

Data System, Joint Standoff Weapons, and Theater High Altitude Area Defense, which are being reviewed by the military departments.

At the law's enactment date (October 13, 1994), the average period for converting emerging technology into operational capability for major programs was calculated to be 115 months from program initiation dates to initial operating capability dates for all current major programs. As of September 30, 1995, this average period declined to 113 months. For the following year, the period increased to 115 months. As of September 1997, this period has not changed.

The calculation of the average period of all MDAPs described above includes a significant number of older programs that were structured and developed using the traditional acquisition process. A more accurate assessment of the effects of DoD's acquisition reform efforts would be to concentrate on those programs that were initiated under the new acquisition reform process. MDAPs started since 1992 have an average period of 86 months for converting emerging technology into operational capability, which is two months less than reported last year. These more recent programs have been able to fully employ regulatory reform, including specification streamlining, procurement reform, and integrated product teams to reduce cycle time.

TOTAL OWNERSHIP COSTS

Total ownership cost is the sum of all financial resources necessary to organize, equip, and sustain military forces sufficient to meet national goals in compliance with all laws; all policies applicable to DoD; all standards in effect for readiness, safety, and quality of life; and all other official measures of performance for DoD and its components.

DoD urgently needs to reduce the total ownership costs of its systems to sustain force modernization and recapitalization. Total ownership costs of systems have increased dramatically over the years. Over 60 percent of the cost of a weapon system is incurred after it is fielded. As DoD retains ownership of weapon systems for longer periods of time, the cost of supporting these systems grows. DoD is taking three actions to reduce the total ownership cost. First, DoD is integrating the management of development and production for systems with the management of operations and support. The purpose of this integration is to provide a total ownership focus to development so that trade-offs can be made between investments in development and reduced costs in support. Second, DoD is reforming the logistics process by reducing logistics response time and reducing the logistics footprint. This effort is especially important for the support of legacy systems that will continue in inventory for many more years. Third, DoD is developing a system that will provide improved insight into total ownership costs and allow management the opportunity to have the information necessary to make more informed decisions.

TRANSPORTATION ACQUISITION REFORM

The Department has embarked on a major initiative to completely reengineer its transportation documentation and financial processes. The goal is to establish a thoroughly streamlined business process that significantly improves the efficiency and timeliness of DoD's procedures for moving, billing, paying, and maintaining in-transit visibility of its materiel, people, and

personal property. Several pilot programs were initiated in October 1997 to improve transportation accounting, simplify documentation, and test credit vehicles for paying selected transportation bills. Concurrently, a full-time Reengineering Team has been established to develop a strategy to completely reengineer the Department's overarching transportation documentation and financial process by February 1998.

Over the past year, the Department has been working to develop a definitive transportation acquisition policy to bring consistency to the varied transportation acquisition processes that have evolved over time. The policy will seek to strike a balance between DoD transportation readiness goals and the objectives of the Federal Acquisition Streamlining Act. The policy will require that commercial transportation providers commit to support DoD contingency requirements through participation in DoD readiness programs, such as the Civil Reserve Air Fleet and Voluntary Intermodal Sealift Agreement, as a condition for receiving DoD business, and that carriers provide access to their in-transit data. The policy will also require that DoD use best-commercial practices and best-value evolution procedures to acquire transportation services.

DoD has initiated two programs to test improvements in the way DoD obtains moving services for military families' personal property. The Military Traffic Management Command (MTMC) is initiating a Personal Property Pilot Program in early 1998 to test a reengineered concept of operations jointly established by DoD and industry representatives. Utilizing a FAR-based contract with a best value award will improve the quality of personal property transportation service to military families by requiring full replacement value, on-time pickup and delivery, and reduced loss and damage. MTMC's aim is to provide improved service through competitive, long-term contracts. The Army is testing a concept at Hunter Army Airfield, Georgia, which provides service members a relocation package that includes household goods management and commercial relocation services, (e.g., home finding and home selling/buying). This is a quality of life initiative that changes the way the Army relocates its members. Army members will no longer have to integrate their own moves. The Hunter test offers services that positively impact quality of life, e.g., full replacement value coverage for loss/damage, residence/office counseling, and direct claims settlement within 30 days. The Hunter test is a model for DoD that seeks to outsource non-core competencies and reduce infrastructure. If successful, DoD intends to expand the project to other installations.

INTEGRATING ENVIRONMENT INTO ACQUISITION PROCESS

DoD is integrating environmental concerns into the acquisition reform process and helping reduce weapons system life-cycle costs that are driven by environmental requirements, while also improving environmental performance. About 80 percent of the hazardous materials used by DoD are attributable to the acquisition process. DoD's emphasis is on reducing costs and meeting existing or emerging compliance requirements by preventing pollution at the source. At the heart of these integration efforts are sound business practices, for example, the Joint Group on Acquisition Pollution Prevention (JG-APP), which was established by the Joint Logistics Commanders to work with industry to eliminate hazardous materials in the manufacturing of weapon systems. JG-APP helps acquisition program managers adopt new materials and processes that reduce the use of hazardous materials at contractor design and manufacturing

facilities. This effort has helped in overcoming barriers to pollution prevention by fundamentally reengineering the approval process for pollution prevention projects in acquisition programs.

In DoD Directive 5000.1, the Department lists the policies and principles that guide all defense acquisition programs. One of the principles sets forth the Department's environmental management policy. To implement DoD's policy, DoD Instruction 5000.2 requires that every weapon system program conduct environmental, safety, and health (ESH) analyses. The ESH analyses must be initiated at the earliest possible time in the acquisition process and updated continually throughout the life cycle of the program. The analyses provide the information needed for a program manager to understand the environmental issues that are important to the program and the public, and to develop a strategy for integrating ESH issues.

CONCLUSION

Acquisition reform continues to be an important element of the Department's strategy to meet the requirements of the warfighter, by buying smarter and faster and getting better products at a cheaper price. Acquisition reform is a continuous process, focused on identifying and eliminating impediments to new and innovative business processes, as well as incorporating best practices from the marketplace.

Chapter 19

INFRASTRUCTURE

Support operations play a critical role in enabling Department of Defense personnel to live, train, and execute national security policy. Support functions must further serve the force by becoming better, faster, and cheaper. They must be better because quality infrastructure—particularly installations—contributes to quality of life, morale, retention, and hence force readiness. Services must be cheaper, because the Department must increase its spending on modernization to maintain battlefield dominance. The Secretary of Defense’s November 1997 Defense Reform Initiative lays out a plan by which DoD will continue to actively examine its internal operations and support activities to determine where it can right-size, lower cost, and improve performance through better management.

FACILITY MANAGEMENT

DoD Infrastructure

The Department has the world’s largest dedicated infrastructure. Roughly the size of the state of Virginia (40,000 square miles), the Department’s physical plant is worth \$500 billion. It includes not only mission and mission-support facilities, but also housing for more than 300,000 families and about 400,000 unmarried service members. DoD is committed to providing facilities in the quality and condition suitable to support the defense mission. The Department is actively pursuing initiatives for facility strategic planning, disposal, outsourcing, privatization and competition, energy, test and evaluation, and housing. All these efforts are focused on improving the efficiency and performance of the DoD facility support structure. As part of the Department’s responsibility to the environment, DoD is working to reduce toxic chemicals released at these facilities.

Facility Strategic Plan

DoD initiated an effort to improve the strategic planning process for the acquisition, operation, maintenance, repair, renovation, and replacement of its physical plant. In 1998, this effort, as an outgrowth of shortfalls identified in the Quadrennial Defense Review (QDR), will create a Defense Facilities Plan using a framework modeled after the Government Performance and Results Act of 1993. All active and reserve Service components are participating, along with defense agencies.

Facility Disposal

The Department is improving facility management by disposing of obsolete and excess buildings and structures. A recently-completed survey of all installations has identified 8,000 buildings totaling 50 million square feet as candidates for disposal by FY 2003. Disposal of these buildings will result in cost avoidance to DoD of \$100 million per year in future operations and maintenance costs. In addition, disposal will improve safety, prevent space creep, and remove eyesores. The Department has substantially increased funding for facilities disposal and will

accomplish even more through military construction projects that contain facilities disposal as part of the project.

Competition, Privatization, and Outsourcing

Another key to achieving necessary savings is outsourcing, privatization, and competition. Competition drives organizations to improve quality, reduce costs, and better focus on their customers' needs. DoD's experience has been positive; the Department has saved at least 20 percent on services costs as a result of past competitions. However, commercial firms cannot always perform the required work, and many activities are best performed by government entities due to expertise, technological edge, or other factors. Outsourcing is useful only when it results in the best value for the government. In 1995, the Department of Defense began developing its strategy for competition and outsourcing. The Defense Reform Initiative further directed the Department to evaluate DoD's entire military and civilian work force by 1999 to identify which functions are commercial in nature and could be competed.

The Department's principal tool for competition has been the Office of Management and Budget's Circular A-76, which provides policy and cost comparison procedures for commercial activities. More than 2,000 A-76 studies were completed between 1978 and 1994, about half of which were won by the government in-house work force. Regardless of who wins the competitions, DoD anticipates steady state savings from the ongoing A-76 cost comparisons process of over \$2.4 billion annually commencing in FY 2003. These savings are based on conservative extrapolations of historical experience for savings from A-76 cost comparisons.

Energy Conservation

The Department spends nearly \$2.5 billion annually to heat, light, cool, and operate buildings and other facilities on military installations (70 percent of all energy used by federal facilities). The primary long-term goal for the Department is to reduce installation energy use by 30 percent over 20 years (1985-2005). The Department is on track at 15.5 percent to meet this goal and satisfy mandates set forth in the 1992 Energy Policy Act and Executive Order 12902. Effective and efficient utilization of energy is essential because conservation not only saves money but also reduces greenhouse gases and counters global warming.

DoD is working to design its facilities to achieve the optimum balance for maximum energy conservation and is working to upgrade equipment to increase energy efficiency. Since 1985, all the Department's energy conservation work has resulted in a reduction of DoD's annual utility bill by about \$500 million.

The Defense Reform Initiative made a number of important commitments with regard to energy use. By January 1, 2000, the Department will privatize all utility systems (electric, water, waste water, and natural gas) except those needed for unique security reasons or when privatization is uneconomical. Many of these systems are old and in need of significant repair. The private sector has both the resources to invest in these systems and the expertise to maintain them appropriately. The Defense Fuels Supply Center (renamed the Defense Energy Support Center) will outline a blueprint for three regional demonstrations of integrated energy management by

the middle of 1998. By allowing DoD to better leverage its buying power, these wider management arrangements will allow the Department to maximize savings.

Research, Development, Test, and Evaluation Infrastructure

The increasing complexity of DoD weapon systems and the expanding size of the forecasted battlespace has driven the research, development, test, and evaluation (RDT&E) infrastructure to become increasingly complex and sophisticated. DoD laboratories now develop leading edge technologies with substantial commercial applications. Likewise, the test and evaluation (T&E) infrastructure has grown into the large and complex set of facilities needed to test systems and subsystems for DoD acquisition programs. These T&E ranges, where several thousand test projects are performed each year for DoD, other federal agencies, U.S. allies, and commercial users, are worth about \$25 billion and account for over 50 percent of the total DoD land area in the continental United States.

Since the early 1990s, Base Realignment and Closure (BRAC) actions and other ongoing initiatives have resulted in significant reductions in DoD RDT&E personnel and infrastructure. The Department recognizes that it must continually look for opportunities to reduce unnecessary duplication, reduce costs, and increase the efficiency and effectiveness of this infrastructure. DoD also recognizes that to maintain a technological edge over potential adversaries, modernized capabilities must be available. In response to the Defense Reform Initiative, the Department will conduct a study to review laboratory and T&E needs for the next 20 years. This study will develop a long-range plan by examining performance envelopes projected for future acquisition systems, laboratory and T&E capabilities, workload, and capacity, with a focus on meeting the needs of current and future warfighters. The result will be a requirements-based RDT&E infrastructure.

Military Housing

To attract and retain high quality personnel, DoD must provide a good quality of life—in particular, decent houses and barracks for service members and their families. But military housing is old, in need of extensive repair, and below contemporary standards. Two-thirds of DoD's 300,000 houses and 60 percent of the 400,000 bachelor housing spaces require revitalization or replacement. Using traditional funding and procurement methodologies to address this problem, it would take 30 years and \$20 billion for the houses and \$9 billion for the barracks. DoD is devoting the maximum amount of resources possible and is increasing reliance on the private sector. DoD expects to tap private sector expertise and capital to speed revitalization of military housing. The Department established the Housing Revitalization Support Office to help use the new authorities.

Attracting private capital to help speed revitalization is imperative. Using new tools provided to DoD by Congress in FY 1996, the Department expects to be able to leverage military construction dollars by a factor of at least 3:1. The Department has made significant progress toward the privatization of military housing and plans to accelerate the privatization program over the coming year. DoD now has solid examples to follow that will help build a portfolio of successes.

Already, service members and their families are moving into 404 new townhouses in Corpus Christi, Texas, and into 185 new townhouses in Everett, Washington. These homes were built as DoD's first limited partnership with private developers. They provide approximately four times the housing for the dollar compared with traditional military construction projects that had been considered at those locations. DoD is evaluating proposals for two other privatization projects: a whole base housing project at Fort Carson, Colorado, where the private sector will construct or revitalize, maintain, manage, and own 2,600 single and multifamily structures; and another at Lackland Air Force Base, Texas, where the private sector will construct, maintain, manage, and own 420 family housing units. The Department is developing requests for proposal for four other revitalization projects: Robins Air Force Base, Georgia; Marine Corps Base Camp Pendleton, California; Marine Corps Logistics Base Albany, Georgia; and Fort Hood, Texas. Some 50 other sites are being evaluated to determine their feasibility as successful privatization projects. DoD has worked hard this year to solve one-time budgetary and legal issues involved with this new program. As these issues are addressed, the Services will be able to negotiate and award more projects more quickly in the coming years.

REDUCING TOXIC CHEMICAL RELEASES AT INSTALLATIONS

DoD Acquisition Year 2000 Goal 8: The Department of Defense will reduce the total of toxic chemicals released at facilities in 1995 by a further 20 percent.

Beginning with 1994, DoD installations submitted annual Toxic Release Inventory (TRI) reports to the Environmental Protection Agency (EPA) for each toxic chemical used in quantities that exceed statutorily defined thresholds. For 1994, 131 installations submitted reports to the EPA showing that DoD released or transferred off-site 10.6 million pounds of toxic chemicals. In 1995, releases were reduced by 36 percent to 6.7 million pounds. This reduction was due to reduced operations at DoD installations and to the Department's pollution prevention program.

Of DoD's 1995 TRI releases and off-site transfers of toxic chemicals, DoD released 5 million pounds (75 percent of the total) to the air. Some of these toxic chemicals are hazardous air pollutants regulated by the Clean Air Act. EPA is increasing the regulatory control for these air pollutants. A number of the toxic chemicals are also ozone depleting substances. By reducing toxic chemicals, DoD is reducing its regulatory burden as well as improving the environment for the community. Achieving toxic chemical reductions requires finding new materials and processes that do not rely on toxic chemicals. DoD installations are implementing these source reduction techniques through such methods as material substitution and equipment changes.

Integrated Environmental Management

Corporate experience has shown that the integration of environmental and core concerns within an organization can generate constructive, cost-effective environmental management which reduces resources use. DoD has initiated an integrated approach to environmental security decision making and management. The objective of this program is to protect people, manage training and living areas judiciously, be a good citizen and neighbor, and set a good example for other militaries around the world.

The Department is building partnerships with states, tribal nations, and citizens to identify and address issues before they become problems, and to jointly develop constructive solutions—both environmentally and economically. Examples of partnering are found in the development of innovative environmental technologies, the implementation of the Environmental Investment (ENVEST) program, and the adoption of the ecosystem management approach.

The Department is developing innovative environmental technologies which can substantially reduce costs and increase the effectiveness of environmental programs. Congress granted DoD the ability to enter into cooperative agreements with state and local government agencies in order to demonstrate, validate, and certify environmental technologies. With strong research and development and evidence of technical promise and cost-avoidance potential of new technologies, DoD can support the transition of successful technologies to wider DoD use and private markets.

DoD and the Environmental Protection Agency jointly sponsored pilot program ENVEST—part of the President’s Reinventing Environmental Regulation initiative, which seeks pollution prevention through regulatory flexibility. ENVEST allows selected military installations to identify a combination of actions that would protect human health and achieve greater overall environmental performance, with equal or less costs than under the current regulatory approach.

DoD’s installations contain diverse habitats, from tall-grass prairies to old-growth forests, and many rare species. DoD’s conservation goal is to support the military mission while managing these important resources for multiple uses for future generations. In order to accomplish this goal, DoD will partner with other federal and state agencies, communities, and interest groups to adopt ecosystem management approach. This approach considers groups of plant and animal species and their interrelationships instead of focusing on single-species management. It also integrates human considerations in helping determine the best long-term uses of these resources.

RIGHT-SIZING THE BASE STRUCTURE

The Department’s BRAC process has been a major tool for reducing the domestic base structure and generating savings. The Department recognizes its responsibility to communities surrounding former bases and has a strong track record in helping them develop these properties into vibrant centers of economic growth for public benefit. Even so, the Department’s base infrastructure remains too large for its mission; it must be right-sized to properly support the national security mission.

DoD Acquisition Goal 6: In the spirit of fostering partnerships and community solutions, DoD will complete disposal of 50 percent of the surplus property baseline and privatize 30,000 housing units.

BRAC Savings

Four BRAC Commissions between 1988 and 1995 proposed the closure or realignment of 152 major installations and 235 smaller installations. The Department invested approximately \$23 billion total to implement these recommendations—and will net a projected \$14 billion savings

by FY 2001. Recurring savings after FY 2001 will amount to approximately \$5.6 billion each year. Despite the infrastructure reductions gained by the four rounds of base closures, balancing DoD's force and base structure is critical to preserving readiness.

The Department has embarked on a study of actual costs and savings attributable to BRAC in compliance with Section 2824 of the FY 1998 Defense Authorization Act. Preliminary analysis by the DoD Inspector General indicates that BRAC costs have been overstated and BRAC savings have been understated.

Improving the Base Reuse Process

The Department continues to make base reuse a high priority. Since 1993, when President Clinton launched a plan to support faster redevelopment at base closure communities, DoD has made major improvements each year to the way former military bases are converted to civilian use. A few of the more recent initiatives are:

- **Job Centered Property Disposal.** The Economic Development Conveyance (EDC) Program makes former DoD property available to BRAC communities below or at fair market value to aid job creation. The program was launched in record time and is generating jobs and economic activity at a surprising rate and in unexpected places. Twenty-seven recently approved EDCs are projected to create about 135,000 jobs.
- **Leasing for Reuse.** Because leasing helps create jobs quickly, the military departments' process for leasing property to BRAC communities has been simplified and expedited. Between June 1996 and June 1997, 234 tenants moved into former bases, representing 34 percent of all tenant activities. Even greater success is expected in the future as the military departments implement streamlined lease approval processes. To make the process more uniform in practice and application, each of the military departments has developed a model lease for use by the communities and is scheduling how-to training for personnel in the field offices.
- **Better Guidance.** Revisions and clarifications to DoD's Base Reuse Implementation Manual will help BRAC communities better understand the steps involved in gaining access to former military property quickly and easily. Faster property disposition helps communities generate economic activity and benefits the Department as well.

Demonstrated Results

Successful recovery from base closures and conversion of military bases can be found throughout the country. Already the redevelopment of closed bases has created nearly 40,000 new jobs and 800 tenants. For bases closed more than two years, nearly 75 percent of the lost civilian jobs have been replaced.

Public and private reinvestments are recreating these installations as job centers, with new airports, educational institutions, and multifaceted business developments. Former defense facilities are also helping communities meet needs for public recreation, homeless individuals,

and affordable housing. Most communities are rebounding remarkably fast, crafting more diverse and resilient economies. Many find that they are probably better communities for having evolved away from the bases.

In California, the state hardest hit by base closures, many communities are well on their way to recovery. For example, in Sacramento, on the site of the former Army Depot, Packard Bell employs 5,000 people. At the former Mather Air Force Base there are 45 tenants and 1,800 new jobs. In Charleston, South Carolina, where the number of DoD job losses, as a percent of the work force, was greater than any other BRAC location, there are 32 entities reusing the former Navy facilities providing 2,420 jobs. Additionally, roughly 62 percent of the six million square feet of leasable space on the base is occupied.

Surplus Property Disposal

As part of the effort to monitor the BRAC process, DoD uses 97 major closure properties as a baseline for measuring progress on closure, disposal, cleanup, and reuse. DoD property disposal is accomplished through federal and private transfers. Over 330,000 acres of real property were declared excess from the last four rounds of BRAC. The BRAC surplus installation property has or will be transferred through public benefit conveyance or to other federal agencies, negotiated sales, public bid sales, or through economic development conveyances. Seventy-two base transition coordinators are on-site coordinators that facilitate the process of base closure and property disposal to the local community.

Future Base Closure Rounds

DoD has eliminated only 21 percent of its domestic base infrastructure, while force structure will have dropped by 36 percent by FY 2003. The Department therefore will request authorization for two more BRAC rounds. After implementation of these rounds, the Department anticipates eventual additional annual recurring savings of approximately \$2.7 billion. Balancing the Department's force and base structures by eliminating unnecessary infrastructure is critical to preserving readiness.

CONCLUSION

The Department of Defense must make its support structure as agile and efficient as possible. Unless DoD continues to change its traditional tendency to rely upon inherited structures and processes, the nation risks entering the next millennium unprepared for the global challenges it will face. The Department is committed to maintaining only the infrastructure needed and managing it better: seeking out and adopting the best business practices, streamlining organizations, and introducing competition into the delivery of support services, wherever it is effective to do so.

Chapter 20

INDUSTRIAL CAPABILITIES AND INTERNATIONAL PROGRAMS

DoD has worked to become a smarter customer—pushing for efficiency and value from suppliers and better access to commercial and international suppliers—while working to ensure that essential defense industrial capabilities are available to the Department as it prepares to move into the 21st century.

A CHANGING CUSTOMER, A CHANGING INDUSTRIAL BASE

Responding to Industry Right-Sizing and Preserving Essential Capabilities

DoD is undertaking policies to ensure that adequate competition is retained for future DoD programs, that essential capabilities are not lost, and that industry can take the necessary steps to operate efficiently and effectively.

REVIEW OF MERGERS AND ACQUISITIONS

The reduction in the Department's procurement budget since FY 1985 spurred a dramatic increase in the number of mergers and acquisitions in the defense industry. Such transactions permit companies to reduce overhead, eliminate excess capacity, diversify product lines, and cut costs. However, they also can eliminate competition that is necessary to reduce costs and spur innovation. To determine the effects of mergers on DoD programs and advise the appropriate antitrust agency, the Department reviews each transaction carefully.

DoD reviews address four questions: First, will the merger result in a loss of necessary competition? Second, will the merger have an adverse effect on programs because of buyer/seller relationships between the two firms? Third, does the merger present potential organizational conflicts of interest? Fourth, what costs or savings could accrue to the Department as a result of the acquisition?

Since March 1995, the Department has reviewed about 35 transactions; eleven of these were completed in FY 1997. During this period, a number of these transactions have proceeded only on the basis of consent agreements between the companies and the Department of Justice or the Federal Trade Commission. These agreements have required divestitures of businesses, agreements not to enforce exclusive teaming arrangements, and firewalls.

Once mergers are consummated, the Department will pay its fair share of restructuring costs. As required by law, DoD must audit corporate proposals and certify that overall savings exceed costs by a factor of two-to-one. DoD pays its share of amounts spent for severance pay, relocation assistance, retraining, and retention of medical benefits. DoD will not pay for any portion of the cost of making the acquisition, bonuses, or executive severance packages. Restructuring costs have been certified for six major combinations since July 1993, and for one other combination where a certification was not required by law. For these seven, the DoD share of the costs was \$765 million versus a projected Department savings of more than \$4 billion over five years.

Vertical Integration—Defense Science Board Report and DoD Actions

Last year, the Department became concerned that vertical integration in the defense industry could have a potential effect on product competition and innovation. To address these questions, the Department requested the Defense Science Board to establish a Task Force on Vertical Integration and Supplier Decisions. In May 1997, the task force reported that vertical integration does not appear to be a systemic problem for DoD products today, but that it might pose future concerns. The task force also recommended a number of steps to address such concerns. DoD endorsed the report's findings and began a series of policy and procedural changes to improve its ability in its ongoing acquisition processes to address problems that may emerge from increased vertical integration.

First, to improve subtier visibility, DoD began an effort to identify and monitor the competitive health of selected, important subtier markets. Second, DoD initiated policy revisions requiring its acquisition personnel to devise program strategies that help foster competition at both prime and subtier supplier levels. Third, DoD began to examine how science and technology investments can shape and enhance future competitions. Fourth, the Department began revising curricula at defense acquisition schools to improve understanding of industrial issues among the acquisition work force. Finally, DoD established a dedicated line for firms to report anonymously exclusionary behavior on the part of other firms. These actions are intended to ensure the Department's continued access to the competitive, innovative subsystems, and components that help provide the leading edge in weapon systems.

Component and Material Industrial Assessments

In 1997, DoD began to evaluate and address changes in key component and material providers which supply many programs, affecting competition and innovation, and product availability. The Department evaluated industry segments that supply microwave power tubes and carbonizable rayon fiber. Microwave power tubes generate and amplify microwave energy for DoD applications in radar systems, electronic warfare systems, and telecommunications systems and for Department of Energy applications in high energy and nuclear physics, and materials science research. The National Aeronautics and Space Administration and DoD use carbonized rayon fiber-reinforced composites in solid rocket motor nozzles and in reentry vehicle heat shields. In each case, DoD and the appropriate agency established mechanisms to ensure that industry restructuring in response to reduced spending would not impact DoD's ability to meet future mission requirements.

Small Business Efforts

Small business is an important source of the industrial capabilities supporting defense needs as well as an important element of the economic fabric of the United States. Small businesses bring critical innovation to the defense marketplace. Additionally, small business is an engine that provides for job creation and ensures that a greater number of citizens receive benefits from defense procurement dollars.

In FY 1996, DoD completed its most successful year in the history of the small business program. In FY 1996, \$25.4 billion (23.2 percent) of \$109 billion awarded to U.S. business concerns was awarded to small businesses—unequaled in the last 30 years. In addition, DoD prime contractors awarded \$19.8 billion in subcontracts to small business concerns (41.8 percent of the \$47.4 billion in total subcontract awards reported).

DoD awards to small disadvantaged business (SDB) concerns were similarly unprecedented, with prime contract awards equaling \$6.9 billion (6.3 percent) and subcontracts equaling \$2.8 billion (2.6 percent) for a combined total SDB performance of 8.9 percent—the highest ever reported both in terms of dollars and percentage accomplishments.

In the women-owned small business (WOSB) program, during FY 1996 DoD awarded \$2 billion in prime contracts and \$1.5 billion in subcontracts. Together they represent 3.2 percent of the total prime and subcontract awards. The Department continues a series of initiatives which support the program objectives to enhance WOSB participation and meet and exceed the government-wide 5 percent goal.

MENTOR-PROTEGE PROGRAM

The Mentor-Protege Program is a valuable tool in the Department's success in meeting its SDB prime and subcontracting goals. Over 200 large business mentors have provided over 300 proteges with the business and technical assistance necessary to participate more effectively in the complex DoD marketplace. For their efforts, the mentors receive either reimbursement or credit toward their small disadvantaged business subcontracting goals. The objective of the DoD Pilot Mentor-Protege Program is to provide incentives to major DoD prime contractors to assist small disadvantaged businesses or qualified organizations employing the severely disabled to enhance their capabilities and to increase their participation as DoD subcontractors or suppliers.

The Mentor-Protege Program has resulted in win-win results for small disadvantaged businesses, large prime contractors, and the Department. For example, one SDB concern has expanded from a manufacturer of custom-molded ceramic shapes to the manufacture of high temperature ceramic dies, bringing this technology out of the research and development (R&D) laboratories into full production for use in building the F-22. Not only did this provide for expansion of the potential market for the SDB, but cost savings to the Air Force.

In another effort, an emerging Native American owned company participated in the DoD Pilot Mentor-Protege Program for 28 months. The central thrust of this agreement was the transfer of technology in hot-form titanium processing for firewall assemblies on military/commercial helicopters. An extensive training program was developed and implemented consisting of Statistical Process Control, blueprint reading, metrology, use of hand tools, hot-press on-the-job training, team building, management of growth, cost awareness, and job yield factors. The protege firm now has the capability to process Electronic Data Interchange orders, bar code customer shipments, and use computer numerical control programming. The firm was formally recognized by its mentor as SDB Supplier of the Year based on measured performance criteria of delivery, quality, and total cost (best value).

SMALL BUSINESS INNOVATION RESEARCH PROGRAM

DoD's Small Business Innovation Research Program (SBIR) funds approximately \$530 million each year in defense related R&D projects at small technology companies. The program has received consistently favorable reviews for its contribution to U.S. military and economic capabilities in independent evaluations by the General Accounting Office, National Academy of Sciences, the National Bureau of Economic Research at Harvard, and others.

Commercial Technology Insertion—Reducing Operation and Support Costs

About 65-70 percent of the life-cycle cost of a major weapon system is incurred after the system is fielded. As systems age, Operation and Maintenance (O&M) costs tend to grow. Because of the large inventory of legacy systems that must be maintained well into the future, reducing O&M costs is a major thrust for DoD.

The Commercial Operations and Support Savings Initiative (COSSI) is designed to test a way to routinely reduce O&M costs by developing repair or upgrade kits that incorporate commercial technological advances that have occurred since the system was designed and manufactured, and inserting those kits into fielded systems. The use of partnerships and consortia is encouraged allowing the talents of firms in the defense and commercial sectors, academic institutions, and nonprofit organizations to be combined and complemented.

COSSI is a two step process. In Stage I, DoD and a firm or consortium enters into a cost sharing arrangement to develop and qualify a prototype repair or upgrade kit. Cost sharing provides assurance that the industry partner is committed to the project and believes in the viability of the outcome. Stage II is implemented where Stage I has been successful. In Stage II, the military customer can use normal procurement procedures to purchase production quantities of kits.

COSSI was implemented for the first time in FY 1997. Initial indications suggest the COSSI business model is both attractive to industry and capable of generating substantial savings for DoD. Eighty-one industry proposals were evaluated and 30 were selected for Stage I funding. The government cost share for Stage I is \$97 million, with the proposing firms contributing \$91 million. If all Stage I projects proceed to Stage II, the net present value of the O&M savings these projects are expected to generate over a ten-year period is approximately \$3 billion.

Maintaining and Modernizing Weapon Systems

Diminishing manufacturing sources critically challenge DoD's ability to maintain older weapon systems. As the service lives of weapon systems are extended, parts never projected to be replaced are wearing out. Shortened production periods of electronic parts are the result of rapid technological obsolescence. Manufacturers no longer produce the parts, and drawings and other technical documentation are no longer available. The Defense Microelectronics Activity was created to concentrate on problems unique to integrated circuits. The Virtual Parts Supply Base was established to capitalize on integrating the expertise already addressing instances of diminishing manufacturing sources in centers of excellence.

The purpose of the Defense Production Act Title III Program is to establish, maintain, modernize, or expand the domestic production capacity for technology items, components, and industrial resources that are critical to DoD and for which a viable domestic capacity does not exist or is insufficient to meet defense needs. The Title III program has unique authorities that enable it to employ a wide range of financial incentives which reduce the risk of establishing the needed capacity. These authorities have proven invaluable in addressing industrial capacity issues by providing business incentives that ensure timely, assured, and affordable access to sources for defense critical materials, components, and processes. Key technology areas targeted for Title III action include:

- Active Matrix Liquid Crystal Cockpit Displays (AMLCDs). This project is expanding domestic production capabilities by stimulating the demand for AMLCDs in a number of defense programs to help develop domestic suppliers that are competitive in commercial flat panel markets. AMLCDs offer improved performance, improved reliability and maintainability, reduced life-cycle costs, and reduced acquisition costs over other display technologies. These advantages are important considerations in aircraft and space vehicle applications.
- Semi-Insulating Gallium Arsenide Wafers (SI GaAs). This project has been exceptionally successful in encouraging investment by domestic companies to improve and expand their production capabilities. SI GaAs is an enabling technology for a wide variety of defense applications including radar, smart weapons, electronic warfare, and communications systems. Its properties make it the preferred material for microwave and millimeter wave integrated circuits. The Title III suppliers of SI GaAs wafers increased their share of the U.S. market from 30-70 percent and of the world market from 25 percent to over 45 percent. Each of the contractors greatly improved material quality and production yields and now produce world-class wafers that are 35 percent cheaper than pre-Title III prices. Through this project, a viable, integrated domestic production base is meeting both defense and commercial SI GaAs wafer requirements.
- Discontinuous Reinforced Aluminum (DRA). This project established a highly successful partnership for expanding the U.S. industrial base for DRA composites. DRA is an advanced metal matrix composite of aluminum alloy that is significantly stiffer, stronger, lighter, more wear-resistant, and more dimensionally stable than monolithic aluminum alloys and other composite materials. This Title III project encouraged a key supplier of this material to invest capital to expand DRA production capacity which ultimately reduced the price of this material by 60 percent. An industry-government team established DRA material as the preferred spare for aging F-16 ventral fins, which raised the mean time between failure from 400 hours to over 6,000 hours. Because of this success, other Air Force Air Logistics Centers are evaluating the use of DRA as a low-cost alternative in the retrofit of F-16 fuel access covers and other applications that are life-cycle or maintenance cost driven.

WORKING WITH OTHER NATIONS—INTERNATIONAL PROGRAMS SUPPORT DOD’S TRANSFORMATION

U.S. forces often fight or work alongside the military forces of other nations. Deploying forces in cooperation with those of other countries places a premium on interoperability—ensuring U.S. systems are compatible with allied systems.

DoD’s International Armaments Cooperation Policy

International armaments cooperation is a key element of DoD’s acquisition and technology efforts to field the most capable force possible. International armaments cooperation, in its many forms, enhances interoperability, stretches declining defense budgets, and preserves defense industrial capabilities. Successful efforts require that DoD engage allies in discussions at the earliest practicable stage to identify common mission problems and to arrive jointly at acceptable mission performance requirements to balance cost, meet coalition military capability needs, and assure interoperability.

Some of the more notable success stories in international industrial cooperation include the F-16 Falcon, AV-8 Harrier, T-45 training aircraft, CFM-56 engine, the continuing cooperative efforts under the NATO Airborne Warning and Control System (AWACS) program, and the Multifunctional Information Distribution System. The Department is now working with allies in Europe and Asia to explore other cooperative programs, including the Medium Extended Air Defense System (MEADS) and NATO Allied Ground Surveillance efforts. The International Cooperative R&D program has led to sharing of military technology among allies, as well as to development of joint equipment to improve coalition interoperability. Frequently, these R&D investments provide the cooperative linkage required to leverage independent national developments and enhance military capabilities. Such items include advanced aircraft, combat vehicle command and control, communications systems interoperability, and ship defense. These cooperative programs also foster closer international and military to military relations.

International defense cooperation is also enhanced through the Foreign Comparative Testing (FCT) program, which evaluates foreign nondevelopmental items for DoD use. Twenty foreign countries have been active participants in the FCT Program. The Services and the United States Special Operations Command have procured over \$4.5 billion worth of foreign equipment as a direct result of successful equipment evaluations. By purchasing foreign nondevelopmental items, the DoD has realized research, development, test, and evaluation cost avoidance of over \$2 billion while providing earlier fielding of quality items to U.S. warfighters.

As DoD takes greater advantage of the opportunities in international defense cooperation and commerce, it continues to address the risks of the proliferation of weapons of mass destruction and advanced tactical systems. DoD has worked to ensure that the Services and defense agencies understand the nature and importance of the February 1995 Conventional Arms Transfer policy and take its tenets fully into account when pursuing cooperative international defense programs and sales. As a result, both economic security and national security interests are pursued and protected.

DoD has also taken steps to improve the effectiveness and efficiency of international cooperation. An International Armaments Cooperation Handbook has been developed to provide a compendium of current policy, key processes, and points of contact for use by persons working cooperation issues in the Department.

International Cooperative Opportunity Group Developments

The Department is examining the potential for international collaboration on upcoming major systems acquisitions. As part of the Department's review of potential opportunities for cooperation on upcoming major system acquisitions, the Armaments Cooperation Steering Committee (ACSC), the senior armaments cooperation policy and oversight body within the Department of Defense, is implementing a disciplined process for identifying new opportunities for international cooperation. A major ACSC initiative deals with the formation of International Cooperative Opportunities Groups (ICOGs) to identify and recommend specific new opportunities for armaments cooperation.

ICOGs are looking at areas of common need, and seek to establish early communication with allies to create opportunities earlier in the acquisition process. The ICOG process has identified programs as candidates for potential cooperation based on several factors: the degree of requirements commonality; the extent to which the technologies, strategies, and budgets of the potential partners are complementary; the potential for international industrial teaming; and the perceived benefits and risks associated with execution of such a program.

Environmental Cooperation with Other Nations' Military Forces

The U.S. military has a wealth of experience and expertise that it can share with other nations. DoD's environmental programs are becoming another important tool in which to engage the armed forces of other nations. Working with other U.S. government agencies, DoD is implementing environmental cooperative initiatives with civilian and military leaders from other countries. With its unique and long-standing relationships with other military forces around the world, DoD has an unrivaled ability to teach, educate, and train.

Through military-to-military cooperation, DoD conducts bilateral/multilateral environmental cooperation with Australia, Canada, Germany, Norway, Sweden, Russia, Poland, the Czech Republic, Hungary, and South Africa, while discussions for such cooperation are under way with several others. In addition to promoting stability through engagement, DoD gains useful information from these exchanges in support of the Department's environmental responsibilities as it takes advantage of the perspectives that other nations offer.

DoD also engages in agreements such as the Arctic Military Environmental Cooperation Program (AMEC), which is a trilateral forum for dialogue and joint activities among U.S., Russian, and Norwegian military and environmental officials to address critical environmental concerns in the Arctic. One of the main objectives of AMEC is to help the Russian military address its radioactive and nonradioactive waste challenges in the fragile ecosystem of the Arctic. DoD, together with the Department of Energy and the Environmental Protection Agency, will leverage U.S. expertise in environmental techniques to address radioactive and chemical

waste associated with nuclear submarines. More importantly, this unique effort is helping to build trust and understanding among these three militaries.

Defense Export Loan Guarantee Program

In November 1996, DoD established the Defense Export Loan Guarantee (DELG) program pursuant to congressional direction. This program enables the Secretary of Defense to guarantee payment of loans made by commercial lending institutions to eligible foreign governments.

During FY 1997, Congress granted DoD authority to guarantee up to \$15 billion in loans made for the purchase or long-term lease of U.S. defense articles, services, and design and construction services to eligible foreign governments. DELG program procedures closely follow those of similar programs administered by the Export-Import Bank of the United States. The program is available to support Foreign Military Sales or direct commercial sales through the Arms Export Control Act process. The DELG program provides no subsidies and operates at minimal expense to the U.S. government by charging users an array of fees to defray administrative costs.

CONCLUSION

Industrial capability reviews and international programs serve a central role in the Department's interface with industry to provide equipment and capabilities for the warfighter. DoD will continue to work with industry to eliminate unused capacity and lower overhead costs, while ensuring that industrial capabilities are sufficient to meet DoD's needs. DoD will continue improving its relationships with allies through increased cooperation and interoperability. These efforts will enhance the Department's capability to promote competition, seize the opportunities presented by innovation, and respond rapidly to warfighter needs.

Chapter 21

THE FY 1999 DEFENSE BUDGET AND FUTURE YEARS DEFENSE PROGRAM

President Clinton's FY 1999 defense budget and the FY 1999-2003 Future Years Defense Program (FYDP) seek to ensure America's security and sustain the nation's vital global leadership role. This budget and FYDP strike a prudent balance between immediate military needs, such as high readiness and quality of life, and long-term safeguards, such as development and procurement of new weapons and technologies. They also reflect the recommendations of the *Report of the Quadrennial Defense Review (QDR)*—last year's comprehensive reassessment of U.S. military strategy, force structure, readiness, modernization, and infrastructure.

THE DEFENSE TOPLINE

The President's FY 1999 budget requests \$257.3 billion in budget authority and \$252.6 billion in outlays for the Department of Defense. Funding levels in the President's budget are in compliance with last year's budget agreement between the White House and congressional leaders.

DoD budget authority requested for FY 1999 is, in real terms, about 40 percent below its level in FY 1985, the peak year for inflation-adjusted defense budget authority since the Korean War.

As a share of America's gross domestic product, DoD outlays are expected to fall to 3.0 percent in FY 1999, well below average levels during the past five decades. Other long-term trends for defense spending are detailed in Appendix B, as is budget authority by appropriations title and by DoD component, in current and constant dollars.

PRIORITIES IN THE FYDP AND FY 1999 BUDGET

Readiness, People, and Quality of Life

DoD continues to give high priority to keeping U.S. forces ready to fight and win. This commitment to force readiness is reflected in strong funding support for training, supplies, maintenance of weapons and equipment, and other preparedness essentials. Since these requirements are mostly paid for in the Operation and Maintenance (O&M) accounts of the Services, the sufficiency of these accounts was a crucial concern in the formulation of the FY 1999 budget.

Table 16

Department of Defense Budget Topline (\$ in Billions)						
	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
BUDGET AUTHORITY						
FY 1999 Budget	254.9	257.3	262.9	271.1	274.3	284.0
Percent Real Growth	-	-1.1	0.0	+0.9	-1.1	+1.1
OUTLAYS						
FY 1999 Budget	251.4	252.6	255.8	257.1	259.7	275.8

Force readiness also requires taking good care of uniformed people and their families, which in turn requires strong support for quality of life issues like pay, housing, and medical services. The FY 1999 budget funds the full military pay raise provided for under law, and also provides strong support for the construction and maintenance of family and bachelor housing; cost-of-living allowances; child care; community and family support; and morale, welfare, and recreation programs.

The high readiness and quality of U.S. forces is best measured by the actual performance of U.S. forces. When called upon for a wide variety of missions, America's armed forces continue to react swiftly and decisively.

Force Structure and End Strength

The U.S. force structure is roughly two-thirds of its size when the Berlin Wall fell in November 1989. Table 17 shows the decline in personnel strengths since FY 1987, the post-Vietnam War peak for the end strength of both active duty military and DoD civilians. Selected Reserve strength peaked at 1,170,600 in FY 1989. The decrease in DoD civilians reflects reductions in forces and facilities, as well as reforms to streamline defense infrastructure and improve management. Other personnel data is in Appendix C.

Recapitalization of U.S. Forces

Since the late 1980s, the Department was able to reduce its purchases of new weapons without undermining the battlefield superiority of U.S. forces. One reason was the modernization achieved during the years of strong defense spending during the 1980s. In spite of the sharp decline in procurement funding, the average age of U.S. military equipment generally did not increase, because as the forces were drawn down, older equipment was weeded out. But now that the drawdown in forces is nearly over, DoD's reprieve from equipment aging is over as well.

Table 17

Department of Defense Personnel (End of Fiscal Year Strength in Thousands)				
	FY 1987	FY 1998	FY 1999	Percent Change FY 1987-1999
Active Military	2,174	1,419	1,396	-36
Army	781	488	480	-39
Navy	587	387	373	-36
Marine Corps	199	173	172	-14
Air Force	607	371	371	-39
Selected Reserves	1,151	886	877	-24
DoD Civilians (FTEs*)	1,133	770	747	-34
* Full-time equivalents				

To ensure military readiness in the long term, the Department must modernize U.S. forces with new systems and upgrades to existing systems in order to maintain America's technological and qualitative superiority on the battlefield.

The Department continues to move strongly toward its goal of increasing procurement funding to \$60 billion by FY 2001, a target the Administration established in its FY 1996 budget. The FY 1999 budget requests \$48.7 billion for procurement. By FY 2001, procurement spending is projected to reach \$61.3 billion.

For the modernization of U.S. forces to succeed, Congress must support the specific spending allocation proposed for DoD weapons development and procurement. Additionally, the Department must achieve its projected savings from infrastructure reductions, acquisition reform, and other initiatives. For its long-term modernization needs, the Department's FY 1999 budget authority request for science and technology is \$7.2 billion.

Defense Reform Initiative—A Revolution in Business Affairs

The FYDP and FY 1999 budget reflect Secretary Cohen's decisions in his November 1997 Defense Reform Initiative; both incorporate changed personnel levels and all savings that can be achieved without legislation. The Initiative seeks to ensure that DoD support activities are as responsive as possible to U.S. warfighting needs and to produce budget savings to fund weapons modernization and other requirements.

DEFENSE BUDGET ISSUES

Unrequested Spending

Each year Congress includes substantial spending in the defense budget that was not requested by the President. Sometimes the additions are for weapons or other uses included in the FYDP, but not planned for inclusion until some time after the budget year. In these cases, the issue is the

timing of the expenditures—not whether the spending is needed. But additions that are for non-FYDP uses constitute a more clear-cut diversion of funds from the spending requirements determined during the Department’s rigorous program and budget review. Unrequested spending is especially damaging when it fails to take account of the future spending that it will generate.

CONCLUSION

Events since the end of the Cold War have demonstrated the need for America to retain a strong global leadership role and a prudent defense posture. President Clinton’s FY 1999 defense budget, and the strategy and plans on which it is based, supports that need while remaining fiscally responsible.

REPORT OF THE SECRETARY OF THE ARMY

Since the birth of our nation, America's Army has served the United States with distinction, both at home and abroad, in peace and in war. At the threshold of the 21st century, the Army is a Total Force, an institution with people at its core—Active, National Guard, Army Reserve, civilian employees, families, and retired members. The strength and character of the Army's soldiers and civilians are the linchpin in maintaining our Army as the finest in the world.

A new global security environment exists as a result of social, political, and military changes during the past decade. No longer a world in which two hostile superpowers face each other, today's environment includes threats—and opportunities—in a wide number of areas. The Army has evolved to be a strategically relevant joint force to meet the challenges of today's world. It is our nation's force of decision—a full spectrum force—trained and ready to respond to a wide range of crises, from fighting and winning major theater wars, to peacekeeping, to humanitarian relief missions, to disaster relief in communities at home. America's Army is a central element of our National Military Strategy, in shaping the international security environment, responding to a wide range of crises, and preparing now for an uncertain future.

IN SUPPORT OF NATIONAL SECURITY

As described in the May 1996 Army White Paper "*Force of Decision...Capabilities for the 21st Century*," the primary mission of America's Army remains constant: to fight and win the nation's wars. In an uncertain world, the Total Army also performs a wide variety of other missions around the world and at home, including deterring potential adversaries, reassuring and lending stability to allies, and supporting our communities in times of emergency.

The Army provides the nation with unique capabilities for implementing the National Security Strategy. Throughout history, wars have been won by forces on the ground. Only soldiers on the ground can take and hold territory. America's Total Army, with a full spectrum of capabilities, is able to project its forces and establish direct, continuous, and comprehensive control over land, resources, and people to achieve victory and ensure an enduring peace. Whatever the mission, committing the Army commits the nation. There is no greater expression of national resolve and will than to put our soldiers—America's sons and daughters—on the ground.

In smaller-scale contingency operations, the Army plays an indispensable role by asserting American resolve and commitment with the presence of land forces. The inherent versatility of the Army makes it the force of choice for the majority of missions in support of the National Security Strategy. In 28 joint military operations since the fall of the Berlin Wall, the Army has done our nation's heavy lifting, accounting for over 60 percent of the forces committed to these operations.

Shaping the International Environment

In support of our National Security Strategy, America's Army shapes the international environment in ways favorable for our nation. By promoting democracy and stability around the world, the Army reduces threats the nation could face in the next century.

By its involvement in peacetime military engagement activities, the Army helps shape the global security environment. During the last year, U.S. Army soldiers have contributed to this effort by reinforcing peace as part of multinational stabilizing and peacekeeping teams in Bosnia and the Sinai Peninsula; separating forces at the border between Ecuador and Peru; and demonstrating resolve in the former Yugoslav Republic of Macedonia by placing soldier observers at the borders.

The Army also helps shape the security environment by participating in military-to-military exchanges, in the Partnership for Peace program, as executive agent for the Marshall Center, and in military exchange schooling with foreign countries. The Army also participates in a number of combined exercises. For instance, the longest airborne military expedition in history was among the many training exercises and operations in which the Army participated during 1997. Soldiers from the 82d Airborne Division deployed 7,700 miles from Fort Bragg, North Carolina, and parachuted in to join troops from the three Central Asian republics of Uzbekistan, Kazakhstan, and Kyrgyzstan in a Partnership for Peace peacekeeping exercise in Kazakhstan. Deployed or stationed in over 100 countries in 1997, American soldiers and civilians helped shape the international environment by their presence and by carrying the values of our nation with them.

Responding to a Full Spectrum of Crises

America's Total Army is organized, trained, and equipped to respond to a full spectrum of crises. During the Cold War, the Army trained primarily to fight and win large-scale wars. Today, America's Army, while a more streamlined force, is capable of projecting effective combat power from installations either in the continental United States or from forward bases and of operating effectively with a broad range of allies or coalition partners.

As a full spectrum force with the capability to project its forces rapidly, America's Army can compel an enemy; conduct decisive operations with precise fires, information, and detection capabilities; and shape the battlespace by integrating all combat multipliers to overcome the enemy. Through these capabilities and the ability to sustain and protect its forces, our Army is ready to perform its key role in support of joint, combined, or unilateral missions across a broad range of operations.

The Army deters potential foes from actions which are counter to the nation's interests. Forward-deployed soldiers and civilians represent America's strongest commitment to its allies. Since World War II, Army forces in Europe and the Pacific have deterred aggression and promoted stability by their very presence. Forward-deployed soldiers are able to respond to an overseas crisis within hours, as they did in 1997 by safeguarding the evacuation of American citizens from Albania. In the post-Cold War era, the Army has transformed itself into a power projection force, stationed mainly in the United States. Today's Army is capable of rapidly deploying combat ready forces and sustaining them for extended lengths of time. This capability has strengthened America's ability to deter potential adversaries. Nowhere was this more evident than in the September 1996 deployment of a combat-ready heavy brigade from Fort Hood, Texas, to Kuwait in 96 hours. That decisive deployment proved to be a compelling deterrent to Iraqi aggression.

The Army also responds by conducting peacekeeping and humanitarian efforts worldwide. By placing over 11,000 active and reserve component soldier and civilian boots on the ground in Bosnia, America has demonstrated its support to our NATO allies and enhanced the implementation of the Dayton Peace Accords. Similarly, through its participation in humanitarian relief efforts in the Kurdish region of Iraq, the Army helped alleviate human suffering in that region.

The nation can also count on its Army to respond to natural disasters, civil disturbances, and other national emergencies. In FY 1997, National Guard, Army Reserve, and Active Component soldiers assisted in cleanup efforts after flooding in the Northwest, the Northeast, the Ohio and Mississippi Valleys, in the aftermath of Hurricane Danny, and elsewhere. Soldiers also helped stem the flow of illegal drugs across the nation's borders.

Preparing Now for an Uncertain Future

America's Army has undergone a vast transformation since the end of the Cold War. The Army is a smaller force—since 1989 nearly 700 installations have closed and over 600,000 dedicated and professional soldiers and civilians have departed the ranks. Reduced in size from 28 to 18 divisions, the Total Army is smaller than at any time in the last 58 years.

In the future, the nation can expect to continue to face threats and challenges similar to those experienced since the end of the Cold War. As the Army continues to help shape the international environment and respond to threats, it must, at the same time, remain prepared to fight and win major theater wars. To remain ready, the Army must take advantage of information age technology, and increase mobility, agility, and lethality. We must utilize space, which is an increasingly important enabler of military operations.

Our Army is at the forefront of the American military's transformation from the industrial age to the information age. Army efforts involve both a process and a product. The process to reconceptualize and redesign the force at all levels, from the foxhole to the factory, is called Force XXI. Designed to integrate and test information technologies in today and tomorrow's systems under a variety of conditions, Force XXI will give soldiers and leaders the situational awareness and information dominance necessary to win decisively on the battlefields of the next century. In 1997, the Army conducted brigade and division level advanced warfighting experiments to test information age technologies for their applicability and efficacy on the battlefield. Among many lessons learned from these experiments, we found that as soldiers and leaders leveraged information technologies and passed greater amounts of relevant information across the force, their lethality, survivability, and versatility increased significantly. The realization of these changes will enable us to evolve Army XXI, the nation's near-term, full spectrum force for the early years of the new millennium. In capitalizing on emerging information age technologies, Army XXI will be a central force in support of future joint operations.

Looking beyond Army XXI to the years following 2015, the Army is undertaking an effort called the Army After Next (AAN), to develop a vision of future battlefields and future land forces. By conducting a series of free-play tactical, operational, and strategic wargames and examining

political, social, demographic, and technical changes which are likely to affect the future of war, AAN seeks to frame issues vital to the Army and integrate them into combat development programs. Ultimately, AAN will build upon the mental agility gained by Army XXI and provide the Army beyond 2015 with the physical speed and agility necessary to meet any future challenge along the full spectrum of military operations.

MEETING THE CHALLENGES OF TODAY AND BEYOND

As America's Army shapes and responds to the world today and prepares for an uncertain future, it will confront many challenges. In the new century, the Army must remain actively engaged, while continuing to change to meet the challenges of an ambiguous world. Balancing readiness, modernization, and quality of life while continuing to execute its many missions poses the greatest challenge to Army leaders today.

Maintaining the Tempo

The increase in the number of military operations since 1989 is one of the most striking features of the post-Cold War world. America's Total Army is a busy Army. On any given day in 1997, the Army had, on average, over 31,000 active and reserve soldiers and civilians deployed in over 70 countries, not counting the 100,000 forward-deployed soldiers. In May 1997, worldwide deployments reached the 100-country mark for the first time in the Army's history. Such involvement does not come without costs. We are doing more with fewer people, performing three times more deployments than during the Cold War.

Increased deployments increase stress on Army families. Whether soldiers are assigned here in the United States or deployed abroad, their peace of mind is a key component of readiness and a critical element in sustaining the post-Cold War levels of participation in military operations. Soldiers' peace of mind comes from the knowledge that society values their service and that their families are being taken care of. Therefore, support for families and sustainment of a good quality of life are critical to America's Army. Quality of life programs, including pay, housing, health care, and child development, are among the important investments in soldier and family well-being, and remain top priorities for Army leaders.

Supporting the increased tempo of the post-Cold War world requires a Total Army effort. In Bosnia, soldiers and civilians from all three components—active, guard, and reserve—contribute collectively to the success of the peacekeeping effort. On any given day in 1997, approximately 25 percent of Army forces in the Bosnia area of operations were from the Army Reserve and National Guard. Reserve Component soldiers also augmented active duty soldiers in Macedonia, participated in a wide range of training deployments and exercises, and provided essential backfill to critical support functions in Germany to replace active units that were deployed elsewhere. In day-to-day operations abroad and at home, the collective efforts of Active, Guard, Reserve, and civilian members contribute to the success of the Total Army.

To further strengthen the Total Army in shaping and responding today and preparing for the future, the Army is moving ahead with three force structure initiatives. First, to improve the importance of the National Guard combat structure to the warfight, the Army will establish two

Active Component/Army National Guard (ARNG) Integrated Divisions by October 1999. Each division includes three ARNG enhanced separate brigades under the command of an Active Component division headquarters. The division headquarters will be commanded by an Active Component major general. Second, an ARNG Division Redesign plan calls for converting up to 12 ARNG maneuver brigades to combat support and combat service support forces which are required to support Army's warfighting requirements. Under the current plan, execution of this effort should be complete by the end of FY 2009. Third, the Army will establish multi-component units, combining Active and Reserve Component personnel, equipment, and funding to reap the benefits of the expertise and resources of the Total Army. Eleven initial multi-component units will be established in June 1998 and be fully operational by October 1999. In addition, during FY 1999, we will begin to improve the capabilities of the Guard and Reserve to respond to the consequences of the use of weapons of mass destruction.

Equipping the Force

As a smaller, yet more engaged fighting force in a changing world, America's Army must be the best equipped to ensure success now and in the next century. Today's soldiers are indeed the best equipped—the challenge is to ensure that status while maintaining current readiness. Army modernization must take advantage of information age technology now so that we will be able to guarantee future security. To assure land dominance in future military operations, the Army has refined its modernization program to make the best use of available resources to adequately equip our soldiers. We will integrate new technology, especially technology that enhances information dominance, and upgrade existing systems in order to maintain America's technological edge. We will continue to field premier equipment to our soldiers, including the AH-64D Apache Longbow helicopter, the Army Tactical Missile System, the Patriot air defense system, the Family of Medium Tactical Vehicles, modifications to the M1 Abrams tank, and others. Crucial new weapon systems for the next century continue with the development of the RAH-66 Comanche helicopter, the Crusader howitzer, and Theater High Altitude Air Defense System, among others. Army modernization efforts follow a path that establishes a system-of-systems in support of the joint military strategy, and seeks to enhance combat power projection by increasing the effectiveness of light forces and reducing heavy lift requirements.

Of course, constrained resources pose a serious challenge to our modernization efforts. Since the end of the Cold War, the Army's buying power has steadily declined approximately 40 percent. This caused our procurement funding to decrease from \$14.5 billion in FY 1989 to \$6.9 billion in FY 1998. In the FY 1999 budget request, we are reversing that decline in procurement and have requested \$8.2 billion. To achieve modernization objectives in today's fiscal environment, the Army has secured funds for investment by closing and realigning bases, reducing infrastructure through careful privatization and outsourcing initiatives, and pursuing an aggressive recapitalization effort. As our Chief of Staff, General Reimer, has said, the only way to ensure a Revolution in Military Affairs is to engage in a Revolution in Business Affairs today. The Army is committed to becoming more efficient, adopting better business practices, reengineering its processes, and reducing excess infrastructure. We make that commitment not only because it assures stewardship of reduced resources, but also because it is the only way to maintain force structure and stay trained and ready to fulfill the National Military Strategy while preparing for the 21st century.

Today's Army leads the way in acquisition reform. For example, it has launched a major effort, called Modernization through Spares, to insert commercial technologies and reduce the cost of spare parts. Additionally, in attaining savings through credit card purchases, the Army was the first federal agency to exceed one million transactions for micropurchases in FY 1996, and broke that record with 2.4 million transactions in FY 1997. By aggressively implementing better business practices at all levels, the Army is taking advantage of the Revolution in Business Affairs to help fund modernization, readiness, and quality of life programs.

The Army, however, has accepted risk in its modernization program. Some systems have been canceled to reallocate resources for higher priorities. Other systems have been slowed or delayed. New starts have been limited, and capability upgrades to existing programs have been used where practicable.

A Quality Force

The defining characteristic of the Army is its people. Our soldiers, civilians, and families are why this nation has the best Army in the world. For America's Army to remain the world's best, it must continue to recruit, develop, and retain quality soldiers and civilians. Given the multitude of missions across the full spectrum of military operations and the rapid integration of information age technology into weaponry and equipment, quality soldiers led by quality leaders are most important in achieving full spectrum dominance on today's and tomorrow's battlefields.

Overall, the Army continues to reach its recruiting and retention goals. But success does not come easily. Between 1995 and 1997 recruiting requirements increased by 30 percent. No longer can the Army rely on force structure reductions from the post-Cold War drawdown to offset recruiting shortfalls. To meet increased recruiting requirements, the Army increased its recruiting force to 5,961 noncommissioned officers, added \$30.9 million to its advertising budget, bolstered educational and enlistment incentives, and added emphasis to programs such as the Army Hometown Recruiters Assistance Program. We know that we will have to work hard to continue to recruit the quality soldiers we will need in the 21st century.

Recruiting is only part of the equation. The Army must continue to train and develop quality soldiers and superb leaders. That training and development continues throughout a soldier's career. Combat Training Centers and joint and combined training exercises provide challenging, realistic, sustained, multi-echeloned training across the full spectrum of operations. Simulators, simulations, and distance learning capitalize on information age technology to maximize savings on training funds and to reach large numbers of geographically dispersed soldiers. The Army's leader development program has proven to be second to none and the envy of the world.

Teamwork is an essential element of a capable force. Throughout our history, the Army has stressed to our soldiers and our leaders that to have and demonstrate respect for one another is an integral component of the ethos of soldiering—it is the foundation of what is required to function effectively as a team. The strength of the United States Army is derived from our Core Values—duty, honor, courage, loyalty, integrity, respect, and selfless service. Our soldiers must learn them first in Basic Training, embrace them every day in the performance of their duties, and take them home to their communities when they leave the Service. The Army will continue to work

towards ensuring an environment of mutual respect and dignity where every soldier is given the opportunity to reach his or her own highest potential in serving our nation.

In the past year, an intensive review of human relations was conducted by the Army. The effort was the most comprehensive and scientific self-examination ever undertaken by our Army. Based on the recommendations of that review, an aggressive Army action plan entitled The Human Dimensions of Combat Readiness has been developed. The plan includes 128 recommendations which are being implemented throughout the Army.

CONCLUSION: AMERICA'S ARMY, ABLE TO RESPOND TO THE NATION'S NEEDS TODAY AND INTO THE FUTURE

We are now just a few years from the dawning of a new century, where American leadership will continue to be vital to peace in the world. It will be a century where America's Army continues to be the strong right arm of the nation, and where a strong defense is necessary to maintain America as the world's indispensable nation.

America's best and brightest sons and daughters are America's Army. They believe in something greater than themselves, trust in something greater, and realize the importance of service to our country. Soldiers know that the end of the Cold War did not bring an end to conflict but, rather, ushered in a strategic environment that is more uncertain and, at times, more hazardous than any time in recent memory. Soldiers know that the battlefield will always be a dangerous and lonely place. America has soldiers of character and courage, who are well trained, ably led, superbly equipped, supported by a quality civilian work force, and in sufficient numbers to survive and emerge victorious from whatever mission America asks of them. Ours is an Army of Americans who are also soldiers, helping to shape the world's strategic security environment, responding to a wide range of crises both abroad and at home, and preparing for the challenges of the new millennium. America's Army stands ready to respond when the nation calls.

/signed/

Robert M. Walker

Acting Secretary of the Army

REPORT OF THE SECRETARY OF THE NAVY

THE NAVY-MARINE CORPS TEAM: ANSWERING THE NATION'S CALL—ANYTIME, ANYWHERE

The National Military Strategy specifies three tasks for the armed forces:

- Shape the international environment.
- Respond to the full spectrum of crises.
- Prepare now for an uncertain future.

Forward-deployed naval forces are engaged around the world on a daily basis to accomplish each of these tasks. The Navy-Marine Corps team answered the nation's call in 1997, from continued support of international operations in the Arabian Gulf and Adriatic Sea, protecting American citizens during noncombatant evacuations in Albania, Sierra Leone, and the Democratic Republic of the Congo, to humanitarian assistance during disasters such as the recovery operations associated with the crash of Korean airliner KAL 801 in Guam. Carrier battle groups and amphibious ready groups with embarked Marine expeditionary units provide the National Command Authorities (NCA) with a rapid, flexible response capability across the spectrum of operations. In the future, the nation's fundamental strategic values will flow from the ability to sail unfettered throughout the world, to shape and respond using naval forces, as required, without restriction—anytime, anywhere.

Shaping the International Environment

Peacetime engagement is a traditional role for the Navy and Marine Corps, and is a primary means of shaping the international environment. It projects American influence and power abroad in ways that promote regional economic and political stability, which in turn serves as a foundation for prosperity. Forward-deployed, combat ready naval forces remain continually engaged as an active and visible tool of U.S. foreign policy. The potent power projection capabilities of carrier battle groups and amphibious ready groups constitute a rapid and credible deterrent to potential aggressors.

These same naval forces reassure allies of the United States' commitment to regional peace and stability. Routine exercises with allied forces build and enhance coalition interoperability. Additionally, port visits provide an opportunity to demonstrate goodwill toward local communities, further promoting democratic ideals. Consequently, significant resources are committed to achieving these vital requirements. Every day of the year, nearly one-third of the Navy and Marine Corps operational forces—more than 50,000 Sailors and Marines and 100 ships—are deployed around the world. Naval forces provide near-continuous presence in four major regions: the Mediterranean Sea, the Arabian Gulf/Indian Ocean, the Western Pacific, and the Caribbean. In Japan, regional stability is anchored with the forward-stationed Independence (CV 62) Carrier Battle Group, Belleau Wood (LHA 3) Amphibious Ready Group, and Third Marine Expeditionary Force (III MEF). Closer to home, the Navy's Western Hemisphere Group

is shaping the environment by strengthening the bonds to Caribbean and Latin American allies. Each of these strategically important forward locations provides a launching point for quick reaction by naval forces to crises virtually anywhere.

Responding to Uncertainty: Providing Options to the National Command Authorities

One of the most important products of shaping the international security environment is deterrence. The stark reality is that nuclear weapons are deployed as a threat to United States national interests. Efforts to discourage the proliferation and use of these, as well as other weapons of mass destruction, will continue unabated. In the interim, the United States must maintain a credible nuclear deterrent capability. The nation's ballistic missile submarine (SSBN) fleet is a key component of the overall nuclear deterrent posture. The reliability and security of SSBN command and control systems and the accuracy and flexibility of their weapons combine to convince any adversary's leadership that seeking a nuclear advantage, or even parity, would be futile. Stealth and mobility make this force the most survivable element of the strategic nuclear triad.

Deterrence is not limited to weapons of mass destruction. Combat-ready forces also provide the foundation for conventional deterrence. Forward-deployed naval forces deter potential aggressors by offering a clear indication that aggressive action will not be tolerated and cannot succeed. The demonstrated ability to fight and win and a firm resolve to respond rapidly to developing crises provide credibility and effectiveness to deterrence efforts. Should deterrence fail, these actions set the stage for future operations, if military force is required. The total capability of U.S. armed forces is a factor in conventional deterrence. Most important, however, are the visible, forward-deployed naval expeditionary forces. Naval forces act as a sovereign extension of the nation, maneuvering in international waters, unencumbered by political motives which may inhibit or prohibit use of other forces. These forces can be unobtrusive—from beyond the horizon or from undetected submerged positions—or can bring their combat power to bear within full view of an adversary. Naval expeditionary capabilities provide the NCA with a unique range of options. Using the sea as a maneuver space, Navy and Marine Corps air, land, and sea forces comprise the NCA's rheostat for adjusting national response to world events.

Naval forces not only shape the battlespace, they demonstrate a capability to halt aggression long before a potential opponent can achieve its objectives. While enhancing deterrence, naval forces simultaneously shift the military balance by posing numerous options in response to aggression. An adversary is forced to consider multiple responses, injecting uncertainty into planning, disrupting his ability to execute a coherent campaign, and eroding confidence in the likelihood of success. Naval forces can provide security and employ unique operational and logistic capabilities to allow civil initiatives to work. The presence of naval forces in the early stages of a crisis visibly reminds the aggressor of the overwhelming capabilities that can be projected from the continental United States.

In the near future, the Navy's emerging theater air and missile defense capabilities will be able to extend a protective shield to joint forces, friends, and allies, from the sea. The mobility of these systems, currently being developed around the existing Aegis surface fleet, is a critical force multiplier.

The ability to fight and win as a joint military team against any adversary is vital to the National Security Strategy. Throughout the joint campaign, naval forces will exploit robust command and control systems to concentrate combat power from dispersed, networked forces and project power far inland. Initial operations by swiftly responding naval forces will often halt aggression early in the conflict. In the rare case where the aggression is not immediately contained, initial operations by the Navy-Marine Corps team are critical to enabling a joint campaign. The Navy's ability to dominate the littorals ensures sea and area control. Naval forces also can assert maritime superiority along sea lanes of communication and provide strategic sealift to transport joint and allied forces into theater. The ability to effectively counter enemy area-denial threats—with potent information warfare, power projection, and force-protection capabilities—increases the decisive impact throughout a joint campaign. When the joint campaign is over, naval forces can remain on scene for long periods to enforce sanctions and guarantee the continuation of regional stability.

Preparing for an Uncertain Future

Today, the Navy and Marine Corps enjoy maritime superiority around the world. In order to maintain operational primacy, the Department of the Navy must embrace change and make it an ally. Emerging technologies, concepts, and doctrine must be exploited in order to guarantee the military superiority vital to the nation's global leadership. The Department must take advantage of the Revolutions in Military Affairs and Business Affairs to achieve its goals.

The emergence of a Revolution in Military Affairs (RMA), driven by technological advances in nearly every field, has been postulated for several years. An RMA typically occurs when new technologies combine with innovative application to achieve a quantum leap in capabilities. The Department of the Navy has a long history of combining technological change with innovative thinking. Carrier aviation, amphibious warfare, and ballistic missile submarines are vivid examples of such previous success. The Department of the Navy embarked on a similar innovative path for the 21st century with . . . *From the Sea*, and further refined its strategic thought with *Forward . . . From the Sea*. The revolution continued in the past two years with publication of the Navy's Operating Forward . . . From the Sea, and the Marine Corps' Operational Maneuver From the Sea. These operational concepts define how the Navy-Marine Corps team will execute their strategic concepts to maintain operational primacy into the 21st century.

No revolution in military affairs can stand alone. An RMA must include new technologies, efficient organizational structures, revised doctrine, and new programs in order to exploit revolutionary ideas. Modernization and recapitalization also are necessary to exploit fully an RMA to the fullest extent possible. These efforts require dedicated funds. A Revolution in Business Affairs can achieve cost efficiencies to support these goals. Aggressive reengineering of Navy and Marine Corps infrastructure and streamlining of support services are two methods available to accomplish this goal. Further, the Department must learn from the success of others and prepare to manage acquisition in a manner that maximizes the impact of every dollar spent. The transformation of naval forces must integrate the strengths of the Sailors, Marines, and civilians with emerging technologies. The Navy and Marine Corps will meet this challenge by incorporating technologies into advanced concepts and doctrine.

Both the Navy and the Marine Corps are moving swiftly to institutionalize the generation of innovative concepts and ideas. The Marine Corps Warfighting Laboratory and the Sea Dragon initiative created the necessary focus to experiment with new concepts and doctrine. Similarly, the Navy has conducted several at-sea Fleet Battle Experiments to examine future concepts and doctrine. The Navy will establish the Navy Warfare Concept Development Command in Newport, Rhode Island, in 1998, which will integrate talent from the Naval War College, Naval Doctrine Command, and the Strategic Studies Group. The combination will enable out-of-the-box thinking and will encourage the exploration of future naval warfare concepts.

SAILORS, MARINES, AND CIVILIANS: OUR MOST VALUABLE RESOURCE

People are the heart and soul of the Navy-Marine Corps team. Although end strength is approaching a steady-state level, further reductions will be required to implement the recommendations of the Quadrennial Defense Review (QDR). Consequently, the operational readiness of the Navy and Marine Corps depends, now more than ever, upon the ability to recruit and retain the very best men and women with the right mix of skills and experience.

Recruiting Tomorrow's Leaders

Attracting the high caliber youth needed to maintain a credible future force is the focus of the Department of the Navy's recruiting theme, which emphasizes core values of Honor, Courage, and Commitment. Although low national unemployment and an increase in college attendance created a challenging recruiting environment, 1997 proved to be a successful year for Navy and Marine Corps recruiting. Recruiting strategy focused on attracting highly qualified individuals for particular skills in the Fleet and Fleet Marine Forces. Through targeted marketing, Navy and Marine recruiters achieved 100 percent of their overall enlisted recruiting and officer accession goals in 1997. In addition, the academic quality of enlisted recruits remains high.

Maintaining a quality recruiting force has been key to these successes. The increased Special Duty Assignment Pay has given Navy and Marine Corps recruiting commands an additional incentive to retain high-caliber Sailors and Marines for recruiting duty. A number of new initiatives now are in place to improve the quality of life for recruiters and their families assigned away from major bases or stations.

Improvements were achieved in increasing minority accessions into both officer and enlisted ranks through the enhanced opportunities for minorities initiatives program. While solid progress was made for enlisted accessions, more work is needed in the area of officer accessions. In addition, the Department is exploring better ways to attain a meaningful distribution of minorities across technical and nontechnical ratings.

The Department's ability to recruit a well-qualified and diverse civilian work force also has been enhanced through a series of coordinated recruitment programs, which have brought Navy and Marine Corps activities together with college and university students. To invest in future civilian recruitment, special residential and scholarship programs were established to acquaint outstanding high school and college students to the Department's technical missions.

Retaining the Best and the Brightest

Sustaining a skilled, motivated, and ready force is the foundation for the future of the Navy-Marine Corps team. A variety of tools are utilized to retain the best and brightest Sailors and Marines. For example, the Navy and Marine Corps continue to offer a Selected Reenlistment Bonus to keep critical billets filled. Marine Corps first term re-enlistees are afforded an option to choose one of three duty stations to continue their military careers. Similarly, the Navy's Homebasing Initiative gives families more stability by serving in a single fleet concentration area.

A stable and competitive officer corps is essential to lead the Navy and Marine Corps of the 21st century. Nuclear Officer Incentive Pay, Medical Officer Incentive Special Pay, and Aviation Continuation Pay are some of the tools that enable the Department of the Navy to retain capable, talented, and technically oriented leaders in the face of ever-increasing private sector competition. Using the authority approved in the FY 1998 National Defense Authorization Act, the Navy and Marine Corps are addressing pilot retention issues within selected warfare communities.

Adequate compensation fosters improved retention in mission critical skills, increases morale, and maintains high readiness. The newly authorized Basic Allowance for Housing will be phased in over a six-year transition period. This will provide an immense benefit for Sailors and Marines stationed in high cost, metropolitan coastal areas, and improve the lives of junior enlisted personnel.

The Naval and Marine Corps Reserve provided an unprecedented level of support during the past year. Increasingly used as a force multiplier to accomplish everyday missions, the Naval and Marine Corps Reserve is no longer just a force-in-waiting—to be called upon in the event of global war. To this end, Reserve contributory support to the active Fleet has more than doubled since 1991, to more than two million man-days of direct mission support in 1997.

Navy-Marine Corps Training: Today's Investment, Tomorrow's Capability

The Naval Training Center in Great Lakes, Illinois, has initiated an innovative boot camp final exam, called Battle Stations, to ensure Sailors are ready to join the Fleet. New Sailors use teamwork, basic seamanship, and nautical knowledge gained during the boot camp curriculum to master seven training stations during a pre-graduation battle problem. Battle Stations uses fleet experiences to create a more challenging and relevant training regimen for the Navy's newest Sailors.

To continue preparing junior Sailors for career success after basic recruit training, the Navy uses basic and advanced-skills schools in areas such as engineering and weapon systems. Employing electronic manuals, remote video classroom techniques, and on-board systems, the Navy is training more Sailors with greater productivity. Afloat training groups at fleet concentration areas are used to tailor training to meet the needs of individual commands. Tailored training eliminates duplication, saves time, and concentrates on correcting individual and unit weaknesses.

The Navy's leadership continuum puts career-spanning rigor into leadership training, for both active and reserve personnel. The leadership continuum is the Navy's vehicle for imparting leadership qualities into a program of recurring training from recruitment to retirement. Leadership training commences at accession training and is reinforced through eight courses for officer and enlisted personnel, which form the basis of the continuum.

Transformation is an ongoing and dynamic process of making Marines. It begins with first contact with the recruiter and continues throughout a Marine's career. Nowhere is this process more definable than at recruit training. The purpose of Marine Corps recruit training is simple—to make Marines. It is a socialization process during which young men and women with differing perceptions of right and wrong, various understandings of permissible behavior, and undeveloped or unfocused thoughts of professional conduct are imbued with a common set of values and standards. This transformation from civilian to basic Marine is made possible by the common desire to become a Marine and the teaching or mentoring of a positive role model—the Drill Instructor.

The Crucible is a fifty-four hour training evolution that takes place in the eleventh week of recruit training. It is designed to be a crystallizing experience during which everything that the recruit has learned in the previous ten weeks is drawn together and brought sharply into focus. Sleep and food deprivation, physical and mental challenges, and constant operating tempo are all designed to build strength of character and a sense of self-sacrifice and teamwork. Constant reinforcement of the values of courage (both physical and mental), honor, and commitment are the hallmarks of the exercise.

The Marine Corps believes that an individual's character is measured in four different, but related, categories of fitness—mental, physical, moral, and spiritual. To address the development of moral fitness, the Marine Corps has developed a Values Program that provides value-based training and education at every level from recruit training, through all Marine Corps schools and into every unit.

Unit cohesion is defined as the intense bonding of Marines, strengthened over time, in absolute trust, subordination of self, and an intuitive relationship in collective actions of the unit. To achieve this, the Marine Corps is beginning to form teams of Marines immediately after recruit training, to assign those teams to follow-on skill producing schools, and to subsequently assign them to operational units in the fleet. Changing from individual assignment to unit assignment is a major change, but one that will improve the combat efficiency on the battlefields of tomorrow.

The Department of the Navy Civilian Leadership Development Program identifies certain leadership competencies that commands and activities use to establish formal leadership programs. The program provides all employees with opportunities to acquire knowledge and skills that enhance their competitiveness for higher level positions. Civilian leadership development also supports the Defense Leadership and Management Program, which offers advanced leadership, executive-level skills, and professional military education.

Equal Opportunity and Core Values

The Department of the Navy offers every Sailor, Marine, and civilian employee equal opportunity to succeed and achieve their fullest potential regardless of ethnicity, gender, national origin, race, or religion. With strong emphasis on core values, the Department ensures that each individual is treated with dignity and respect. A recent amendment to Department regulations prohibits participation in any supremacist organization espousing discrimination based upon race, creed, color, sex, or national origin. Navy and Marine Corps focus groups report that the Department is successfully communicating core values and policies on sexual harassment and unprofessional relationships to the fleet and field.

Since 1994, women have been eligible for assignment onboard combat ships and aircraft. With the exception of submarine duty and special operations, women train and serve in every Navy community and career field. This is a direct reflection of efforts to ensure women receive assignments and opportunities which closely match those of their male counterparts. Moreover, the Women at Sea Program embarkation plan continues to expand career opportunities for women on combatants and in aviation. In FY 1998, an additional 13 ships and one carrier air wing will become gender-integrated, resulting in 98 gender-integrated ships and four gender-integrated air wings.

Quality of Life

The Department of the Navy recognizes quality of life as a vital component in recruiting and retention. The Departmental focus is provision of an acceptable level of quality shelter, health care, and community support services to Sailors, Marines, and their families, regardless of duty station. Key elements of the quality of life program include an adequate compensation and benefits package, as well as a positive environment that provides personnel the requisite tools to reach their full potential. To this end, the Department of the Navy has established minimum quality of life standards, and is working towards consistent and professional delivery of all quality of life components.

Properly sheltering Sailors, Marines, and their families remains a core quality of life issue. New initiatives under way in family housing, bachelor quarters, and housing allowances reinforce the commitment. Erasing maintenance and repair backlogs and a deficit of suitable housing hinges on the careful use of the Military Housing Privatization Authorities, in concert with the traditional application of appropriated dollars. Changes to the housing allowance compensation system now provide allowances that more closely match actual housing costs.

Affordable, high-quality child care also is a critical quality of life requirement. Initiatives to expand availability include contracting for spaces in qualified off-base civilian centers, expanding family child care to incorporate off-base residences, enhancing resource and referral programs, school-age care partnerships, and regional contracts with local providers.

Rounding out quality of life services for Marines, Sailors, and families are community support programs, entailing individual and family support services. A full range of family support services, emphasizing basic skills for living, are available. The Marine Corps' formal Key

Volunteer Network Program and the Navy's Ombudsman Program work at the grass roots level to assist spouses and families while the service member is deployed. In addition, the Marine Corps is implementing LINKS (lifestyle, insights, networking, knowledge, and skills) to assist new families adapt to life in the Marine Corps. These outreach efforts are an integral part of readiness and retention.

Single Sailors and Marines represent the largest category of personnel in the Department of the Navy. Typically, they live in modest accommodations. They need programs which enhance their physical and mental readiness, provide recreational opportunities, and offer meaningful and beneficial activities during off-duty hours. The single Sailor and Marine programs address these specific needs. Initiatives include safe and secure storage for personal belongings and vehicles during deployment, pier-side laundry facilities for those who live onboard ship or are deployed overseas, and quality fitness equipment.

Navy Medicine will continue to find innovative ways to provide medical and dental care as close to the worksite as possible. Pierside clinics, deployment of health care specialists with the operating forces, and new programs at recruit training activities that save valuable training time by delivering health care to trainees on-site are just the first step.

New technology enables the Navy to provide specialty medical consultation in remote areas and achieve cost and time savings by reducing the need to transport patients. It also greatly enhances the ability to provide quality health care for forward deployed operating forces and at remote medical treatment facilities. The successful telemedicine technology developed on the USS George Washington (CVN 73) is being applied to support operational medical services in other locations.

In conjunction with the Department of Defense and other Services, the Navy is working diligently to ensure TRICARE's success. As TRICARE approaches full implementation in 1998, delivery of patient-focused, consistent health care to all beneficiaries, regardless of geographical location, remains the goal. Beneficiary education and customer-focused marketing are some of the important priorities. In addition, current legislative authority allowing the Department of Defense to proceed with the Medicare Subvention Demonstration project is encouraging. The Department of the Navy is also assessing options to improve access to medical care for Medicare-eligible beneficiaries.

READINESS

Readiness remains a top priority and the fundamental gauge by which the Navy-Marine Corps team measures its ability to respond to current and future national tasking. Accordingly, readiness parameters are constantly monitored and assessed to determine the right fiscal balance among operations, modernization, and recapitalization accounts. The Department's readiness monitoring system has proved reliable in identifying deficiencies quickly so that appropriate action can be taken. Early recognition and aggressive corrective action are required to reverse negative trends.

Readiness is not only limited to the ability to meet today's commitment; readiness must be able to answer both near-term and long-term requirements as well. Providing the necessary tools our people need to operate both today and into the future is essential to maintaining operational primacy. The Department's current equipment readiness remains satisfactory. In some major warfighting systems where it is cost-effective, equipment is being remanufactured or given a service-life extension to keep it operational. Other major weapon systems are substantially upgraded to provide a bridge to future systems. The F/A-18E/F Super Hornet and the remanufactured AV-8B Harrier will ensure Naval air superiority and potent strike options are maintained until the Joint Strike Fighter joins the fleet. Likewise, the retrofit of the AAV-P7 amphibious assault vehicle will keep it capable of conducting its mission until the Advanced Amphibious Assault Vehicle (AAAV) becomes operational.

The Department is also formulating innovative systems for the future that will improve long-term readiness. Even as the most modern ships in the world leave the shipyards, active research and development efforts and budget conscious procurement plans for their replacement are under way. For example, 13 more Arleigh Burke (DDG 51)-class destroyers will join the fleet in the next four years under a cost-effective multiyear procurement plan, yet we are developing an innovative DD-21 design for the next century. The Navy's budget request includes funding for CVN-77, the last Nimitz-class carrier. Its design will make it an affordable transition carrier for a new concept, the CVX. The New Attack Submarine and the San Antonio (LPD 17)-class amphibious ship are innovative replacements for their aging predecessors and are necessary to maintain long-term readiness. The vast amount of work in research, development, and fielding of Navy theater missile defense systems is yet another example of long-term investments that are paying off today. In short, aggressive long-range planning ensures Marines and Sailors will continue to have the tools that they require, at an affordable price.

The Department is also examining innovative ideas to substantially reduce overhead costs. Smart Ship and Smart Base are initiatives to find ways to reduce personnel requirements onboard ships and bases. Similarly, innovative technologies are being evaluated to improve efficiency and reduce crew size in new ship designs such as CVX and DD-21. Striking the correct balance between current and future readiness is vital.

TECHNOLOGY: INNOVATION AND MODERNIZATION

The explosion of new technologies has transformed the way militaries conduct warfare. Capabilities available today were not considered possible a mere decade ago. It is evident that the growth rate of these technologies will continue to accelerate. This phenomenon of rapid expansion in technology requires that the Navy and Marine Corps become experts in the innovative application of emerging technology to new and existing weapon systems. Innovation is critical in order to transform the aggregate impact of leading-edge technology into battlespace dominance. Together, the Marine Corps Warfighting Laboratory and the Navy At-Sea Battle Labs provide a venue to institutionalize innovation within the Department of the Navy.

The Marine Corps Warfighting Laboratory is the test bed to investigate new concepts and technologies within the Marine Corps. To carry out this process, a Five Year Experimentation Plan was developed. This plan, which consists of three phases, is the cornerstone document for

concept-based experimentation and the introduction of science and technology into the operating forces. The first phase, called Hunter Warrior, was completed in March 1997 and examined the contribution which a Marine air-ground task force (MAGTF) could make if provided with selected conceptual and technological improvements. The remaining phases will examine MAGTF operations in the urban littoral environment.

The Chief of Naval Operations' Fleet Battle Experiments take forward-looking programs and integrate them with innovative operational concepts. Using at-sea battle labs, these experiments will focus on future programs that align the Navy with *Joint Vision 2010*. In 1998, the Naval Warfare Development Command will be established in Newport, Rhode Island, to integrate talent from the Naval War College, Naval Doctrine Command, and the Strategic Studies Group. The combination will enable out-of-the-box thinking and will encourage the exploration of future naval warfare concepts.

In April 1997, the Chief of Naval Operations declared that the Navy was shifting from platform-centric to network-centric warfare. Network-centric warfare leverages information technology and integration to derive highly responsive and effective combat power from geographically dispersed but robustly netted forces. The entire force, including the supporting base structure, will be modernized with high speed multimedia information services which are fully interoperable with joint and allied systems. Network-centric warfare promises a shift from an attrition-style warfare to a much faster and more effective warfighting style characterized by speed of command.

Joint Vision 2010 highlighted the critical role information plays in the success of military operations. Increased processing power, networking capabilities, and software enhancements will have a dramatic and decisive impact on future warfighting. Under the Information Technology-21 (IT-21) concept, the Navy is building a communications and networking backbone which will support the rapid exchange of information between naval and joint platforms. New doctrine and organizations are also being developed to allow the Navy to take full advantage of these changes.

After technology and innovative concepts are identified, tested, and validated, the Department of the Navy's acquisition process ensures technology insertion into important programs. For example, the use of composite materials reduced the weight of the F/A-18E/F Super Hornet and MV-22 Osprey by hundreds of pounds while improving crew ballistic protection. Open-system computer architecture and fiber-optic technology are critical command-and-control components of the New Attack Submarine and Land-Attack Destroyer (DD-21). The Marine Corps' Advanced Amphibious Assault Vehicle will employ a fully retractable hydro-pneumatic suspension system which will produce land mobility equivalent to the M1A tank. The AAV also will use a revolutionary water jet propulsion system which will allow the vehicle to exceed speeds of 20 knots while waterborne.

Technology insertion also rapidly transforms concepts to reality, especially through the use of commercial off-the-shelf (COTS) technology. For example, the application of COTS technology has been critical to the development of the Navy's Cooperative Engagement Capability and theater ballistic missile defense systems. In another example, the four Services and the United States Special Operations Command have joined together in a joint venture focused on fielding

low-cost, non-developmental, non-lethal weapons in the near term, while looking to the future of warfare and the ongoing revolution in military affairs.

The demanding environments and competitive nature of warfare necessitate that the Department be an advanced technology institution. Materials, engines, communication systems, weapons, training facilities—every technology that supports Sailors, Marines and the mission—must be cutting edge. Technology will be an important tool as the Department attempts to leverage the benefits of advanced science and technology in warfighting applications.

To ensure the required—and affordable—technology is in place when needed, the Department's FY 1997 science and technology program continued to develop new technological capabilities. Basic research programs expand fundamental knowledge of maritime sciences and engineering, materials, and information sciences; applied research exploits and evaluates technology options for specific naval problems; advanced technology development programs demonstrate the operational capability of new technologies—as stand-alone systems and as enhancements to existing systems; and manufacturing technology programs work to ensure novel technologies can be affordably manufactured. Because technology opportunities are always richer than the resources available for pursuing them, funds were leveraged through partnerships with the other Services, government agencies, academia, and industry for many programs.

Navy and Marine Corps units train as they intend to fight. This philosophy provides both a unifying goal and a significant challenge for training and education institutions. Therefore, available resources must be focused on more effective and efficient methods of attaining and maintaining a high state of operational readiness to support warfighting operations. Just as modern weaponry has influenced warfighting, future investments in learning technology will dramatically shape the delivery of instruction in training and education institutions. The traditional approach of formal school-based and instructor-centered teaching will shift to an increasingly distributed, student-centered approach employing distance learning. This approach will enable Sailors and Marines from around the globe, both ashore and at sea, to have continual access to instructors and educators previously limited to resident students. In the near future, Sailors and Marines can expect to use the Internet and intranets, automated electronic classrooms, learning resource centers, interactive multimedia instruction, video teletraining, and embedded training to learn and master new skills.

EFFICIENCY: EXPLOITING THE REVOLUTION IN BUSINESS AFFAIRS

The Department of the Navy's Research, Development, and Acquisition Team is serving the nation by developing, acquiring, and supporting technologically superior and affordable systems for Navy, Marine Corps, joint, and allied forces. These critical goals are being achieved through strategic acquisition reforms and utilizing a range of tools, including those provided through the Federal Acquisition Streamlining Act and the Clinger-Cohen Act.

The Department of the Navy is confronting key management issues and developing tools such as Cost as an Independent Variable and Activity Based Costing to reduce total ownership costs. Acquisition specialists are inserting commercial dual-use technologies into fielded weapons systems to make operations and support costs more affordable. The Department is accelerating

the move from military specifications and standards to performance-based specifications through Navy-developed software tools and the Single Plant Process initiative.

The Department of the Navy is committed to developing the fundamental infrastructure technologies that enable large distributed work teams to operate in synthetic environments to produce higher quality systems at reduced cost over shorter periods of time. The embodiment of this commitment is the Acquisition Center of Excellence (ACE). The ACE will serve as a test bed and development site for the Navy's Simulation Based Acquisition effort, which is expected to revolutionize the design and procurement of major systems thereby providing dramatic reductions in total life cycle cost and acquisition time. The ACE facility became operational in late 1997.

The Department of the Navy's acquisition work force provides the Fleet and Fleet Marine Forces with the tools required to fulfill its mission throughout the world. Most recently, the acquisition work force has experienced enormous manpower and budget reductions. Downsizing has been steady and controlled, accomplished largely through retirement incentives, Base Realignment and Closure actions, and organizational restructuring. At the same time, procurement has become more technologically complex and, with weapon systems modernization under way, the expectations of the Fleet even greater. To reach the planned drawdown levels by the end of FY 2003, it is imperative that the acquisition force structure be composed of the right people, with a balanced education, training, and skill mixture. To meet this challenge, the Department implemented a plan during the past year to triple the size of its Acquisition Intern Program, thus ensuring the availability of a cadre of highly-qualified individuals to fill senior acquisition positions in the 21st century.

Many acquisition reform successes reflect the Department's bold approach and forward-looking strategy. For example, the F-14 Tomcat Aircraft Precision Strike Fighter Team demonstrated what teamwork and innovative thinking can accomplish in today's climate of acquisition reform. Employing an industry partnership, the F-14 team developed a plan to use a targeting pod to give the F-14 a night precision-guided munitions capability. The first fully operational system was deployed 223 days after contract award, achieving initial operating capability two years ahead of the original schedule. By using commercial off-the-shelf technology, the team realized significant savings which are estimated in excess of \$173 million.

In another example, the Joint Maritime Communications Systems provide a robust communications infrastructure that will meet tactical and support communications requirements. Through acquisition reform, system acquisition time was reduced from 4-7 years to less than 2 years. Using performance-based specifications and open systems architecture, one key subsystem achieved savings of 50 percent of acquisition costs and 30 percent of total life-cycle costs from previous terminals.

The Department of the Navy has been reaping the benefits from participating in international programs for decades through such key programs as the F/A-18, Joint Strike Fighter, and Evolved Sea Sparrow Missile. International sales reduce the price of equipment and ensure interoperability with NATO and other allied countries. The United States recently signed reciprocal procurement memoranda of understanding with several countries to foster a two-way

street in defense trade. Cooperative development programs also enable the Department to share the research and development costs of critical acquisition programs. In addition to improving coalition warfighting capability, cooperative development programs serve to promote country-to-country cooperation on a broader scale.

Effective environmental planning to meet the requirements of environmental statutes, executive orders, and regulations is essential for facilities management, acquisition programs, and military operations. Department strategies for establishing partnerships with regulators, stabilizing funding, and reducing the cost of cleanup at active and closing bases are paying dividends. The cleanup program cost-to-complete estimate continues to show reductions.

In the area of environmental protection, the Department has made substantial progress with respect to shipboard pollution control. A solid-waste plan was developed for surface ships in order to comply with the Act to Prevent Pollution from Ships. A submarine addendum to this plan is in development. Meanwhile, the Department is partnering with the Environmental Protection Agency (EPA) and coastal states to create uniform national discharge standards for military vessels. These standards will not only advance the state-of-the-art for marine pollution control and ensure the protection of coastal waters, but will allow the Navy to transit all states' waters unencumbered by varying discharge regulations. At shore installations, the Department continues to serve as the Department of Defense Executive Agent for Clean Air Act and Clean Water Act implementation. The Department works closely with EPA and state air pollution offices to ensure both compliance and protection of the military mission.

CONCLUSION: CHARTING A COURSE FOR FUTURE SUCCESS

The Department of the Navy enters the next millennium with clear strategic visions and the capacity to fully support the nation's national security interests. The challenge is to sustain this capacity while transforming into the strategic force of the future. To preserve our naval forces' operational primacy with diminished resources, the Department must attain the correct balance of investments in people, readiness, technology, force structure, and modernization.

The Department of the Navy has charted a course to lead the nation into the 21st century. As we face an uncertain global environment, our naval forces, with the world's finest Sailors and Marines, will continue to be key to implementing our National Security Strategy. In the future, our fundamental strategic values will flow from our ability to sail unfettered throughout the world, to shape and respond using naval forces as required, without restriction—anytime, anywhere.

/signed/
John H. Dalton
Secretary of the Navy

REPORT OF THE SECRETARY OF THE AIR FORCE

In 1997, America celebrated our Air Force's 50th Anniversary honoring the men, women, and machines that took air power from its infancy to maturity. While 1997 was a time to reflect, it was also a time to continue shaping our destiny—the evolution of today's air and space force to the space and air force of tomorrow.

DEFINING THE FUTURE AIR FORCE

The Air Force is charting a future that conforms fully with visions outlined by the President's National Security Strategy and the Chairman of the Joint Chiefs of Staff's National Military Strategy. The Air Force contribution to this vision, *Global Engagement: A Vision for the 21st Century Air Force*, was published in November 1996. It extends across the full range of Air Force issues—operations, infrastructure, and personnel—and will shape the Air Force throughout the first quarter of the 21st century. *Global Engagement* defines the Air Force core competencies—competencies that stem from the speed, flexibility, and global range of aerospace forces—and supports the joint goals established in the Chairman's *Joint Vision 2010*.

We are implementing *Global Engagement* through the United States Air Force Long-Range Plan (LRP). The LRP provides a framework for programs with directive statements necessary to make *Global Engagement* actionable and end states which describe the capabilities the Air Force must possess to realize this vision. *Global Engagement* and our long-range planning initiatives guided the Air Force's participation in the Quadrennial Defense Review (QDR) and are key to our role in the resulting new strategy.

The QDR strategy that is now reflected in the 1997 National Security Strategy, the latest edition of National Military Strategy, and the Defense Planning Guidance emphasizes the continuing need to deter aggression by maintaining the ability to rapidly halt enemies in two major theater wars, nearly simultaneously. This strategy depends heavily on the speed, range, agility, and overwhelming firepower of aerospace forces. Such forces give the National Command Authorities and theater commanders additional flexibility and open new political and military options for achieving theater objectives. Readiness is key to maintaining this capability.

READINESS

Maintaining high readiness levels is a top Air Force priority. In peacetime, high readiness levels allow us the flexibility to rapidly deploy the appropriate force anywhere in the world to gather essential intelligence, discourage potential enemies, protect friendly forces, or provide humanitarian aid. In wartime, high readiness levels are vital to the success of halting the enemy attack. Air and space power is critical in these early stages of the CINC's campaign plan and will remain critical throughout later phases.

People, training, and equipment all figure into the readiness equation. A shortfall in any of these areas will degrade unit readiness. While 89 percent of all Air Force units are at the highest readiness levels, disturbing indicators have surfaced in some areas—aircraft mission capable

rates are declining; there are engine spare shortages; pilot and navigator retention has decreased; and reenlistment rates have declined.

Maintaining readiness in today's austere fiscal environment will remain a challenge as aerospace forces are likely to remain in high demand to execute the contemporary military mission. Long-term readiness will require balancing today's operational requirements with the need to modernize our systems for the future.

PROGRAMMING CHOICES—STRENGTHENING CORE COMPETENCIES

The six core competencies of air and space power—air and space superiority, rapid global mobility, global attack, precision engagement, information superiority, and agile combat support—are guiding Air Force investment and modernization choices.

Air and Space Superiority

America's experiences in peace and war have repeatedly demonstrated the necessity of achieving air and space superiority to give our joint team the freedom to operate, free from attack and free to attack. Simply put, air and space superiority is the key to winning wars on America's terms—quickly and with fewer friendly casualties. To maintain our ability to achieve air and space superiority, America is investing in the F-22 Raptor, the Airborne Laser (ABL), the Space-Based Infrared System (SBIRS), and the Evolved Expendable Launch Vehicle (EELV).

- The F-22 Raptor will enable the joint team to dominate the air arena and deny our adversaries sanctuary. It will replace the aging F-15C air superiority fighter and bring a revolutionary combination of stealth, supercruise, and integrated avionics to the air battle. These attributes will ensure America maintains an overwhelming advantage against new, sophisticated threats that will increasingly proliferate around the world. The Raptor successfully completed its first flight in September 1997 and will begin flight testing at Edwards AFB, California, in 1998. It will enter operational service in 2005.
- The Airborne Laser will significantly enhance the ability of America's theater commanders to deter or defeat the threat posed by theater ballistic missiles (TBMs). The ABL can be deployed anywhere, anytime to shoot down TBMs in their vulnerable boost-phase. This capability may deter adversaries by forcing them to contend with the possibility of their own warheads falling back on their territory. This year, the ABL showcased its sensor and communications capabilities as part of a joint multi-layered theater missile defense architecture in the Roving Sands '97 wargame. As a shooter, the ABL shot down 16 of the 17 targets it engaged. In its capacity as a sensor, the ABL provided missile launch warning, launch and impact point predictions, and trajectory data to the joint force. The ABL will reach full operational capability in 2008 with seven aircraft.
- The Space-Based Infrared System will significantly enhance the ability of the ABL and other missile defense systems by providing detection and cueing capabilities. SBIRS will consist of constellations of satellites in high and low orbits that provide improved

detection and warning to theater forces of missile launches. SBIRS high and low components are slated to reach initial operational capability in 2003 and 2006, respectively. SBIRS will complement the F-22 and ABL to enable our forces to dominate air and space. But space-based capabilities like those provided by SBIRS can only be made available with reliable spacelift. Toward that end, the Air Force is developing the Evolved Expendable Launch Vehicle.

- The Evolved Expendable Launch Vehicle will ensure America's access to space well into the 21st century. It will replace the current fleet of launch vehicles with two families of boosters. The EELV will reduce life-cycle cost, shorten launch timelines, and enable more DoD, civil, and commercial launches per year. The medium- and heavy-lift EELVs will have their first flights in 2002 and 2003, respectively.

Rapid Global Mobility

Rapid global mobility is key to the nation's ability to manage the full spectrum of contingencies from combat operations, to peacekeeping, to humanitarian relief. Rapid global mobility is and always has been the theater commander's link to the arsenal of democracy at home. It allows America to respond with the right tools quickly, anywhere on the globe.

- The C-17 Globemaster III will become the new core airlifter of the Air Force's mobility fleet. Its ability to carry outsized cargo into remote or austere airfields affords America the ability to deploy forces virtually anywhere on the globe—a capability that no other nation can match. In 1997, the C-17 supported our forces in Bosnia, Haiti, the Middle East, and in a host of smaller operations. Whether it is delivering Army rocket launchers from Oklahoma to Korea, supporting the evacuation of noncombatants from Liberia, or conducting humanitarian relief flights to Central Africa, the C-17 has and will carry the load for joint force commanders.

- Global Access, Navigation, and Safety (GANS) is a management initiative the Air Force is using to consolidate the requirements, acquisition, and funding of seven closely-related navigation and safety-related programs and initiatives. It will preserve access to prime global airspace in the future by implementing safety and navigation upgrades to Air Force aircraft and ensure our forces maintain the ability to rapidly deploy anywhere well into the 21st century.

Global Attack

To execute the new defense strategy, the United States must continue to invest in its unique ability to project power rapidly, precisely, and lethally. Air Force global attack assets are designed to fill this need.

- The B-2 Spirit is the world's only long-range stealth aircraft. It delivers large amounts of precision ordnance in a single pass, enabling our nation to place any enemy's warmaking capability at risk. The B-2 achieved initial operational capability in April 1997 and delivers several varieties of precision and nonprecision weapons.

- The B-1B Lancer is the Air Force's primary long-range conventional delivery system. In October 1997, the Air Force suspended its active nuclear support role. The B-1 carries three families of cluster bomb weapons, including the antiarmor Sensor Fuzed Weapon (SFW), making it the first bomber with this critical halt phase capability. The near-term planned integration of precision and standoff weapons with a major defensive system upgrade will further enhance the Lancer's lethality, survivability, and effectiveness.
- The B-52 Stratofortress has demonstrated its ability to deter war throughout the Cold War and, when necessary, to project power in today's combat operations. Currently, the B-52 is America's only long-range aircraft with precision standoff global attack capability—the technique of choice for minimizing risk to our aircrews during combat. Upgrades to its navigation system and standoff weapons capability have maintained the B-52's ability to deliver decisive firepower anytime, anywhere.
- The Minuteman III ICBM fleet's rapid, global, precision strike capability rounds out the Air Force's global attack package. Ongoing modernization programs such as the propulsion and guidance replacement programs continue to ensure the Minuteman force remains a reliable and credible nuclear deterrent.

Precision Engagement

The essence of the Air Force's precision engagement core competency is the ability to strike an enemy or influence a situation efficiently and effectively. Precision engagement capabilities enable our nation to achieve its security objectives while minimizing risk and collateral damage. The Air Force is working hard to field advanced munitions that will further enhance the range of our precision engagement capabilities.

- The Joint Direct Attack Munition (JDAM) is an inexpensive guidance kit that converts 1,000 and 2,000 pound general purpose and penetrator warheads into accurate, adverse weather weapons with in-flight retargeting capability. JDAM Low-Rate Initial Production (LRIP) began in 1997 and deliveries will start in 1998.
- The Joint Air-to-Surface Standoff Missile (JASSM) will enable theater commanders to accurately target heavily defended, fixed or relocatable, high-value targets. It is a long-range, low observable, conventional, precision-guided, autonomous, air-to-ground standoff missile currently being developed by Lockheed Martin and Boeing. The decision to proceed to Engineering and Manufacturing Development is scheduled for 1998. The LRIP decision is scheduled for 2000.
- The Joint Standoff Weapon (JSOW) is a Global Positioning System (GPS)-guided, adverse weather standoff munition. This air-to-ground glide weapon will be used against land and sea targets at ranges from 15-40 miles. The Air Force will field two variants optimized against soft and heavily-armed targets in 1998 and 1999, respectively.
- The Wind-Corrected Munitions Dispenser (WCMD) is an inexpensive guidance kit that provides 1,000 pound class dispenser weapons (Combined Effects Munitions, GATOR,

and SFW) a first time capability to be delivered accurately from medium to high altitude in adverse weather. WCMD will enter LRIP in 1998 and full rate production in 2000.

- The Sensor Fuzed Weapon is a 1,000 pound class dispenser weapon which uses the BLU-108 antiarmor submunition. SFW covers 500,000 square feet providing multiple kills per pass and is the Air Force's weapon of choice for the halt phase of a major theater war. SFW entered full rate production in 1996, providing the warfighters an antiarmor capability that was recently deployed to the Gulf region on the B-1. When fitted with the WCMD guidance kit, SFW will be capable of greater accuracy from medium to high altitude.
- The Joint Strike Fighter (JSF) is a precision engagement asset that will replace the aging fleets of Air Force F-16 and A-10 aircraft. It will complement the F-22 to provide our Service the right mix of multi-role and air superiority aircraft for the 21st century. The program is on-track to supply over 2,900 next-generation multi-role strike fighters to the Air Force, Navy, Marines, and the United Kingdom Royal Navy. Delivery of the first operational JSF is scheduled for 2008.

Information Superiority

The ability to collect, control, exploit, and defend information while denying the adversary the same is critical to success in future military operations. In today's information intensive environment, information superiority is not only a core competency, it is the enabling factor in the execution of the other core competencies. The Air Force uses information in its operations as a force multiplier through command and control (C²) and the extensive global awareness capabilities of integrated intelligence, surveillance, and reconnaissance systems.

- Command and control is managed by the Air Force as a weapon system and we are committed to the evolutionary acquisition and integration of new C² programs. To implement and oversee these initiatives, the Air Force stood up the Air and Space Command and Control Agency in 1997. This agency, together with the Air Force Communications and Information Center, also established in 1997, will be pivotal in expanding our nation's information edge. Each organization will leverage information systems and technologies to enhance our warfighters' capabilities.
- The Joint Surveillance Target Attack Radar System (JSTARS) provides the theater commander with surveillance of enemy ground movements. In combat, this information is crucial. In peacetime, it can deter hostile acts before they occur. JSTARS made valuable contributions during Operation Desert Storm and played an important role in bringing about the Dayton Peace Accords when all of the factions saw and understood how well the United States could monitor their military actions. The JSTARS achieved initial operational capability in December 1997.
- The Predator Unmanned Aerial Vehicle (UAV) provides theater commanders a reconnaissance asset with long loiter time and a varied sensor array to use when the cost or risk of using manned systems is inappropriate. It was the first Advanced Concept

Technology Demonstrator to transition to a formal acquisition program, following program initiation by DoD on August 8, 1997. The Predator has been continuously deployed to Bosnia since March 1996, supporting the joint forces with a wealth of imagery information.

- The Airborne Warning and Control System (AWACS) is the theater commander's most important asset for airborne surveillance and battle management. The Air Force is investing in several key modification programs to enhance AWACS performance in combat identification, communications connectivity, target and aircraft location accuracy, and detection range for small targets.

Agile Combat Support

The success of the joint force ultimately rests on our ability to sustain deployed forces. Agile combat support will allow commanders to improve the responsiveness, mobility, and sustainability of their forces. The efficiency and flexibility of agile combat support will substitute responsiveness for massive deployed inventories and contribute to our efforts to make Air Force units more expeditionary in nature.

In an effort to reduce initial airlift requirements, resupply of deployed forces will begin once the forces arrive in theater. Time-definite delivery will form the basis for this effort. In short, when our deployed forces require materiel, efficient command and control, coupled with express delivery, will ensure the right part arrives at the right place at the right time.

DOING IT SMARTER

Sustaining and strengthening our core competencies depends on getting the most out of available resources. As we have in the past, we will continue to find innovative, effective ways to get the job done.

Innovation

Our newest forum for innovation is a network of Air Force battle labs. Battle labs give our warfighters another avenue to generate, test, and field ideas on how to best use our weapon systems. The Air Force established six battle labs in July 1997 to foster innovation: Air Expeditionary Force, Command and Control Battle Management, Unmanned Aerial Vehicle, Space, Force Protection, and Information Warfare. The ideas we generate in the labs will be introduced to theater commanders and their components through exercises, wargaming, and other appropriate avenues.

Revolution in Business Affairs

For the Air Force to transition to a space and air force, it must capitalize on the revolution in business affairs. Because traditional means of acquiring and supporting our forces are too costly to sustain, we have instituted an aggressive series of reforms that affect the full range of our activities.

- **Acquisition Reform.** The Air Force is changing the culture of acquisition. The emphasis is to provide weapon systems better, cheaper, faster, and in a more streamlined and consistently smoother process. Virtually every new acquisition program is taking advantage of commercial practices by altering its strategy toward commercial specifications and standards, privatization, outsourcing, commercial off-the-shelf technology, and contractor system responsibility. Through its Lightning Bolt initiatives in streamlining, teaming, and innovative acquisition strategies, the Air Force has realized \$6 billion in cost savings and \$11 billion in cost avoidance. Newer efforts focus on continuous improvement and establishing strategic steps to ensure acquisition reform becomes the norm. To accomplish these objectives, we will continue to advance the professional development of our acquisition work force by providing quality continuing education and training.

- **Strategic Business Planning.** Sustaining the current force while simultaneously investing in the systems necessary for operations in the 21st century is a significant challenge in today's fiscally constrained environment. The key Air Force leaders responsible for accomplishing and supporting acquisition and sustainment have joined together to embark on a shared vision and commitment toward a strategic business plan to move the acquisition and sustainment communities toward better business practices and continuous process improvement. The goal is to reduce costs without sacrificing mission capability.

- **Partnership with Industry.** In June 1997, the Air Force's senior leaders in acquisition, requirements, and planning and programming signed a memorandum encouraging Air Force members to communicate more openly with industry. The intent of the memorandum is to increase industry's understanding of Air Force mission and affordability requirements in order to achieve innovative and more affordable business solutions.

- **Competition and Privatization.** The Air Force is taking a strategic and long-term approach to competition and privatization to achieve the best value through public/private sector competitions. A formalized process exists to identify competition candidates to achieve maximum savings in infrastructure costs while preserving necessary combat functions. The Air Force has identified 50,000 additional positions for competition over the next six years—a two-fold increase of the entire historical execution since 1979. Recent competitions indicate a savings of approximately 34 percent. We have earmarked these funds for Air Force readiness and modernization accounts.

In addition to competition efforts, the Air Force is pursuing privatization to help recapitalize its aging infrastructure. Under privatization, the Air Force intends to shift functions and responsibilities in whole, or in part, from the government to the private sector. Examples include a study on the feasibility of renovating and/or replacing over 7,200 family housing units and divestiture of utilities plants at selected locations.

- **Depot Maintenance.** In the area of depot maintenance, Air Force efforts continue with the public/private sector competitions at Kelly AFB, Texas, and McClellan AFB,

California. The results of the C-5 depot maintenance competition at Kelly AFB were announced in September 1997. The public competitor, Warner Robins Air Logistics Center located at Robins AFB, Georgia, won the competition. This contract will yield savings of \$190.2 million over the next seven years. We project completing the remaining maintenance competitions for these two locations over the next year.

- **Commercial Off-The-Shelf (COTS).** Making the most of our resources includes avoiding the temptation to reinvent the wheel. Our focus is on increasing the use of current commercial products, processes, and practices. At the same time, we will work to improve the public/private sector business environment to enable a greater use of COTS. Some of our current initiatives include the conversion of 17 percent of our military product specifications to commercial item descriptions or nongovernment standards; the establishment of a Market Research Working Group to define commercial market research techniques that will reveal the best commercially available items to insert into military systems; and the preparation of a draft COTS handbook to aid in identifying and procuring commercial items.

- **Lean Logistics.** Air Force lean logistics focuses on improving operational units' capabilities by integrating and applying state-of-the-art business practices across all logistics functions and processes. The objective is to maximize operational capability by using high velocity, time definite supply and delivery processes in lieu of large inventories to manage mission and logistics uncertainty. This results in shorter cycle times, reduced inventories and costs, and a smaller mobility footprint, which are critical to achieve Air Force agile combat support objectives.

- **Other Cost-Cutting Initiatives.** Additional ongoing cost-cutting initiatives implemented or investigated in 1997 include:

- Replacing government bills of lading with commercial bills of lading for air express cargo shipments.

- Using commercial express carriers for small arms and ammunition shipments.

- Increasing interoperability between Air Force and commercial carrier transportation data and software.

- Using express carriers to ship classified material.

Stewardship

The Air Force is committed to responsible stewardship of the environment, funds, equipment, people, and other resources the public has entrusted to it.

- **Environmental Restoration and Compliance.** Environmental compliance, restoration, and conservation go hand-in-hand with our readiness goals. Our efforts to be good neighbors—and become better ones—have helped preserve our access to ranges,

airspace, and installations. The firm commitment to know and obey environmental laws and regulations has resulted in a dramatic reduction in the number of open enforcement actions against the Air Force from 263 in 1992 to only 16 in 1997. Stable funding allowed the environmental restoration program to maintain its 1997 cleanup schedule at all contaminated sites. Partnerships with governmental and nongovernmental organizations are fostering biodiversity and integrated ecosystem management at many installations.

- **Financial Reform.** Compliance with the Government Performance and Results Act (GPRA) is key to improving financial management. During the past year, the Air Force has supported OSD efforts to develop GPRA output measures and to comply with its many requirements. The Air Force incorporated some GPRA output measures into Air Force financial statements required by the Chief Financial Officers (CFO) Act, and is experimenting with activity-based costing.

Air Force financial statements are being improved as well with a focus on making them more useful and auditable. In the near-term, the effort to improve financial systems involves modifying existing systems to provide better cost data while deploying already developed systems that can reduce errors in financial data. For the long-term, existing systems will be replaced. In most cases, best-of-breed among all Service systems will be chosen and modified to comply with the CFO Act.

- **Operational Risk Management.** Operational Risk Management (ORM) is a decision making tool to systematically identify risks and benefits and determine the best course of action for any given situation. ORM is designed to enhance mission effectiveness by minimizing risks in order to reduce mishaps, preserve assets, and safeguard the health and welfare of our people. In 1997, formal education and computer-based training were initiated to instruct our people in the use of ORM. All Air Force personnel should receive this training by October 1, 1998.

- **Base Closures/Realignments.** The Air Force continues to work with the communities impacted by base closure/realignment to put the property and facilities into economic reuse. In 1997, the Air Force completed Economic Development Conveyances (EDCs) for property at six of these bases. Most notably, the Air Force and the Greater Kelly Development Corporation signed an EDC for Kelly AFB, Texas, just two years after the base was announced for realignment.

PRESENCE AND ENGAGEMENT—THE TOTAL FORCE

Today, more than ever, the Air Force relies on its Total Force—active duty, Air National Guard, and Air Force Reserve—working together to meet today’s peacekeeping and wartime commitments. The Total Force was used extensively during 1997, as Air National Guard and Air Force Reserve forces participated in every major deployment and contingency tasking.

- **Force Protection.** Air Force operations require a viable force protection strategy to protect its people, resources, and facilities anywhere in the world. In 1997, the Air Force

established the 820th Security Forces Group and the Force Protection Battle lab at Lackland AFB, Texas, as well as Office of Special Investigations (OSI) Antiterrorism Teams. These organizations are comprised of security forces, civil engineers, communicators, intelligence experts, logisticians, medical, and OSI personnel. They have each taken part in force protection activities throughout the world.

- **Operation Joint Guard.** This NATO-led coalition has maintained peace among the formerly warring factions in Bosnia. Since the operation began on December 20, 1996, the Air Force has deployed over 2,000 personnel and flown over 3,000 missions (25 percent of the coalition total) including close air support, combat air patrol, suppression of enemy air defense, air refueling, combat search and rescue, and intelligence collection sorties. Additionally, deployed space support teams furnished critical space communications, weather, navigation, and missile warning support.
- **Operations over Iraq.** Operation Southern Watch was established to monitor Iraqi compliance with United Nations Security Council Resolution (UNSCR) 688 in Southern Iraq. Since its beginning in August 1992, the Air Force has deployed over 7,000 personnel to support Operation Southern Watch and has flown over 110,400 sorties (70 percent of the coalition total).

In northern Iraq, Operation Northern Watch, a continuation of Operation Provide Comfort, was set up on January 1, 1997, to enforce a No-Fly Zone north of 36°N as part of UNSCR 688. As of December 31, 1997, the Air Force had deployed over 1,200 personnel and had flown over 3,325 sorties in support of Operations Provide Comfort and Northern Watch (72 percent of the coalition total). Space-based assets provided missile warning and other critical support for these operations.

- **Air Expeditionary Force (AEF) Deployments.** AEFs provide the nation a very mobile, lethal, and highly capable flexible deterrence option, giving theater and joint force commanders a wide range of airpower options to meet their specific needs. AEF options can be applied to the full spectrum of military operations. AEF V, which deployed to Bahrain in late 1997, accounted for 444 sorties in support of Operation Southern Watch during its deployment. It was the first AEF to include bombers—significantly increasing its firepower.
- **Counterdrug Operations.** The Air Force continued to play a major role in the fight against the illicit drug trade. Aerostat radar balloons are deployed along the southern U.S. border, while military working dog teams patrol border entry points and seaports. AWACS and ground surveillance radars monitor known and suspected drug transit and source zones in South America. Air National Guard fighter aircraft routinely identify drug smuggling aircraft, while Civil Air Patrol aircraft provide transportation for law enforcement agencies and assist in the detection and eradication of marijuana crops within the continental United States. Air Force Reserve aircraft and personnel supported drug enforcement agencies by providing imagery, transportation, and intelligence analysis.

- **Disaster Relief.** In April 1997, severe flooding occurred in North Dakota and Minnesota. Grand Forks AFB, North Dakota, was made the support installation for the area and provided over 25,000 civilians and military personnel with shelter and support.

In September 1997, Air Force civil engineers from Aviano Air Base and Camp Darby, Italy, deployed to central Italy to assist with local disaster relief efforts following the most destructive earthquake to hit the region in more than 80 years. More than 30 members of the 31st Civil Engineer Squadron and 31st RED HORSE flight cleared land and trucked in gravel to pave the way for Italian crews to set up temporary, prefabricated shelters for the nearly 4,000 displaced residents.

In October 1997, three Wyoming Air National Guard C-130 aircraft, crews, and support personnel from the 153rd Airlift Wing deployed to Indonesia to provide firefighting assistance. The crews flew hundreds of hours during their 60-day deployment, using their specially equipped C-130s to suppress widespread fires. This support provided the government of Indonesia sufficient time to organize follow-on indigenous and commercial support to battle the remaining fires.

- **Other Major Contributions.** In 1997, the Air Force supported noncombatant evacuation operations during Operation Bevel Edge in Cambodia; Operation Silver Wake in Albania; and Operation Guardian Retrieval in the former Zaire. In addition, the Air Force provided support for the Economic Community of West African States Military Observer Group during Operation Assured Lift; Cuban Flotilla operations during Operation Monitor; aeromedical evacuation support for the President of Guyana; and Kurdish refugee support during Operation Pacific Haven.

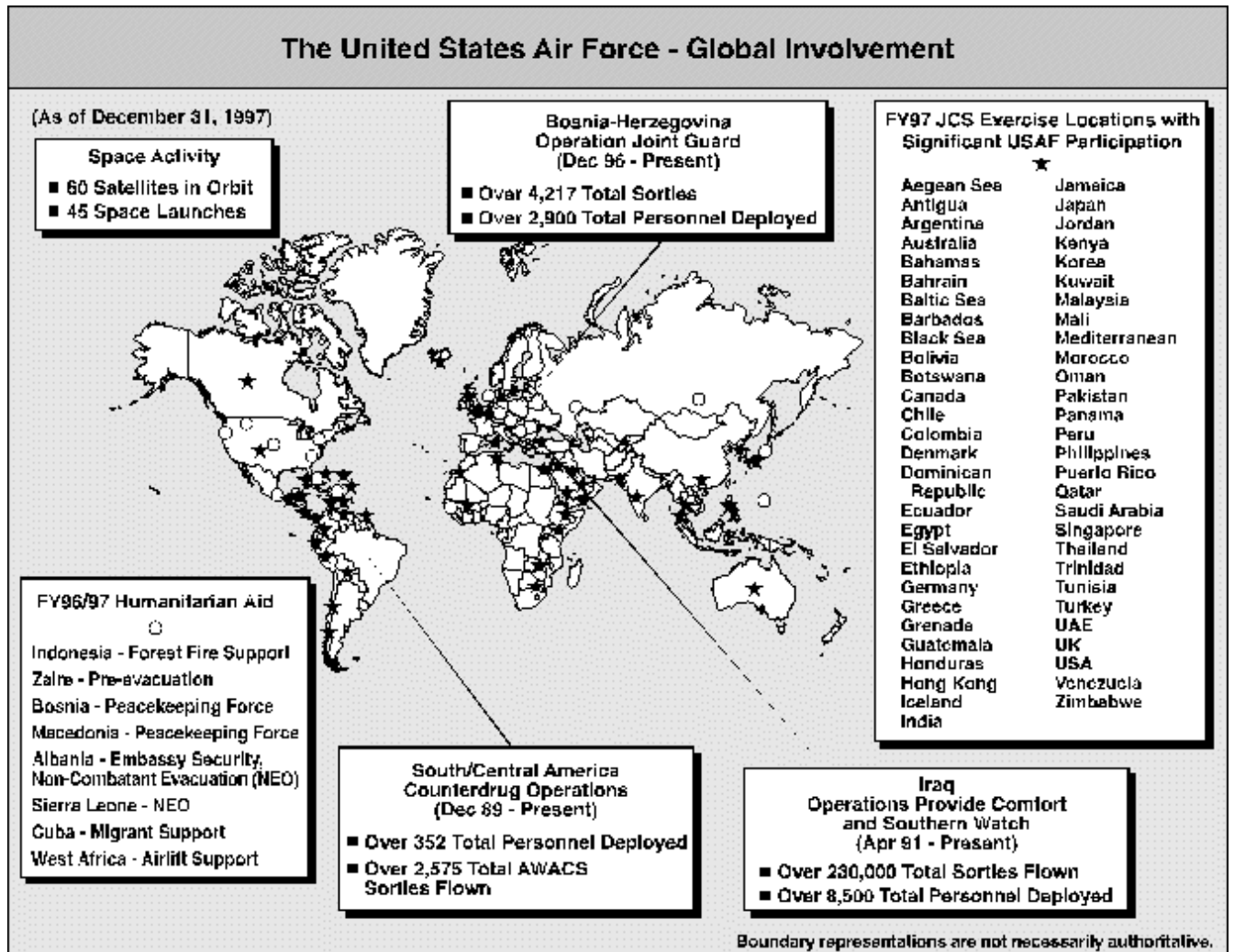
- **Cooperative Engagement.** With the changing nature of modern warfare and a growing reliance on the military capabilities of friends and allies, the Air Force seeks to enhance its relationships with the militaries of other countries. Recently, the focus of Air Force constructive engagement and stability enhancement efforts have been in our Partnership for Peace military contact program and in security assistance, which includes Foreign Military Sales (FMS), International Military Education and Training (IMET), and the Armaments Cooperation Program.

In 1997, the Air Force participated in over 20 exercises with approximately 25 Partnership for Peace countries. A shining example was CENTRAZBAT 97, a combined exercise consisting of forces from the United States, Kazakhstan, Uzbekistan, Kyrgyzstan, Russia, and Turkey. Air Force participation included eight C-17s which flew 7,800 miles nonstop to air drop troops and equipment from Fort Bragg, North Carolina, in Central Asia—in the world's longest air drop mission.

Currently, the Air Force FMS program is managing over 4,600 active contracts for aircraft, spare parts, munitions, and training worth over \$107 billion. In addition, in 1997, over 5,000 foreign military members from about 100 countries received training under the IMET program. The Air Force also maintains 220 agreements under the Armaments

Cooperation Program in an effort to sustain and enhance our relations and ensure two-way information flow with our allies and coalition partners.

- **Space Operations.** The Air Force is committed to assured access to space. Thus far, 1997 was the busiest year for Air Force space operations. The two major Air Force ranges, Vandenberg AFB, California, and Patrick AFB, Florida, conducted 45 successful space and missile launches, including range support and support services for every government and commercial launch of the Space Shuttle, Pegasus, Atlas, Delta, Titan IV, and Athena II boosters. In addition, the Air Force Satellite Control Network maintained a 99.5 percent mission effectiveness rate with over 159,000 satellite contacts.



On February 23, 1997, the first Titan IVB was launched to insert a Defense Support Program missile warning satellite into orbit. The Titan IVB's upgraded solid rocket motors give it a 25 percent increase in payload capacity, as well as greater reliability. On November 7, our Service set a new mark with the third successful launch of America's heavy lift Titan IV within a 23 day period, eclipsing the previous record of 65 days set in

1996. The Titan IV has a 95.7 percent success rate since launching the first of 23 mission payloads into space in June 1989.

Despite the failure of a Delta II launch vehicle in January, there was a total of ten successful Delta launches in 1997. This included the launch of a next-generation global positioning satellite in July 1997. This launch replenished the GPS operational constellation of 24 satellites and ensures a continuous GPS signal will remain available for precise navigation operations worldwide.

Enhancing space support to the warfighter remains a top priority for our space operators. In the area of military satellite communications, Milstar satellites are now providing secure, jam-resistant, nuclear survivable command and control communications to the East Atlantic and European theaters. In Bosnia, the Joint Broadcast System used direct satellite broadcasts to transmit live Unmanned Aerial Vehicle images and other large digital products to theater commanders and supporting forces—dramatically increasing their global situational awareness. Meanwhile, the Global Broadcast Service is progressing toward its first launch in 1998 and will give our forces similar broadcast services worldwide.

OUR FOUNDATION—PEOPLE

Quality people define our Air Force. Wherever we are called upon to serve or whatever we are called upon to do, it is the dedication and professionalism of our people that makes us the world's premier air and space force.

Core Values

On January 1, 1997, the Secretary of the Air Force published the Air Force Core Values pamphlet addressing the high standards and professionalism required of Air Force people. Air Force core values—integrity first, service before self, and excellence in all we do—exist for all members of the Air Force family, whether officer, enlisted, civil servant, or contractor. Strong core values promote confidence within the ranks and demonstrate to the American people that our military forces are worthy of their trust and support. For this reason, we have thoroughly integrated core values into every aspect of our education and training programs.

Leadership Training

Although the Air Force has always placed emphasis on leadership, the accelerated rate of change today requires leaders, both civilian and military, who are prepared to confront a variety of complex issues. Leadership is the cornerstone of our education and training architecture, from Airman Leadership School to Air War College.

Quality of Life

In balance with modernization and readiness, quality of life investments continue to be a top priority for the Air Force. The greatest return on this investment is seen in terms of the

recruitment and retention of quality people for our highly technical aerospace missions. Our corporate strategy is to pursue initiatives supporting seven quality of life priorities that satisfy a broad range of needs and expectations: fair and equitable compensation; safe, affordable, and adequate housing; quality health care; balanced TEMPO; robust community programs; a stabilized retirement system; and expanded educational opportunities.

- **Compensation.** Compensation continues to be a primary focus for our Total Force quality of life agenda. It has the most direct impact on standards of living. Specifically, we need congressional support to continue to provide competitive annual compensation packages.
- **Housing.** Access to safe, affordable, and adequate housing is essential. In August 1997, our unaccompanied airmen began moving into our first new one-plus-one dormitories (one person per sleeping room with a shared kitchen and bath) at McChord AFB, Washington. We are moving into the second phase of implementation of the private-room assignment policy for existing dormitories. We have a responsibility to provide the same level of quality housing for our overseas installations, such as those in Korea, where the lack of unaccompanied housing has force protection implications.

For Air Force families, we need to revitalize over 58,000 housing units that have an average age over 34 years. Privatization offers an opportunity for accelerated revitalization. At Lackland AFB, Texas, a privatization project appears feasible to replace 272 housing units and construct 148 new units on base. At Robins AFB, Georgia, the Air Force is developing a privatization project for 670 units in a neighborhood immediately off base. We will implement this innovative approach where it is economically and financially feasible.

- **Health Care and Medical Initiatives.** Air Force families demand and deserve quality health care. The Air Force operates 46 of the Department's 115 hospitals and 33 of its 471 clinics. Each of these facilities is accredited by the Joint Commission on Accreditation of Healthcare Organizations, and meets the same standards as civilian hospitals. For the past five years, average accreditation scores for military hospitals have exceeded the average civilian scores. Furthermore, 17 percent of Air Force facilities received accreditation with commendation—the highest rating available—compared to 12 percent in the civilian sector.

TRICARE is the DoD strategy designed to make community health care a life support system for military operations. TRICARE combines military and civilian medical capabilities to provide care for active duty and CHAMPUS-eligible individuals. The program will be fully implemented by spring 1998. Current law prohibits older retirees from participating in TRICARE. A tri-Service task force is looking into alternatives for their care, as the expansion of TRICARE reduces space-available care used by retirees. One step in meeting the commitment to care for this group is Medicare Subvention legislation. This allows Medicare reimbursement for medical care provided in DoD facilities to Medicare-eligible beneficiaries. Congress passed legislation in July 1997

authorizing a Medicare Subvention demonstration project for military retirees that will begin in 1998 and involve several Air Force medical treatment facilities.

- **Balanced Tempo.** TEMPO, the measure of how hard our people are working, is comprised of two parts—OPTEMPO and PERSTEMPO. OPTEMPO measures a weapon system's or unit's activity level, while deployed or at home station. It includes operational and contingency deployments, training and exercises, home station or base support, and professional development and education. PERSTEMPO is the measure of an individual's temporary duty away from home station. Since 1989, deployment requirements have quadrupled, while permanent forward basing and end strength have decreased by 66 percent and 37 percent respectively.

Our objective is to maintain a reasonable TEMPO that balances the needs of the mission with the quality of life of our people. On an individual level, the Air Force desired maximum days an individual should be away from his or her home station is 120 days per year. Rising TEMPO has caused certain systems, skills, and individuals to exceed the desired maximum. Ongoing Air Force efforts to reduce TEMPO include reducing the number of inspections and non-vital deployments; extending the time between competitions; and periodic stand-downs. We have implemented a new tracking system that allows our commanders to manage TEMPO from individual, unit, major command, and Service-wide perspectives.

- **Community Programs.** Air Force community programs are designed to help active duty members with their dual responsibilities as military members and parents. They provide childcare, before and after school programs for children 6-12 years of age, youth centers for teens, and family support centers to help individuals cope with family separations.

- **Retirement.** Our continuing objective with respect to retirement pay is to preserve its value and to protect this benefit as a strong retention tool.

- **Education.** A fully-funded tuition assistance program and exploitation of distance learning technologies remain the two key components of our quality of life-related educational programs.

Equal Opportunity Programs

We are committed to treating our people fairly. However, when a member has concerns that discrimination or harassment exists, the Air Force maintains two programs—the military equal opportunity and civilian equal employment opportunity programs—to investigate and correct problems. To ensure the programs meet our objectives, we are conducting a review to find ways to make them better. We expect to complete this review in 1998.

Recruiting and Retention

The Air Force must continue to recruit and retain high quality people to lead us into the 21st century. While we continue to meet our recruiting goals with high quality recruits, our recruiters

are facing increased challenges. Ample opportunity to attend college, a robust economy with low unemployment, military drawdowns, and highly visible U.S. commitments abroad have decreased the pool of interested qualified potential recruits. Annual youth attitude surveys show that although the percentage of young women interested in serving in the Air Force has remained relatively constant since 1989, the interest of young men in serving has dropped from 17 percent to 12 percent over the same period. There has also been a decrease in the number of enlistees scoring in the top half on the Armed Forces Qualification Test (down to 79 percent from 88 percent in FY 1989).

Beyond trends in recruitment, reenlistment rates declined in the first- and second-term categories. First-term reenlistments are down 3 percentage points from 1996, while second-term reenlistments are down 5 percentage points from 1996. For our rated force, pilot retention rate declined 6 percentage points in 1997, while navigator retention declined 2 percentage points. Continued emphasis on reducing TEMPO and enhancing the quality of life of our people are key to reversing these trends.

CONCLUSION

The Air Force is committed to serve this nation across the spectrum of conflict, anytime and anywhere on the globe. To maintain this capability we will continue to operate as a Total Force, modernize for the future, exercise smart stewardship of resources, and recruit and retain the world's finest aerospace team. Our vision for the future, *Global Engagement*, is guiding our efforts in these areas to ensure the United States remains the world's preeminent air and space power into the next millennium.

/signed/

F. Whitten Peters

Acting Secretary of the Air Force

REPORT OF THE CHAIRMAN OF THE RESERVE FORCES POLICY BOARD

Thank you for this opportunity to present a summary of the Reserve Forces Policy Board's (Board) observations and recommendations of the past year. The Board's annual report will present a comprehensive view of key issues and programs, and include a summary of the Board's positions and recommendations on specific issues.

This year was special because the Board celebrated the 50th anniversary of its origin. In the fall of 1947, as the initial step in compliance with the wishes of Congress under the National Security Act, the first Secretary of Defense, James Forrestal, appointed the Committee on Civilian Components under the chairmanship of Mr. Gordon Gray, then Assistant Secretary of the Army. The Committee's purpose was to strengthen all elements of the Reserve components of the armed services. This Committee was the forerunner of the present Board.

The Board serves as an independent policy advisor to the Secretary of Defense on matters relating to the Reserve components. Representatives from each of the Service Secretariats, active components, and Reserve components serve as Board members. The Board offers independent advice on Reserve strengths, readiness, and other critical Reserve component issues. The Reserve component Board members represent a wide range of industrial, business, professional, and civic experience, in addition to their military expertise.

Although the Board normally meets four times a year, in 1997 it met seven times. Additionally, through the use of teleconferencing and e-mail, its ad hoc committees operated virtually full time. The Board departed from its normal meeting format and, in coordination with the National Security Program, John F. Kennedy School of Government, Harvard University, and National Defense University, conducted three separate symposiums entitled Total Force 2010. The symposium format was chosen because it afforded the opportunity for personal interaction among the range of persons from whom input was sought. The symposiums were also structured to develop specific recommendations in a relatively short period. The Board deliberately chose to go well outside its own membership in selecting symposium participants. In addition to congressional representatives, participants included experts from academia, industry, Reserve and Guard Associations, think tanks, the General Accounting Office, the Departments of Defense and Transportation, state and local governments, and Reserves from friendly and allied governments.

In its congressionally mandated role as an independent advisor to the Secretary of Defense on Guard and Reserve issues, the Board maintained a strong interest in the portrayal of the Reserve components throughout the Quadrennial Defense Review (QDR) process and the National Defense Panel (NDP). It has long been the opinion of the Board that with a consistent, defense-wide approach to Total Force integration, the nation could gain more combat capability and could expect peacetime support from America's citizen-military. Since the end of the Cold War, the active component has been cut by a third, yet missions and deployments have tripled. The Reserve components have been fully accessible in the post-Cold War era, resulting in the operating tempo (OPTEMPO) of the Reserve components increasing significantly. It was with this thesis that the Board embarked on this symposium series. The Board considered the many

aspects and implications of full integration of Guard and Reserve forces with their respective active military Service.

The first symposium took place in Theodore Roosevelt Hall, Fort McNair, Washington, DC, and sought to describe the Total Force integration needed to win on the battlefield. It succeeded in identifying integration issues for consideration in the QDR process. The Board also submitted the following three recommendations to the Secretary of Defense:

- That the Secretary of Defense and Chairman, Joint Chiefs of Staff direct the QDR to ensure Total Force structure decisions be made based on Joint Force Requirements Determination rather than traditional approach of preserving Service force structure.
- That the Secretary of Defense hold the Service chiefs accountable for Reserve component readiness. Inherent in this responsibility are common metrics, capabilities, equipment standards, and readiness tailored to assigned mission.
- That the Secretary of Defense direct the Services to identify and eliminate the cultural and structural barriers to effectively integrate active and Reserve components by September 2000.

The second symposium met in Cambridge, Massachusetts. The Cambridge Experience, as the second symposium became known, sought to identify long-term means for enhancing the integration of forces by the year 2010. Some of the recommendations included:

- The creation of a category of Reserve who are available for long-term augmentation to the active forces, yet remain under the Reserve flag.
- The mobilization process, to include all enabling legislation, should be redesigned to facilitate the increased use of the Guard and Reserve.
- Strong consideration should be given to increasing the missions of the Guard and Reserve, especially for the purpose of freeing up flexible full-time members for modernization, reducing OPTEMPO, and executing military operations other than war.
- Identify policies, and new tools and incentives for attracting and retaining Guard and Reserve personnel in the year 2010.

The third symposium, held at the National War College, allowed the Board to finalize recommendations on the programmatic and systematic changes necessary for the Guard and Reserve to be fully optimized. This symposium investigated post-QDR integration alternatives to allow the Total Force to be effective and efficient at all levels of war, in all environments; to keep peace throughout the world conducting operations other than war; and to build international political, economic, and military relationships supporting the military strategy of peacetime engagement.

These symposiums were designed to afford the QDR and the NDP innovative thinking regarding Reserve component employment and integration with the active component. Additionally, the symposiums provided the Secretary of Defense with improvements and alternatives to the QDR that reasonably meet political, fiscal, and military realities. The QDR will be influenced by budget challenges, how two major theater wars will be fought, grassroots support at home, forward presence, civilian oversight, modernization, state governors and political influence, as well as Reserve component peacetime participation. The main outcome of the three symposiums was the need for a Total Force integration policy. The symposiums also identified Reserve component roles and missions, and other alternatives in conjunction with the QDR and NDP.

The Office of the Assistant Secretary of Defense for Reserve Affairs, in conjunction with the Board, developed and coordinated a Total Force integration policy. The Secretary of Defense emphasized the integration of the Reserve and Active components in a memorandum to all Department of Defense leaders and commanders on September 4, 1997. The Secretary asked that an environment be created that eliminates all residual barriers—structural and cultural—for effective integration within the Total Force. The Secretary defines integration as "the conditions of readiness and trust needed for the leadership at all levels to have well-justified confidence that Reserve component units are trained and equipped to serve as an effective part of the joint and combined force within whatever timelines are set for the unit—in peace and war." The memorandum states that only when the following four basic principles are achieved throughout the Department of Defense will Total Force be a reality:

- Clearly understood responsibility for and ownership of the Total Force by senior leaders throughout the Total Force.
- Clear and mutual understanding of the missions of each unit—active, Guard and Reserve—in Service and joint/combined operations, during peace and war.
- Commitment to provide the resources needed to accomplish assigned missions.
- Leadership by senior commanders—active, Guard and Reserve—to ensure the readiness of the Total Force.

The 21st century goal is to have a seamless Total Force that provides the National Command Authorities the flexibility and interoperability necessary for the full range of military operations.

During the year, the Board addressed a number of issues of concern to the Guard and Reserve. The Board recommends allowing Reserve members to obtain government rates when purchasing tickets for travel to inactive duty training. The cost incurred by Reservists traveling to inactive duty training impacts recruiting and retention of skilled Reservists and thus affects readiness. As Reservists participate in more operational missions and perform more duty, more travel at the individual Reservist's expense will be required. Today's Reservists are highly mobile, skilled workers whose civilian occupations often require relocation and quite often a longer commute. The Board is also reviewing issues on parity of pay and benefits for active and Reserve service; a single pay and personnel system; the availability of medical benefits for dependents of Reservists

on active duty less than 31 days; and the continuing push for a Joint Total Force SMART ID card.

Considerable attention and discussion focused on producing a vision statement for the role of the Guard and Reserve. The Board's vision is: "To enhance national defense, the Reserve components must be fully integrated, ready forces with relevant missions, able to operate across the entire spectrum of military requirements."

In addition to the vision statement, the Board recommended nine guiding principles to follow when utilizing the Reserve component. The nine guiding principles are:

- The nation should place maximum reliance on the Reserve components and, when utilized, put them as close to the fight as possible.
- Reserve components must participate at policy, planning, and decision making levels.
- Reserve components must be resourced, equipped, and trained to meet requirements.
- Utilization of the Reserve components against threats to national security promotes national will.
- To be a credible force, each Reserve component must be trained to operate the primary weapon systems of its Service.
- Active and Reserve component systems must be interoperable.
- The process to access the Reserve components should be easy, fast, and funded.
- Commanders in chief must state the requirements and then allow the Services and their Reserve components the flexibility to satisfy the requirements.
- Combat capability can be cost effectively maintained in the Reserve components if resourced and trained at the proper unit level.

The world political, economic, and strategic situation continues to change more rapidly than our evolving military force structure. Some of our former enemies are now friends. World events have caused a slight shift from the possibility of two major theater wars to smaller-scale contingencies. The Department of Defense enforces embargoes and no-fly zones on other nations, stations peacekeeping forces on several continents, evacuates noncombatants from warring countries, and helps establish legitimate governments in other nations. Most of the missions involve the Total Force. We must continue to maximize the core advantages of the Reserves in both smaller-scale contingencies and major theater war.

The Reserve Forces Policy Board's annual report, entitled *Reserve Component Programs, Fiscal Year 1997*, is scheduled for publication in March 1998. It will provide more detailed information regarding Reserve component programs and issues.

/signed/
Terrence M. O'Connell
Chairman

Appendix B BUDGET TABLES

DEPARTMENT OF DEFENSE — BUDGET AUTHORITY BY APPROPRIATION ^{a,c} (\$ IN MILLIONS)							Table B-1	
	FY92 ^b	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999
Current Dollars								
Military Personnel	81,221	75,974	71,365	71,557	69,775	70,338	69,666	70,777
O&M	93,791	89,172	88,341	93,751	93,658	92,353	94,386	94,801
Procurement	62,952	52,789	44,141	43,572	42,420	42,932	44,823	48,706
RDT&E	36,623	37,974	34,567	34,522	34,972	36,404	36,600	36,079
Military Construction	5,254	4,554	6,009	5,426	6,893	5,715	5,089	4,301
Family Housing	3,738	3,941	3,501	3,393	4,260	4,131	3,807	3,477
Defense-wide Contingency								1
Revolving & Mgmt Funds	4,587	4,503	4,354	5,260	3,061	7,534	1,892	400
Trust & Receipts	-5,733	-435	-809	-1,648	-331	-1,250	-1,214	-1,120
Deduct, Intragovt Receipt	-550	-1,069	-104	-180	-291	-186	-141	-164
Total, Current \$	281,883	267,402	251,364	255,652	254,417	257,971	254,909	257,258
Constant FY 1998 Dollars								
Military Personnel	98,824	88,595	81,199	79,482	75,754	74,247	71,667	70,777
O&M	109,807	101,674	98,400	102,352	99,988	96,467	96,078	94,801
Procurement	71,028	58,389	47,925	46,473	44,490	44,326	45,571	48,706
RDT&E	41,646	42,311	37,751	36,981	36,761	37,612	37,217	36,079
Military Construction	5,957	5,060	6,545	5,807	7,249	5,914	5,181	4,301
Family Housing	4,241	4,375	3,807	3,625	4,466	4,261	3,866	3,477
Defense-wide Contingency								1
Revolving & Mgmt Funds	5,261	5,030	4,4592	5,662	3,245	7,783	1,935	400
Trust & Receipts	-6,521	-483	-881	-1,761	-347	-1,287	-1,232	-1,120
Deduct, Intragovt Receipt	-626	-1,188	-114	-192	-305	-191	-143	-164
Total, Constant \$	329,619	303,763	279,090	278,429	271,301	269,133	260,139	257,258
% Real Growth								
Military Personnel	-6.2	-10.4	-8.4	-2.1	-4.7	-2.0	-3.5	-1.3
O&M	-20.3	-7.4	-3.2	4.0	-2.3	-3.5	-0.4	-1.3
Procurement	-14.2	-17.8	-17.9	-3.0	-4.3	-0.4	2.8	6.9
RDT&E	-1.4	1.6	-10.8	-2.1	-0.6	2.3	-1.1	-3.1
Military Construction	-1.1	-15.1	29.3	-11.3	24.8	-18.4	-12.4	-17.0
Family Housing	10.9	3.1	-13.0	-4.8	23.2	-4.6	-9.3	-10.1
Total	0.1	-7.9	-8.1	-0.2	-2.6	-0.8	-3.4	-1.1

^a Numbers may not add to total due to rounding.

^b In FY 1991-92, abrupt increases in budget authority, especially O&M, were due to the incremental costs of Operation Desert Shield/Storm. The FY 1991-92 sharp rise in receipts reflects offsetting allied contributions.

^c Tables B-1 and B-2 show the total DoD budget, which consists of both discretionary spending and direct spending. These terms were defined by the Balanced Budget and Emergency Deficit Control Act of 1985 (commonly known as the Gramm-Rudman-Hollings Act), which was extended and amended extensively by the Budget Enforcement Act of 1990 and the Omnibus Budget Reconciliation Act of 1993. Discretionary spending is controlled through annual appropriations acts. Direct spending (sometimes called mandatory spending) occurs as a result of permanent laws. For DoD, mandatory spending consists of offsetting receipts, totaling nearly \$1.4 billion in FY 1998. The 1997 Balanced Budget Act included dollar limits (caps) on discretionary spending by the federal government.

DEPARTMENT OF DEFENSE — BUDGET AUTHORITY BY COMPONENT ^a (DOLLARS IN MILLIONS)									Table B-2
	FY1991 ^b	FY1992 ^{b,c}	FY1993 ^c	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999
Current Dollars									
Army	91,825	73,636	64,803	62,470	63,268	64,505	64,418	60,534	63,815
Navy	103,470	90,311	83,198	78,055	76,873	79,966	79,531	80,921	81,337
Air Force	91,257	82,340	79,146	74,575	73,932	72,992	73,216	74,410	76,658
Defense Agencies/OSD/JCS	21,134	29,151	22,158	19,380	21,120	22,269	22,444	22,661	22,790
Defense-wide	-31,477	6,445	18,097	16,883	20,460	14,686	18,366	16,382	12,658
Total, Current \$	276,208	281,883	267,402	251,364	255,652	254,417	257,974	254,909	257,258
Constant FY 1998 Dollars									
Army	110,666	87,322	74,352	70,044	69,379	69,160	67,467	61,991	63,815
Navy	122,957	105,617	94,742	86,609	83,731	85,231	82,996	82,552	81,337
Air Force	107,352	95,948	89,583	82,576	80,556	77,854	76,387	75,829	76,658
Defense Agencies/OSD/JCS	25,136	33,394	24,869	21,347	22,782	23,548	23,287	23,092	22,790
Defense-wide	-36,956	7,338	20,218	18,514	21,981	15,507	18,998	16,675	12,658
Total, Constant \$	329,155	329,619	303,763	279,090	278,429	271,301	269,136	260,139	257,258
% Real Growth									
Army	11.8	-21.1	-14.9	-5.8	-1.0	-0.3	-2.5	-8.1	2.9
Navy	-1.2	-14.1	-10.3	-8.6	-3.3	1.8	-2.6	-0.5	-1.5
Air Force	-7.0	-10.6	-6.6	-7.8	-2.5	-3.4	-1.9	-0.7	1.1
Defense Agencies/OSD/JCS	9.3	32.9	-25.5	-14.2	6.7	3.4	-1.1	-0.8	-1.3
Defense-wide	-1134.9	-119.9	175.5	-8.4	18.7	-29.5	22.5	-12.2	-24.1
Total	-9.9	0.1	-7.9	-8.1	-0.2	-2.6	-0.8	-3.4	-1.1

^a Number may not add to total due to rounding. Entries for the three military departments include Retired Pay accrual.

^b FY 1990-93 data for the three departments and defense agencies includes Gulf War incremental costs, FY 1991-93 defense-wide entries include appropriations that made available allied cash contributions to offset these incremental costs.

^c In FY 1992, \$9.1 billion was shifted from the Services to defense agencies/OSD for the new Defense Health Program (DHP). In FY 1993, the DHP began being reflected in the defense-wide line.

FEDERAL BUDGET TRENDS (DOLLARS IN MILLIONS)						Table B-3
Fiscal Year	Federal Outlays as a % of GNP	DoD Outlays as a % of Federal Outlays	DoD Outlays as a % of GDP	Non-DoD Outlays as a % of Federal Outlays	Non-DoD Outlays as a % of GDP	DoD Outlays as a % of Net Public Spending ^a
1950	15.6	27.4	4.3	72.6	11.3	18.5
1955	17.3	51.4	8.9	48.6	8.4	35.5
1960	17.8	45.0	8.0	55.0	9.8	30.3
1965	17.2	38.8	6.7	61.2	10.5	25.2
1970	19.4	39.4	7.6	60.6	11.7	25.4
1971	19.5	35.4	6.9	64.6	12.6	22.4
1972	19.6	32.5	6.4	67.5	13.2	20.6
1973	18.8	29.8	5.6	70.2	13.2	19.0
1974	18.7	28.8	5.4	71.2	13.3	18.2
1975	21.4	25.5	5.5	74.5	15.9	16.5
1976	21.5	23.6	5.1	76.4	16.4	15.4
1977	20.8	23.4	4.8	76.6	15.9	15.5
1978	20.7	22.5	4.7	77.5	16.1	15.2
1979	20.2	22.8	4.6	77.2	15.6	15.4
1980	21.7	22.5	4.9	77.5	16.8	15.3
1981	22.2	23.0	5.1	77.0	17.1	15.8
1982	23.2	24.7	5.7	75.3	17.5	16.9
1983	23.6	25.4	6.0	74.6	17.6	17.3
1984	22.3	25.9	5.8	74.1	16.6	17.5
1985	23.1	25.9	6.0	74.1	17.1	17.6
1986	22.6	26.8	6.1	73.2	16.6	17.9
1987	21.8	27.3	6.0	72.7	15.9	17.6
1988	21.5	26.5	5.7	73.5	15.8	17.0
1989	21.4	25.8	5.5	74.2	15.9	16.5
1990	22.0	23.1	5.1	76.9	16.9	14.8
1991	22.6	19.8	4.5	80.2	18.1	12.6
1992	22.5	20.7	4.7	79.3	17.8	13.1
1993	21.8	19.8	4.3	80.2	17.5	12.4
1994	21.4	18.4	3.9	81.6	17.5	11.6
1995	21.1	17.2	3.6	82.8	17.5	10.8
1996	20.8	16.2	3.4	83.8	17.5	10.1

^a Federal, state, and local net spending excluding government enterprises (such as the postal service and public utilities) except for any support these activities receive from tax funds.

Appendix C PERSONNEL TABLES

MILITARY AND CIVILIAN PERSONNEL STRENGTH ^{a,b} (END FISCAL YEAR — IN THOUSANDS)												Table C-1	
	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98 ^f	FY 99 ^h
Active Component													
Army	780.8	771.8	769.7	750.6	725.4	611.3	572.4	541.3	508.6	491.1	491.7	488.0	488.0
Navy	586.8	592.6	592.7	582.9	571.3	541.9	510.0	468.7	434.6	416.7	395.6	386.9	372.7
Marine	199.5	197.4	197.0	196.7	195.0	184.6	178.4	174.2	174.6	174.9	173.9	173.0	172.2
Air Force	607.0	576.4	570.9	539.3	510.9	470.3	444.4	426.3	400.4	389.0	377.4	371.4	370.9
Total	2174.1	2138.2	2130.2	2069.4	2002.6	1808.1	1705.1	1610.5	1518.2	1471.7	1438.6	1419.3	1395.8
Reserve Component Military (Selected Reserve)													
ARNG	451.9	455.2	457.0	437.0	441.3	426.5	409.9	369.9	374.9	370.0	370.0	361.5	357.0
Army Reserve	313.6	312.8	319.2	299.1	299.9	302.9	275.9	259.9	241.3	226.2	212.9	208.0	208.0
Naval Reserve	148.1	149.5	151.5	149.4	150.5	142.3	132.4	107.6	100.6	98.0	95.3	94.3	90.8
MC Reserve	42.3	43.6	43.6	44.5	44.0	42.3	41.7	40.7	40.9	42.1	42.0	40.9	40.0
ANG	114.6	115.2	116.1	117.0	117.6	119.1	117.2	113.6	109.8	110.5	110.0	108.0	107.0
Air Force Reserve	80.4	82.1	83.2	80.6	84.3	81.9	80.6	79.6	78.3	73.7	72.0	73.4	74.2
Total	1150.9	1158.4	1170.6	1127.6^c	1137.6^d	1114.9	1057.7	998.3	945.8	920.4	902.2	886.1	877.1
Civilian^e													
Army	416.9	406.2	401.5	398.4	369.6	364.5	327.3	289.5	272.7	258.6	246.7	245.2	240.3
Navy	349.7	351.5	350.2	349.0	331.8	319.5	295.0	276.5	259.3	239.9	222.6	215.1	212.0
Air Force	264.7	256.2	258.6	255.4	235.0	215.0	208.2	196.6	188.9	182.6	180.0	178.2	169.6
DoD Agencies	95.8	97.6	97.1	99.6	112.4	139.4	153.6	154.0	144.3	137.6	136.5	131.2	124.7
Total	1127.1	1111.4	1107.4	1102.4	1048.7	1038.4	984.1	916.5	865.2	818.7	798.8	769.8	746.5

^a As of September 30, 1997.

^b Numbers may not add to totals due to rounding.

^c Does not include 25,600 members of the Selected Reserve who were activated for Operation Desert Shield, displayed in the FY 1990 active strength total and paid for from the Active Military Personnel Appropriations account.

^d Does not include 17,059 members of the Selected Reserve who were activated for Operation Desert Shield/Storm, displayed in the FY 1991 active strength total and paid for from the Active Military Personnel Appropriations account.

^e Includes direct and indirect hire civilian full-time equivalents.

^f FY 1998 National Defense Authorization Act.

^g Projected in FY 1999 President's Budget.

^h Subject to finalization of President's Budget.

U.S. MILITARY PERSONNEL IN FOREIGN AREAS (END FISCAL YEAR — IN THOUSANDS) ^{a,b}											Table C-2	
	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92 ^b	FY 93	FY 94 ^d	FY 95	FY 96	FY 97
Germany	250	251	249	249	228	203	134	105	88	73	49	60
Other Europe	75	73	74	71	64	62	54	44	41	37	62 ^e	48
Europe, Afloat	33	31	33	21	18	20	17	17	9	8	4	3
South Korea	43	45	46	44	41	40	36	35	37	36	37	36
Japan	48	50	50	50	47	45	46	46	45	39	43	41
Other Pacific	17	18	17	16	15	9	3	1	1	1	1	1
Pacific Afloat (including Southeast Asia)	20	17	28	25	16	11	13	17	15	13	15	14
Latin America/ Caribbean	13	13	15	21	20	19	18	18	36 ^d	17	12	8
Miscellaneous	26	27	29	13	160	39 ^c	23	25	15	14	17	15
Total^c	525	524	541	510	609	448	344	308	287	238	240	226

^a As of September 30, 1996.

^b Numbers may not add to totals due to rounding.

^c Includes 118,000 shore-based and 39,000 afloat in support of Operation Desert Storm.

^d Includes 17,500 in Haiti and 4,000 afloat in the Western Hemisphere.

^e Includes 26,000 in the former Republic of Yugoslavia and Hungary in support of operations in Bosnia and Herzegovina.

Appendix D FORCE STRUCTURE TABLES

DEPARTMENT OF DEFENSE STRATEGIC FORCES HIGHLIGHTS ^a								Table D-1	
	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Land-Based ICBMs^b									
Minuteman II (1 warhead each) plus Minuteman III (3 warheads each)	880	737	625	535	530	530	500	500	500
Peacekeeper (10 warheads each)	50	50	50	50	50	50	50	50	50
Heavy Bombers (PAI)^c									
B-52	129	110	64	74	56	56	56	56	56
B-1	84	84	84	60	60	60	70	72	78
B-2	0	0	3	6	9	10	12	14	16
Submarine-Launched Ballistic Missiles^b									
Poseidon (C-3) and Trident (C-4) missiles on pre-Ohio-class submarines	176	96	48	0	0	0	0	0	0
Trident (C-4 and D-5) missiles on Ohio-class submarines	288	312	336	360	384	408	432	432	432

^a Force levels shown are for the ends of the fiscal years in question. Inventory levels for future years reflect the force structures supported by the FY 1998 budget. The actual force levels for FY 1999 and FY 2000 will depend on future decisions.

^b Number of operational missiles. Not in maintenance or overhaul status.

^c PAI = Primary Aircraft Inventory. PAI excludes backup and attrition reserve aircraft as well as aircraft in depot maintenance. Total inventory counts will be higher than the PAI figures given here.

DEPARTMENT OF DEFENSE GENERAL PURPOSE FORCES HIGHLIGHTS							Table D-2	
	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Land Forces								
Army Division								
Active	14	12	12	10	10	10	10	10
Reserve	8	8	8	8	8	8	8	8
Marine Corps Division								
Active	3	3	3	3	3	3	3	3
Reserve	1	1	1	1	1	1	1	1
Army Separate Brigades^a								
Active	7	7	3	3	3	3	3	3
Reserve	24	24	24	22	18	18	18	18
Army Special Forces Groups								
Active	5	5	5	5	5	5	5	5
Reserve	4	2	2	2	2	2	2	2
Army Ranger Regiments	1	1	1	1	1	1	1	1
Tactical Air Forces (PMAI/Squadron)^b								
Air Force Fighter and Attack Aircraft^c								
Active	1131/56	966/53	936/53	936/52	936/52	936/52	906/49	906/49
Reserve	816/42	639/40	576/38	504/40	504/40	504/40	549/38	549/38
Conventional Bombers								
B-1 (Active/Reserve)	0	0	0	0	0	36/18	36/18	36/18
Navy Fighter and Attack Aircraft								
Active	610/56	590/50	528/44	504/37	452/36	452/36	432/36	432/36
Reserve	116/10	90/7	38/3	38/3	38/3	38/3	36/3	36/3
Marine Corps Fighter and Attack Aircraft								
Active	330/23	320/22	320/23	320/23	308/21	308/21	280/21	280/21
Reserve	72/6	68/5	48/4	48/4	48/4	48/4	48/4	48/4
Naval Forces								
Strategic Forces Ships	24	19	16	17	18	18	18	18
Battle Forces	342	315	300	294	292	271	256	257
Support Forces Ships	51	41	37	26	26	26	23	23
Reserve Forces Ships	18	16	19	18	18	18	18	16
Total Ship Battle Forces	435	391	372	355	354	333	315	314
Mobilization Category B:								
Local Defense Mine Warfare Ships &	2	7	12	13	13	13	13	13
Total Other Forces^d	17	8	13	15	19	21	22	23

^a Includes the Eskimo Scout Group and the armored cavalry regiments.

^b Primary mission aircraft inventory (combat-coded aircraft only).

^c FY 2000 figures are tentative pending QDR implementation decisions.

^d Excludes auxiliaries and sealift forces.

DEPARTMENT OF DEFENSE AIRLIFT AND SEALIFT FORCE HIGHLIGHTS								Table D-3	
	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Intertheater Airlift (PMAI)^a									
C-5	109	109	107	104	104	104	104	104	104
C-141	234	214	214	199	187	163	143	136	104
KC-10 ^b	57	57	54	54	54	54	54	54	54
C-17	0	2	9	17	22	24	30	37	46
Intratheater Airlift (PMAI)^a									
C-130 ^c	417	380	424	428	432	430	388	389	388
Sealift Ships, Active^d									
Tankers	20	20	18	18	12	13	10	10	10
Cargo	40	40	51	51	49	48	48	50	50
Sealift Ships, Reserve									
RRF ^e	97	97	93	77	82	87	88	88	96

^a PMAI = Primary mission aircraft inventory for active and reserve components. The numbers shown reflect only combat support and industrial funded PMAI aircraft, not development/test or training aircraft.

^b Includes 37 KC-10s allocated to an airlift code.

^c Does not include Department of the Navy aircraft.

^d Includes fast sealift, afloat prepositioning, and common-user (charter) ships, including (through FY 1998) aviation support ships.

^e RRF = Ready Reserve Force. Vessels assigned to 4-, 5-, 10-, or 20-day reactivation readiness groups. Excludes RRF ships tendered to the Military Sealift Command. Ship counts for FY 1999 and FY 2000 include aviation support vessels.

Appendix E

GOLDWATER-NICHOLS ACT IMPLEMENTATION REPORT

This appendix contains the Department's Joint Officer Management Annual Report for FY 1997. Except for the progress/compliance with Section 619a, Title 10, United States Code, Tables E-2, E-5, reasons in Tables E-9 and E-11, and promotion objectives, the Joint Duty Assignment Management Information System was used to produce this report.

PROGRESS/COMPLIANCE WITH SECTION 619a, TITLE 10, U.S. CODE

Section 931 of the FY 1994 National Defense Authorization Act required each Service to develop and implement personnel plans to permit the orderly promotion of officers to brigadier general or rear admiral (lower half). As addressed by the certification report submitted to Congress in June 1995, these plans have been developed and fully implemented by the Department. The Services have continued to revise career development paths to accommodate early joint assignments; assign greater numbers of former 0-5/0-6 commanders and Senior Service College graduates to joint duty; educate the officer corps on joint education opportunities; and toughen the quality standards for Joint Specialty Officer designation.

The Department has made progress with implementing the results of the Department of Defense Inspector General report of November 1995 and the follow-up General Accounting Office report to Congress of September 19, 1997. Highlighting this progress has been the Implementation of the Joint Duty Assignment List Validation Board, which commenced reviewing assignments in joint organizations for compliance with the Goldwater-Nichols Act of 1986. The board has reviewed approximately 19 percent of all joint positions to date. Additionally, a DoD instruction and directive providing comprehensive policy guidance for joint management have both been signed and fully implemented.

The following brigadier general/rear admiral (lower half) promotion boards were completed during FY 1997 (does not include professionals):

CATEGORY	USA	USAF	USMC	USN
Number of officers selected for O-7	46	44	14	39
Number (percent) of officers joint qualified	28 (60%)	35 (80%)	6 (43%)	24 (62%)
Number of joint equivalency waivers used (percent)	2 (4%)	2 (5%)	0 (0%)	0 (0%)

The Department is committed to ensuring the completion of a joint duty assignment remains an essential element of an officer's ability to perform duties at the general/flag officer level. Attention will continue to be devoted to guarantee long term compliance with the personnel policy objectives of the Goldwater-Nichols DoD Reorganization Act of 1986.

SUMMARY OF JOINT SPECIALTY OFFICER (JSO) AND JOINT SPECIALTY OFFICER NOMINEE DESIGNATIONS FOR FY 1997					Table E-1
CATEGORY	USA	USAF	USMC	USN	TOTAL
Number of officers designated as JSOs	202	211	57	34	504
Number of officers designated as JSO nominees	563	752	56	389	1760
Number of JSO nominees designated under COS provisions	293	394	16	202	905

CRITICAL OCCUPATIONAL SPECIALTIES (COS)			Table E-2
USA	USAF	USMC	USN
Infantry	Pilot	Infantry	Surface
Armor	Navigator	Tanks/AAV	Submariner
Artillery	Command/Control Operations	Artillery	Aviation
Air Defense Artillery	Space/Missile Operations	Air Control/Air Support/Anti-air Warfare	SEALS
Aviation		Aviation	Special Operations
Special Operations		Engineers	
Combat Engineers			

SUMMARY OF OFFICERS ON ACTIVE DUTY WITH A CRITICAL OCCUPATIONAL SPECIALTY (AS OF SEPTEMBER 30, 1997)					Table E-3
CATEGORY	USA	USAF	USMC	USN	TOTAL
COS officers who have completed JPME	1582	1977	520	1341	5420
COS officers designated as JSOs	1059	993	413	814	3279
COS officers designated as JSO nominees	2122	2729	484	1840	7175
COS officers designated as JSO nominees who have not completed JPME	1505	1913	308	1383	5109
COS JSO nominees currently serving in a JDA	1061	1198	166	790	3215
COS JSO nominees who completed a JDA and are currently attending JPME	6	0	0	12	18

SUMMARY OF JSOs WITH CRITICAL OCCUPATIONAL SPECIALTIES WHO ARE SERVING OR HAVE SERVED IN A SECOND JOINT ASSIGNMENT (AS OF SEPTEMBER 30, 1997)					Table E-4
	USA	USAF	USMC	USN	TOTAL
Field Grade					
Have served*	198 (69)	195 (78)	25 (12)	37 (15)	455 (174)
Are serving*	158 (76)	147 (74)	19 (7)	63 (33)	387 (190)
General/Flag					
Have served*	19 (10)	23 (6)	9 (6)	13 (6)	64 (28)
Are serving*	12 (8)	24 (9)	6 (4)	7 (3)	49 (24)

*Number in parenthesis indicates number of second joint assignments which were to a critical joint position.

ANALYSIS OF THE ASSIGNMENT WHERE OFFICERS WERE REASSIGNED (IN FY 1997) ON THEIR FIRST ASSIGNMENT FOLLOWING DESIGNATION AS A JOINT SPECIALTY OFFICER					Table E-5
ASSIGNMENT CATEGORY	USA	USAF	USMC	USN	TOTAL
Command	82	18	8	6	114
Service HQ	12	5	8	7	32
Joint Staff critical	1	2	0	2	5
Joint Staff other	3	2	0	1	6
Other JDA critical	8	14	2	1	25
Other JDA	29	7	4	6	46
PME	4	17	1	5	27
Other Operations	25	18	4	6	53
Other Staff	28	3	3	12	46
Other Shore	—	—	—	10	10

*For the Marine Corps: Other Operations = Fleet Marine Force; Other Staff = Non-Fleet Marine Corps

AVERAGE LENGTH OF TOURS OF DUTY IN JOINT DUTY ASSIGNMENTS (FY 1997) (IN MONTHS)				Table E-6
GENERAL/FLAG OFFICERS				
	JOINT STAFF	OTHER JOINT	JOINT TOTAL	
USA	25.5	25.4	25.5	
USAF	16.7	25.4	24.5	
USMC	25.5	23.1	23.8	
USN	21.5	37.7	34.6	
DoD	22.5	27.4	26.7	
FIELD GRADE OFFICERS				
	JOINT STAFF	OTHER JOINT	JOINT TOTAL	
USA	33.7	37.4	37.0	
USAF	36.3	37.1	37.0	
USMC	36.0	39.1	38.8	
USN	37.2	38.3	38.2	
DoD	35.5	37.5	37.3	

SUMMARY OF TOUR LENGTH EXCLUSIONS FOR FY 1997					Table E-7
CATEGORY	USA	USAF	USMC	USN	TOTAL
Retirement	298	290	48	54	690
Separation	0	0	0	28	28
Suspension from duty	26	12	2	4	44
Compassionate/Medical	14	16	0	2	32
Other joint after promotion	36	2	0	0	38
Reorganization	10	0	2	2	14
Joint overseas-short tours	370	240	14	64	688
Joint accumulation	40	6	0	4	50
COS reassignment	210	296	56	254	816
TOTAL	1004	862	122	412	2400

JOINT DUTY POSITION DISTRIBUTION BY SERVICE (AS OF SEPTEMBER 30, 1997)					Table E-8
	JOINT STAFF	OTHER JOINT DUTY	TOTAL JOINT DUTY	TOTAL DOD JDAs%	TOTAL DOD OFFICERS %*
USA	274	2967	3241	34.9%	28.7%
USAF	281	3221	3502	37.7%	37.7%
USMC	68	476	544	5.8%	8.7%
USN	212	1791	2003	21.6%	24.9%
DoD	835	8455	9290	100.0%	100.0%

* Total Commissioned Officers: 0-3 through 0-10 less professional categories.

CRITICAL POSITIONS SUMMARY (AS OF SEPTEMBER 30, 1997)					Table E-9
CATEGORY	USA	USAF	USMC	USN	TOTAL
Total Critical Positions	363	351	58	187	959
Number of Vacant Positions	62	68	23	39	192
Of Those Filled, Number (and %) Filled by JSOs	261 (87%)	230 (81%)	21 (60%)	105 (71%)	617 (80%)
Number of Critical Positions Filled by Non-JSOs	40	53	15	43	151
Percent of Critical Positions Filled by JSOs or Non-JSOs	83%	81%	60%	79%	80%

Reasons for filling critical positions with officers who are not JSOs are listed below:

Position filled by non-JSO incumbent prior to being a joint position	0
Position being converted to a noncritical position or being deleted	5
Joint specialist officer not yet available	77
Best qualified officer not joint specialist	63
Position filled by non-JSO incumbent prior to being a critical position	2
Other	4

TOTAL 151

The following organizations have joint duty critical positions which are filled by officers who do not possess the joint specialty:

Office of the Secretary of Defense (OSD)	12
Joint Staff	19
U.S. Atlantic Command (USACOM)	7
U.S. Central Command (USCENTCOM)	6
U.S. European Command (USEUCOM) ;	8
U.S. Pacific Command (USPACOM)	3
U.S. Southern Command (USSOUTHCOM)	4
U.S. Strategic Command (USSTRATCOM)	5
U.S. Transportation Command (USTRANSCOM)	5
U.S. Space Command (USSPACECOM)	4
U.S. Special Operations Command (USSOCOM)	3
North American Air Defense Command (NORAD)	3
North Atlantic Treaty Organization (NATO)	16
Defense Attaches	7
Defense Logistics Agency (DLA)	5
Defense Intelligence Agency (DIA)	4
Defense Information Systems Agency (DISA)	3
Joint Warfighting Center	1
National Defense University (NDU)	1
Office of Military Affairs	1
Joint Warfare Analysis Center	3
National Imagery and Mapping Agency	1
Non-Joint Staff (G/FO)	24
TOTAL	151

COMPARISON OF WAIVER USAGE (FY 1997)					Table E-10
CATEGORY	USA	USAF	USMC	USN	TOTAL
Field Grade Section					
JSO Designations	202	211	57	34	504
JSO Sequence Waivers	5	4	1	1	11
JSO Two-tour Waivers	8	2	0	0	10
JSOs Graduating from JPME	3	11	1	7	22
JDA Assignment Waivers Granted	1	1	0	1	3
Field Grade Officers who departed JDAs	1098	1143	163	503	2907
Field Grade JDA tour length waivers	76	100	0	12	188
General/Flag Officer Section					
General/Flag Officers who departed JDAs	33	45	8	20	106
Attended CAPSTONE	14	13	3	1	31
General/Flag Officer JDA tour length waivers	48	46	11	29	134
CAPSTONE Waivers	0	1	0	6	7
*Selected for Promotion to O-7	46	44	14	39	143
Good of the Service Waivers	9	0	5	5	19
Other Waivers	19	14	5	24	62

*Does not include professional categories.

JOINT PROFESSIONAL MILITARY EDUCATION (PME) PHASE II SUMMARY (FY 1997)					Table E-11
	USA	USAF	USMC	USN	TOTAL
Students graduating from Armed Forces Staff College in FY 1997	270	329	48	197	844
Students who had not completed resident PME (percent of total)	54(20%)	83(25%)	0(0%)	14(7%)	151(18%)
Students who had completed nonresident PME (percent of total)	54(20%)	83(25%)	0(0%)	11(6%)	148(18%)
Students who had not completed resident or nonresident PME (percent of total)	0(0%)	0(0%)	0(0%)	3(2%)	3(0%)

Reasons for students not completing resident Professional Military Education (PME) prior to attending Phase II

Officer completed Phase I by correspondence/seminar	144
Officer completed Phase I equivalent program	4
Officer scheduled to attend a resident PME immediately following Phase II	0
Officer career path did not allow attendance at a resident PME program	3
Other	0

FY 1997 JOINT OFFICER PROMOTION RATES											Table E-12
GRADE	CATEGORY	ARE SERVING IN			HAVE SERVED IN			TOTAL IN ZONE			REMARKS
		IN ZONE %	BELOW ZONE %	ABOVE ZONE %	IN ZONE %	BELOW ZONE %	ABOVE ZONE %	CON	SEL	%	
AIR FORCE PROMOTION RATES (LINE)											
0-8	Joint Staff	50	N/A	N/A	0	N/A	N/A	7	2	29	
	JSO	-	N/A	N/A	-	N/A	N/A	62	16	26	
	Service Hqs	15	N/A	N/A	25	N/A	N/A	24	5	20	
	Other Joint	50	N/A	N/A	25	N/A	N/A	10	4	40	
	Board Avg	-	N/A	N/A	-	N/A	N/A	86	22	26	
0-7	Joint Staff	5	N/A	N/A	4	N/A	N/A	46	2	4	
	JSO	-	N/A	N/A	-	N/A	N/A	594	27	5	
	Service Hqs	5	N/A	N/A	3	N/A	N/A	145	6	4	
	Other Joint	2	N/A	N/A	1	N/A	N/A	267	5	2	
	Board Avg	-	N/A	N/A	-	N/A	N/A	1813	43	2	
0-6	Joint Staff	96	16	0	58	7	0	45	34	76	
	JSO	0	0	0	0	0	0	112	68	61	
	Service Hqs	58	5	0	55	7	2	140	78	56	
	Other Joint	60	3	4	37	1	0	198	91	46	
	Board Avg	-	-	-	-	-	-	834	349	42	
0-5	Joint Staff	95	19	0	86	0	0	26	24	92	
	JSO	0	0	0	100	0	0	1	1	100	
	Service Hqs	80	7	14	89	9	100	202	168	83	
	Other Joint	74	3	4	59	1	4	413	286	69	
	Board Avg	-	-	-	-	-	-	1845	1163	63	
0-4	Joint Staff	0	100	0	0	0	0	0	0	0	
	JSO	0	0	0	0	0	0	0	0	0	
	Service Hqs	93	10	33	92	10	0	53	49	93	Note 1
	Other Joint	98	9	0	82	13	0	49	46	94	
	Board Avg	-	-	-	-	-	-	2862	2323	81	
ARMY PROMOTION RATES (COMPETITIVE CATEGORY)											
0-8	Joint Staff	100	N/A	N/A	75	N/A	N/A	5	4	80	
	JSO	-	N/A	N/A	-	N/A	N/A	42	21	50	
	Service Hqs	71	N/A	N/A	-	N/A	N/A	8	6	75	
	Other Joint	100	N/A	N/A	0	N/A	N/A	3	2	67	
	Board Avg	49	N/A	N/A	49	N/A	N/A	65	32	49	
0-7	Joint Staff	12	N/A	N/A	8	N/A	N/A	58	6	10	
	JSO	1	N/A	N/A	2	N/A	N/A	830	14	2	
	Service Hqs	2	N/A	N/A	0	N/A	N/A	176	4	2	
	Other Joint	4	N/A	N/A	1	N/A	N/A	266	8	3	
	Board Avg	3	N/A	N/A	3	N/A	N/A	1815	46	3	

FY 1997 JOINT OFFICER PROMOTION RATES											Table E-12
GRADE	CATEGORY	ARE SERVING IN			HAVE SERVED IN			TOTAL IN ZONE			REMARKS
		IN ZONE %	BELOW ZONE %	ABOVE ZONE %	IN ZONE %	BELOW ZONE %	ABOVE ZONE %	CON	SEL	%	
ARMY PROMOTION RATES (Continued)											
0-6	Joint Staff	38	0	1	51	2	0	191	102	53	
	JSO	68	0	11	52	5	0	56	33	59	
	Service Hqs	40	0	8	45	2	0	188	85	45	
	Other Joint	50	0	5	15	0	7	234	77	33	
	Board Avg	39	1	5	39	1	5	882	344	39	
0-5	Joint Staff	87	33	0	100	0	0	17	15	88	
	JSO	100	-	-	100	-	-	12	12	100	
	Service Hqs	76	17	0	73	2	0	138	103	75	
	Other Joint	66	8	4	61	1	20	354	227	64	
	Board Avg	60	6	2	60	6	2	1714	1027	60	
0-4	Joint Staff	0	0	0	0	0	0	0	0	0	
	JSO	-	-	-	-	-	-	0	0	0	
	Service Hqs	91	25		100	0		13	12	92	Note 1
	Other Joint	80	0	0	100	0	-	7	6	86	
	Board Avg	74	6	0	74	6	-	2222	1650	74	
MARINE CORPS PROMOTION RATES (UNRESTRICTED)											
0-8	Joint Staff	100	N/A	N/A	100	N/A	N/A	3	3	100	
	JSO	0	N/A	N/A	0	N/A	N/A	15	8	53	
	Service Hqs	33	N/A	N/A	100	N/A	N/A	12	6	50	
	Other Joint	0	N/A	N/A	0	N/A	N/A	3	0	0	
	Board Avg	0	N/A	N/A	0	N/A	N/A	22	11	50	
0-7	Joint Staff	25	N/A	N/A	9	N/A	N/A	15	2	13	
	JSO	0	N/A	N/A	0	N/A	N/A	161	6	4	
	Service Hqs	11	N/A	N/A	7	N/A	N/A	93	8	9	
	Other Joint	11	N/A	N/A	4	N/A	N/A	43	3	7	
	Board Avg	0	N/A	N/A	0	N/A	N/A	325	14	4	
0-6	Joint Staff	91	0	33	40	0	0	16	12	75	
	JSO	0	0	0	0	0	0	56	24	43	
	Service Hqs	37	0	17	54	0	0	43	20	47	
	Other Joint	50	0	1	44	0	0	55	26	47	
	Board Avg	0	0	0	0	0	0	217	92	42	
0-5	Joint Staff	100	0	0	100	0	0	4	4	100	
	JSO	0	0	0	0	0	0	0	0	0	
	Service Hqs	83	0	0	63	0	3	83	59	71	
	Other Joint	78	0	0	65	0	10	74	55	74	
	Board Avg	0	0	0	0	0	0	474	323	68	

FY 1997 JOINT OFFICER PROMOTION RATES											Table E-12
GRADE	CATEGORY	ARE SERVING IN			HAVE SERVED IN			TOTAL IN ZONE			REMARKS
		IN ZONE %	BELOW ZONE %	ABOVE ZONE %	IN ZONE %	BELOW ZONE %	ABOVE ZONE %	CON	SEL	%	
MARINE CORPS PROMOTION RATES (Continued)											
0-4	Joint Staff	0	0	0	0	0	0	0	0	0	
	JSO	0	0	0	0	0	0	0	0	0	
	Service Hqs	80	0	0	79	0	0	29	23	79	Note 1
	Other Joint	100	0	0	0	0	0	1	1	100	
	Board Avg	0	0	0	0	0	0	609	478	79	
NAVY PROMOTION RATES (NOTE 2)											
0-8	Joint Staff	13	N/A	N/A	13	N/A	N/A	6	3	50	
	JSO	0	N/A	N/A	6	N/A	N/A	19	4	21	
	Service Hqs	38	N/A	N/A	15	N/A	N/A	14	8	57	
	Other Joint	25	N/A	N/A	13	N/A	N/A	8	6	75	
	Board Avg	31	N/A	N/A	31	N/A	N/A	62	21	34	
0-7	Joint Staff	19	N/A	N/A	12	N/A	N/A	97	66	68	
	JSO	12	N/A	N/A	12	N/A	N/A	438	75	17	
	Service Hqs	13	N/A	N/A	12	N/A	N/A	436	70	16	
	Other Joint	13	N/A	N/A	12	N/A	N/A	179	64	36	
	Board Avg	14	N/A	N/A	14	N/A	N/A	1167	91	8	
0-6	Joint Staff	16	1	4	14	0	0	38	25	66	
	JSO	0	0	0	0	0	0	104	54	52	
	Service Hqs	51	3	4	13	1	4	119	70	59	
	Other Joint	26	1	1	17	2	0	117	45	38	
	Board Avg	41	0	0	41	0	0	736	328	45	
0-5	Joint Staff	8	11	0	16	6	0	28	24	86	
	JSO	0	0	0	0	0	0	18	16	89	
	Service Hqs	45	2	0	21	0	0	97	70	72	
	Other Joint	30	1	6	24	1	0	230	159	69	
	Board Avg	66	0	0	66	0	0	1441	920	64	
0-4	Joint Staff	0	0	0	0	0	0	0	0	0	
	JSO	0	0	0	0	0	0	0	0	0	
	Service Hqs	27	1	0	13	0	0	13	10	77	Note 1
	Other Joint	42	0	19	34	2	0	22	16	73	
	Board Avg	65	0	0	65	0	0	1957	1255	64	

Note 1: No officers met this board who were JSOs or were serving in, or had served, on the Joint Staff.

Note 2: The Navy conducted 39 separate promotion boards in competitive categories this fiscal year. For consistency purposes, they have been combined into one report.

Appendix F

DEFENSE ACQUISITION WORKFORCE IMPLEMENTATION REPORT

Tables F-1 through F-22 display the Defense Acquisition Workforce Improvement Act (DAWIA) reporting requirements as of September 30, 1997. Reporting requirement not included is Section 1762 (c) (13), Number of personnel paid a bonus under Section 317, 37 U.S. Code. During FY 1997, the Service Secretaries did not request approval from the Secretary of Defense to exercise this authority.

The overall size of the workforce decreased in FY 1997. The reported workforce of 105,544 is 2.3 percent smaller than in FY 1996. The number of encumbered Critical Acquisition Positions (CAPs) was down by less than 1 percent to 14,711. Additionally, the total membership in the Acquisition Corps improved slightly to 22,641—a move up of 3.4 percent from last year.

CRITICAL ACQUISITION POSITIONS HELD - FY 1997 {SECTION 1762 (C) (3)} ALL COMPONENTS

Table F-1

Position Category		GS/ GM- 13 or Below	O- 4	GS/ GM- 14 ^c	O-5	GS/ GM- 15 ^d	O- 6	SES ^e	Gen/Flag Officer	Civilian Total	Military Total	Combined Total
Acquisition Management^a	Total	36	203	1491	867	868	564	131	74	2526	1708	4234
PEOs		0	0	0	0	0	0	7	15	7	15	22
PMs ^b		0	0	3	12	10	93	8	3	21	108	129
DPMs ^b		0	0	10	10	58	15	5	0	73	25	98
Pgm Mngt/Pgm Mngt Ovrsght	Total	19	193	1269	801	783	549	124	74	2195	1644	3802
Division Heads		4	46	198	285	267	330	74	31	543	709	1235
Comm/Computer Sys	Total	17	10	222	66	85	15	7	0	331	97	422
Division Heads		11	6	60	18	30	12	0	0	101	36	137
Proc. and Contracting:	Total	19	46	1260	287	415	172	54	8	1051	1723	2261
Sr. Contracting Officials		0	4	50	23	33	26	26	2	109	62	164
Division Heads		7	21	448	105	190	106	26	6	671	248	909
Business, Cost Estimating and Financial Mgmt:	Total	14	14	400	36	139	10	8	1	98	585	622
Division Heads		7	4	73	16	78	10	5	1	163	31	194
Auditing:	Total	0	0	156	0	40	0	13	0	209	0	209
Division Heads		0	0	122	0	39	0	13	0	174	13	174
Production/Quality:	Total	1	4	238	22	73	46	2	5	154	314	391
Division Heads		0	0	80	2	46	45	2	5	128	52	180
Acquisition Logistics:	Total	17	7	387	63	146	45	14	2	147	651	681
Division Heads		9	3	120	36	75	44	12	2	216	86	301
Sys. Plng. Rsch. Dev. & Eng:	Total	26	34	3458	160	1284	73	136	5	380	5068	5176
Division Heads		9	9	492	36	450	58	94	2	1045	108	1150
Test and Evaluation:	Total	3	29	619	119	188	42	21	3	211	1006	1024
Division Heads		0	15	168	61	96	32	15	3	278	113	390
Education, Training, and Career Development:	Total	0	10	4	34	6	11	12	70	0	61	112
Division Heads		0	3	3139	548	1294	197	118	21	4551	769	20
	Total	116	347	8014	1620	3160	965	391	98	11681	3030	14711

Source: DMDC data verified by Component Records

^a Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^b ACAT I and ACAT II only

^c Includes pay grade AD-02

^d Includes pay grade AD-03

^e Includes pay grade TX

CRITICAL ACQUISITION POSITIONS HELD - FY 1997 {SECTION 1762 (C) (3)} COMPONENT: ARMY											Table F-2	
Position Category		GS/GM-13 or Below	O-4	GS/GM-14	O-5	GS/GM-15	O-6	SES	Gen/Flag Officer	Civilian Total	Military Total	Combined Total
Acquisition Management:^a	Total	0	0	461	323	299	121	31	19	791	463	1254
PEOs		0	0	0	0	0	0	1	6	1	6	7
PMs ^b		0	0	0	11	2	26	1	0	3	37	40
DPMs ^b		0	0	0	1	20	1	0	0	20	2	22
Pgm Mngt/Pgm Mngt Ovrsght	Total	0	0	399	284	285	116	31	19	715	419	1134
Division Heads		0	0	62	122	140	90	16	0	218	212	430
Comm/Computer Sys	Total	0	0	62	39	14	5	0	0	76	44	120
Division Heads		0	0	4	6	6	4	0	0	10	10	20
Proc. and Contracting:	Total	0	0	380	92	96	42	15	1	491	135	626
Sr. Contracting Officials		0	0	25	19	25	12	5	0	55	31	86
Division Heads		0	0	78	14	24	5	5	0	107	19	126
Business, Cost Estimating and Financial Mgmt:	Total	0	0	159	0	46	0	0	0	205	0	205
Division Heads		0	0	23	0	28	0	0	0	51	0	51
Auditing:	Total	0	0	0	0	0	0	0	0	0	0	0
Division Heads		0	0	0	0	0	0	0	0	0	0	0
Production/Quality:	Total	0	0	115	0	30	0	0	0	145	0	145
Division Heads		0	0	21	0	18	0	0	0	39	0	39
Acquisition Logistics:	Total	0	0	102	4	23	2	0	0	125	6	131
Division Heads		0	0	22	0	17	2	0	0	39	2	41
Sys. Plng. Rsch. Dev. & Eng:	Total	0	0	1605	56	690	11	64	1	2359	68	2427
Division Heads		0	0	104	4	240	7	48	0	392	11	403
Test and Evaluation:	Total	0	0	314	36	109	10	7	0	430	46	476
Division Heads		0	0	52	10	53	2	3	0	108	12	120
Education, Training, and Career Dev:	Total	0	0	2	32	1	5	0	0	3	37	40
Division Heads		0	0	1	0	0	3	0	0	1	3	4
	Total	0	0	3138	543	1294	191	117	21	4549	755	5304

Source: DMDC data verified by Component Records

^a Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^b ACAT I and ACAT II only

CRITICAL ACQUISITION POSITIONS HELD - FY 1997 {SECTION 1762 (C) (3)} COMPONENT: NAVY

Table F-3

Position Category		GS/ GM-13 or Below	O- 4	GS/ GM- 14	O- 5	GS/ GM- 15	O- 6	SES	Gen/ Flag Officer	Civilian Total	Military Total	Combined Total
Acquisition Management:^a	Total	0	8	554	68	299	160	44	21	897	257	1154
PEOs		0	0	0	0	0	0	2	6	2	6	8
PMs ^b		0	0	3	0	3	35	4	1	10	36	46
DPMs ^b		0	0	6	1	25	6	5	0	36	7	439
Pgm Mngt/Pgm Mngt Ovrsght	Total	0	8	525	68	289	158	44	21	858	255	1113
Division Heads		0	1	50	20	68	109	33	14	151	144	295
Comm/Computer Sys	Total	0	0	29	0	10	2	0	0	39	2	41
Division Heads		0	0	7	0	2	2	0	0	9	2	11
Proc. and Contracting:	Total	0	4	263	60	104	73	15	5	382	142	524
Sr. Contracting Officials		0	0	0	0	3	5	7	0	10	5	15
Division Heads		0	0	64	18	29	66	8	4	101	88	189
Business, Cost Estimating and Financial Mgmt:	Total	0	0	128	7	49	2	0	2	179	9	188
Division Heads		0	0	20	1	20	2	1	0	41	3	44
Auditing:	Total	0	0	0	0	0	0	0	0	0	0	0
Division Heads		0	0	0	0	0	0	0	0	0	0	0
Production/Quality:	Total	0	0	48	16	16	43	1	5	65	64	129
Division Heads		0	0	16	2	9	43	1	5	26	50	76
Acquisition Logistics:	Total	0	0	156	8	58	14	7	1	221	23	244
Division Heads		0	0	37	4	25	13	7	1	69	18	87
Sys. Plng. Rsch. Dev. & Eng:	Total	0	5	1092	28	228	32	27	2	1347	67	1414
Division Heads		0	0	262	5	82	27	26	2	370	34	404
Test and Evaluation:	Total	0	1	186	15	40	9	4	0	230	25	255
Division Heads		0	0	55	5	19	8	4	0	78	13	91
Education, Training, and Career Development:	Total	0	0	1	0	2	4	1	0	4	4	8
Division Heads		0	0	0	0	0	4	1	0	1	4	5
	Total	0	18	2428	202	796	337	101	34	3325	591	3916

Source: DMDC data verified by Component Records

^a Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^b ACAT I and ACAT II only

CRITICAL ACQUISITION POSITIONS HELD - FY 1997 {SECTION 1762 (C) (3)} COMPONENT: MARINE CORPS												Table F-4
Position Category		GS/GM-13 or Below	O-4	GS/GM-14	O-5	GS/GM-15	O-6	SES	Gen/Flag Officer	Civilian Total	Military Total	Combined Total
Acquisition Management:^a	Total	0	12	10	43	9	24	1	1	20	80	100
PEOs		0	0	0	0	0	0	0	0	0	0	0
PMs ^b		0	0	0	0	0	4	0	0	0	4	4
DPMs ^b		0	0	0	0	0	0	0	0	0	0	0
Pgm Mngt/Pgm Mngt Ovrsght	Total	0	12	7	43	9	24	1	1	17	80	87
Division Heads		0	2	5	0	8	18	0	1	13	21	34
Comm/Computer Sys	Total	0	0	3	0	0	0	0	0	3	0	3
Division Heads		0	0	0	0	0	0	0	0	0	0	0
Proc. and Contracting:	Total	0	0	11	0	4	0	1	0	16	0	16
Sr. Contracting Officials		0	0	0	0	1	0	1	0	2	0	2
Division Heads		0	0	2	0	2	0	0	0	4	0	4
Business, Cost Estimating and Financial Mgmt:	Total	0	0	2	2	2	0	0	0	4	2	6
Division Heads		0	0	0	0	1	0	0	0	1	0	1
Auditing:	Total	0	0	0	0	0	0	0	0	0	0	0
Division Heads		0	0	0	0	0	0	0	0	0	0	0
Production/Quality:	Total	0	1	0	3	0	2	0	0	0	6	6
Division Heads		0	0	0	0	0	1	0	0	0	1	1
Acquisition Logistics:	Total	0	1	7	10	4	1	0	0	11	12	23
Division Heads		0	0	5	0	2	1	0	0	7	1	8
Sys. Plng. Rsch. Dev. & Eng:	Total	0	0	22	1	5	0	0	0	27	1	28
Division Heads		0	0	11	0	2	0	0	0	13	0	13
Test and Evaluation:	Total	0	0	2	2	0	0	0	0	2	2	4
Division Heads		0	0	2	0	0	0	0	0	1	0	2
Education, Training, and Career Development:	Total	0	0	0	1	1	0	0	0	1	1	1
Division Heads		0	0	0	0	0	0	0	0	0	0	0
	Total	0	14	54	62	25	27	2	1	81	104	185

^a Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^b ACAT I and ACAT II only

CRITICAL ACQUISITION POSITIONS HELD - FY 1997 {SECTION 1762 (C) (3)} COMPONENT: AIR FORCE Table F-5

Position Category		GS/ GM 13 or Below	O- 4	GS/ GM- 14	O- 5	GS/ GM- 15	O- 6	SES	Gen/ Flag Officer	Civilian Total	Military Total	Combined Total
Acquisition Management:^a	Total	36	183	208	433	110	259	22	33	376	908	1284
PEOs		0	0	0	0	0	0	4	3	4	3	7
PMs ^b		0	0	0	1	5	28	3	2	8	31	39
DPMs ^b		0	0	4	8	13	8	0	0	17	16	33
Pgm Mngt/Pgm Mngt Ovrsght	Total	19	173	147	406	95	251	21	33	282	863	1145
Division Heads		4	43	56	143	30	113	8	16	98	315	413
Comm/Computer Sys	Total	17	10	61	27	15	8	1	0	94	45	139
Division Heads		11	6	30	12	7	6	0	0	48	24	72
Proc. and Contracting:	Total	19	42	220	135	74	57	8	2	321	236	557
Sr. Contracting Officials		0	4	2	4	1	9	6	2	9	19	28
Division Heads		7	21	68	73	47	35	3	2	125	131	256
Business, Cost Estimating and Financial Management:	Total	14	14	83	27	33	8	6	1	136	50	186
Division Heads		7	4	29	15	26	8	4	1	66	28	94
Auditing:	Total	0	0	0	0	0	0	0	0	0	0	0
Division Heads		0	0	0	0	0	0	0	0	0	0	0
Production/Quality:	Total	1	3	21	3	4	1	1	0	27	7	34
Division Heads		0	0	5	0	2	1	1	0	8	1	9
Acquisition Logistics:	Total	17	6	106	41	48	28	6	1	177	76	253
Division Heads		9	3	54	32	29	28	4	1	96	64	160
Sys. Plng. Rsch. Dev. & Eng:	Total	26	29	671	75	328	30	38	2	1063	136	1199
Division Heads		9	9	100	27	112	24	17	0	238	60	298
Test and Evaluation:	Total	3	28	109	66	31	23	8	3	151	120	271
Division Heads		0	15	59	46	24	22	6	3	89	86	175
Education, Training, and Career Development:	Total	0	10	1	33	0	4	0	0	1	47	48
Division Heads		0	3	1	5	0	2	0	0	1	10	11
Total		116	315	1419	813	628	410	89	42	2252	1580	3832

^a Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^b ACAT I and ACAT II only

CRITICAL ACQUISITION POSITIONS HELD - FY 1997
 {SECTION 1762 (C) (3)}
 COMPONENT: OSD, DoD AGENCIES, AND OTHER COMPONENTS^a
 (Numbers for military members assigned OSD/DoD Agencies and other components reflected in individual services totals.)

Table F-6

Position Category		GS/ GM 13 or Below	AD-02	GS/ GM-14	AD-03	GS/ GM-15	TX	SES	Civilian Total	Military Total	Combined Total
Acquisition Management: ^b	Total	0	30	228	7	144	0	33	442	0	442
PEOs		0	0	0	0	0	0	0	0	0	0
PMs ^c		0	0	0	0	0	0	0	0	0	0
DPMs ^c		0	0	0	0	0	0	0	0	0	0
Pgm Mngt/Pgm Mngt Ovrsght	Total	0	29	162	7	98	0	27	323	0	323
Division Heads				25	0	21	0	17	63	0	63
Comm/Computer Sys	Total	0	1	66	0	46	0	6	119	0	119
Division Heads				19	0	15	0		34	0	34
Proc. and Contracting:	Total	0	5	381	0	137	0	15	538	0	538
Sr. Contracting Officials				23	0	3	0	7	33	0	33
Division Heads				236	0	88	0	10	334	0	334
Business, Cost Estimating and Financial Mgmt:	Total	0	18	10	0	9	0	0	37	0	37
Division Heads				1	0	3	0		4	0	4
Auditing:	Total	0	0	156	0	40	0	13	209	0	209
Division Heads				122	0	39	0	13	174	0	174
Production/Quality:	Total	0	2	52	0	23	0	0	77	0	77
Division Heads				38	0	17	0		55	0	55
Acquisition Logistics:	Total	0	3	13	0	13	0	1	30	0	30
Division Heads				2	0	2	0	1	5	0	5
Sys. Png. Rsch. Dev. & Eng:	Total	0	5	63	0	33	0	7	108	0	108
Division Heads				15	0	14	0	3	32	0	32
Test and Evaluation:	Total	0	2	6	0	8	0	2	18	0	18
Division Heads				0	0	0	0	2	2	0	2
Education, Training, and Career Development:	Total	0	0	1	0	3	9	2	15	0	15
Division Heads											
	Total	0	65	910	7	410	9	73	1474	0	1474

Source: DMDC data verified by Component Records

^a NSA / DIA / NIMA Not Included

^b Acquisition Management includes Program Management, PM Oversight, and Communications/Computer Systems position categories.

^c ACAT I and ACAT II only

ARMY ACQUISITION CORPS MEMBERS - FY 1997 {SECTION 1762 (C) (2)}									Table F-7
Career Field	GS/ GM-13 or Below	O-4	GS/ GM-14	O-5	GS/ GM-15	O-6	SES	Gen/Flag Officer	Total
Program Management	34	180	355	280	214	108	20	25	1216
Communications, Computer Systems	7	40	34	28	12	5	0	0	126
Contracting	66	98	283	92	84	44	11	1	679
Industrial Property Management	0	0	1	0	0	0	0	0	1
Manufacturing and Production/ Quality Assurance	10	1	109	1	29	0	2	0	152
Business, Cost Estimating, and Financial Management	39	0	116	0	43	0	3	0	201
Acquisition Logistics	24	22	105	7	31	0	2	0	191
Systems Planning, Research, Development, and Engineering	111	63	1246	51	670	16	62	0	2219
Test and Evaluation	16	62	232	31	94	7	7	0	449
Total	307	466	2481	490	1177	180	107	26	5234
Source: Component Records									

NAVY ACQUISITION CORPS MEMBERS - FY 1997 {SECTION 1762 (C) (2)}									Table F-8
Career Field	GS/GM-13 or below	O-4	GS/ GM-14	O-5	GS/ GM-15	O-6	SES	Gen/Flag Officer	Total
Program Management	609	197	561	563	322	425	53	32	2762
Communications, Computer Systems	28	0	23	3	6	2	2	0	64
Contracting	427	139	226	136	100	78	13	5	1124
Industrial Property Management	0	0	0	0	1	0	0	0	1
Manufacturing and Production/ Quality Assurance	64	58	39	101	13	46	1	5	327
Business, Cost Estimating, and Financial Management	232	8	107	15	45	2	3	0	412
Acquisition Logistics	272	8	120	26	48	15	5	1	495
Systems Planning, Research, Development, and Engineering	1354	23	992	65	231	31	28	2	2726
Test and Evaluation	315	5	167	29	41	9	5	0	571
Total	3301	438	2235	938	807	608	110	45	8482
Source: Component Records									

MARINE CORPS ACQUISITION CORPS MEMBERS - FY 1997 {SECTION 1762 (C) (2)}									Table F-9
Career Field	GS/ GM-13 or Below	O-4	GS/ GM-14	O-5	GS/ GM-15	O-6	SES	Gen/Flag Officer	Total
Program Management	12	57	6	119	9	48	1	10	262
Communications, Computer Systems	2	1	2	0	0	0	0	0	5
Contracting	20	3	10	1	4	0	1	0	39
Industrial Property Management	0	0	0	0	0	0	0	0	0
Manufacturing and Production/ Quality Assurance	3	1	0	2	0	2	0	0	8
Business, Cost Estimating, and Financial Management	6	0	1	0	2	0	0	0	9
Acquisition Logistics	15	2	5	5	3	1	0	0	31
Systems Planning, Research, Development, and Engineering	21	4	20	2	5	0	0	0	52
Test and Evaluation	3	3	2	0	0	0	0	0	8
Total	82	71	46	129	23	51	2	10	414

Source: Component Records

AIR FORCE ACQUISITION CORPS MEMBERS - FY 1997 {SECTION 1762 (C) (2)}									Table F-10
Career Field	GS/ GM-13 or Below	O-4	GS/ GM-14	O-5	GS/ GM-15	O-6	SES	Gen/Flag Officer	Total
Program Management	11	242	168	696	101	227	21	33	1499
Communications, Computer Systems	5	15	64	53	19	8	2	0	166
Contracting	11	60	216	202	75	56	7	2	629
Industrial Property Management	0	0	2	0	0	0	0	0	2
Manufacturing and Production/ Quality Assurance	1	3	19	5	4	1	1	0	34
Business, Cost Estimating, and Financial Management	7	18	105	59	33	10	6	2	240
Acquisition Logistics	4	10	135	96	61	50	10	3	369
Systems Planning, Research, Development, and Engineering	11	51	643	149	333	50	46	1	1284
Test and Evaluation	2	33	109	162	27	43	6	5	387
Total	52	432	1461	1422	653	445	99	46	4610

Source: Component Records

OSD, DoD AGENCIES, AND OTHER COMPONENTS ACQUISITION CORPS MEMBERS ^a - FY 1997 {SECTION 1762 (C) (2)}								Table F-11
Career Field	GS/ GM-13 or Below	AD-01	GS/ GM-14	AD-02	GS/ GM-15	AD-03	SES	Total
Program Management	78	1	81	36	98	8	30	332
Communications, Computer Systems	40	0	56	0	40	0	5	141
Contracting	839	0	397	6	145	0	16	1403
Industrial Property Management	30	0	4	0	2	0	0	36
Manufacturing and Production/Quality Assurance	370	0	135	2	23	0	0	530
Business, Cost Estimating, and Financial Management	8	0	9	17	9	0	0	43
Auditing	786	0	208	0	52	0	14	1060
Acquisition Logistics	6	0	18	4	12	0	2	42
Systems Planning, Research, Development, and Engineering	156	0	89	11	31	0	6	293
Test and Evaluation	3	0	5	2	7	0	4	21
Total	2316	1	1002	78	419	8	77	3901

Source: Component Records

^a NSA / DIA / NIMA not included

ACQUISITION CORPS EXCEPTIONS FROM EDUCATIONAL REQUIREMENTS IN EFFECT END OF FY 1997 {SECTION 1762 (C) (6) AND 1732 (B) (2) (A) AND (B)}			Table F-12
Component	10 Years of Experience Section 1732 (c)(1)	24 Semester Hour Exam Section 1732 (c)(2)	Total
Army	503	1	504
Navy	127	10	137
Marine Corps	1	0	1
Air Force	1060	0	1060
OSD, DoD agencies, and other components	77	2	79
Total	1768	13	1781

Source: Component Records

PERSONNEL PARTICIPATING IN ACQUISITION INTERN, COOPERATIVE EDUCATION, SCHOLARSHIP, AND TUITION REIMBURSEMENT PROGRAMS DURING FY 1997 {SECTION 1762 (C) (12)}					Table F-13
Component	Interns {Sec 1742}	Cooperative Education {Sec 1743}	DoD Scholarships {Sec 1744}	Tuition Reimbursement {Sec 1745 (a)}	Repayment of Student Loans {Sec 1745 (b)}
Army	252	0	9	975	0
Navy	349	31	10	2370	0
Marine Corps	14	2	0	278	0
Air Force	269	0	0	1014	0
OSD, DoD agencies, and other components	381	42	0	587	0
Total	1265	75	19	5224	0

Source: OSD and Component Records

PERSONNEL CERTIFIED BY ACQUISITION CAREER PROGRAM BOARDS IN LIEU OF A BACCALAUREATE DEGREE IN FY 1997 {SECTIONS 1762 (C) (7) AND 1732 (B) (2) (A) (II)}		Table F-14
Component	Military	Civilian
Army	0	0
Navy	0	0
Marine Corps	0	0
Air Force	0	0
OSD, DoD agencies, and other components	N/A	1
Total	0	1

Source: Component Records

MAJOR DEFENSE ACQUISITION PROGRAM MANAGER REASSIGNMENTS DURING FY 1997 {SECTION 1762 (C) (8) AND 1734 (B) (1) (A)}					Table F-15		
PROGRAM MANAGERS FOUR YEAR/MILESTONE							
Component	Number of Reassignments				Avg Length of Assignments (Months)		
	Full-term	Less than Full-term	Total	Percent Full-term	Full-term	Less than Full-term	All
Army	3	2	5	60%	48	22	38
Navy	3	6	9	50%	48	31	37
Marine Corps	1	0	1	100%	48	N/A	48
Air Force	1	6	7	14%	41	34.3	35.3
OSD, DoD agencies, & other components	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	8	14	22	36%	47.1	32.7	37.2

Source: Verified by OUSD(A&T)/AET&CD Records

MAJOR DEFENSE ACQUISITION DEPUTY PROGRAM MANAGER REASSIGNMENTS DURING FY 1997
 {SECTION 1762 (C) (8) AND 1734 (B) (1) (A)}

Table F-16

DEPUTY PROGRAM MANAGERS FOUR YEAR/MILESTONE							
Component	Number of Reassignments				Average Length of Assignments (Months)		
	Full-term	Less than Full-term	Total	Percent Full-term	Full-term	Less than Full-term	All
Army	0	0	0	0%	0	0	0
Navy	5	3	8	63%	76	34	60
Marine Corps	0	0	0	0%	0	0	0
Air Force	2	4	6	33%	58.5	30.75	40
OSD, DoD agencies, & other components	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	7	7	14	50%	71.0	32.14	51.43

Source: Verified by OUSD(A&T)/AET&CD Records

ACQUISITION WORK FORCE WAIVERS/EXCEPTIONS GRANTED DURING FY 1997 {SECTION 1762 (C) (10)}

Table F-17

Component	Contracting Officer/ GS-1102 Qualification Requirements: Section 1724 (d)		Acquisition Corps Eligibility Criteria: Section 1732 (d)		Critical Acquisition Positions Assignment Period/ Qualifications/ Service Obligations: Section 1734 (d)		Other Waivers to Acquisition Work Force Provisions		Incumbent Qualification Exceptions: 1736 (c) Critical Positions 10/92 PMs 10/91	Total By Service
	Reason Code	Number	Reason Code	Number	Reason Code	Number	Reason Code	Number	Number	
Army		0		0	B, C, D, F	3, 5, 49, 1				58
Navy		0			B, C, D, E	12, 72, 33, 13	H	2	0	132
Marine Corps		0	A	6		0		0	0	6
Air Force		0		0	B, C, D G & H	13, 178, 70, 4 & 4				269
OSD, DoD agencies, & other components *		1		1		14				16
Total		1		7		471		2		481

Source: OUSD(A&T)/AET&CD Records

* NSA / DIA /NIMA excluded

- REASON CODE: (A) ACPB screened based on demonstrated potential
 (B) Promotion
 (C) Reassignment in government's interest
 (D) Humanitarian reassignment/discharge
 (E) Service Secretary determination (PEO/PM waivers)
 (F) GO/SES Assignment
 (G) ACAT I PM Reassignment
 (H) Qualifications obviate need for meeting training, education, and experience requirements

OFFICER PROMOTION RATE COMPARISONS FY 1997 COMPONENT: ARMY
Table F-18

To Grade	Categories	TOTAL NUMBER PROMOTED	% PROMOTION RATES		
			IN ZONE	BELOW ZONE	ABOVE ZONE
O-8	Acquisition Corps	2	50	N/A	N/A
	Non-Acquisition Equivalent/Line Officers ^a	30	46.1	N/A	N/A
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	32	48.2	N/A	N/A
O-7	Acquisition Corps	3	1.9	N/A	N/A
	Non-Acquisition Equivalent/Line Officers ^a	29	1.8	N/A	N/A
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	32	2.5	N/A	N/A
O-6	Acquisition Corps	22	31.7	0.4	2.6
	Non-Acquisition Equivalent/Line Officers ^a	324	42.2	1.3	5.5
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	346	41.2	1.1	5.3
O-5	Acquisition Corps	118	62.5	3.2	3.8
	Non-Acquisition Equivalent/Line Officers ^a	1007	59.9	5.6	2.0
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	1125	59.9	5.9	2.0
Source: Service Selection Board Results					

^a Army PERSCOM Officer Personnel Management Directorate - Managed Officers

OFFICER PROMOTION RATE COMPARISONS FY 1997 COMPONENT: NAVY					Table F-19	
To Grade	Categories	TOTAL NUMBER PROMOTED	% PROMOTION RATES			
			IN ZONE	BELOW ZONE	ABOVE ZONE	
O-8	Acquisition Corps	4	44.4	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	16	45.7	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	20	45.5	N/A	N/A	
O-7	Acquisition Corps	10	2.8	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	28	2.9	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	38	2.8	N/A	N/A	
O-6	Acquisition Corps	101	56.2	1.3	7.1	
	Non-Acquisition Equivalent/Line Officers ^a	277	44.4	2.6	11.0	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	387	47.3	2.3	10.1	
O-5	Acquisition Corps	74	72.6	1.8	2.8	
	Non-Acquisition Equivalent/Line Officers ^a	820	63.8	1.9	6.3	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	894	64.5	1.8	6.4	
	Source: Service Selection Board Results					
OFFICER PROMOTION RATE COMPARISONS FY 1997 COMPONENT: MARINE CORPS					Table F-20	
To Grade	Categories	TOTAL NUMBER PROMOTED	% PROMOTION RATES			
			IN ZONE	BELOW ZONE	ABOVE ZONE	
O-8	Acquisition Corps	2	66.7	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	9	47.4	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	11	50.0	N/A	N/A	
O-7	Acquisition Corps	0	0	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	14	3.0	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	14	2.8	N/A	N/A	
O-6	Acquisition Corps	5	35.7	0	0	
	Non-Acquisition Equivalent/Line Officers ^a	92	42.9	0	2.1	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	97	42.4	0	2.0	
O-5	Acquisition Corps	18	73.9	0	5.0	
	Non-Acquisition Equivalent/Line Officers ^a	312	67.9	0	2.1	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	330	68.2	0	2.2	
	Source: Service Selection Board Results					

OFFICER PROMOTION RATE COMPARISONS FY 1997 COMPONENT: AIR FORCE					Table F-21	
To Grade	Categories	TOTAL NUMBER PROMOTED	% PROMOTION RATES			
			IN ZONE	BELOW ZONE	ABOVE ZONE	
O-8	Acquisition Corps	3	25.0	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	19	25.7	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	22	25.6	N/A	N/A	
O-7	Acquisition Corps	7	2.2	N/A	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	36	2.2	N/A	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	43	2.2	N/A	N/A	
O-6	Acquisition Corps	51	32.1	1.4	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	366	43.8	2.9	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	417	41.9	2.6	N/A	
O-5	Acquisition Corps	88	68.9	3.3	N/A	
	Non-Acquisition Equivalent/Line Officers ^a	1204	62.6	2.3	N/A	
	TOTAL: Acquisition and Non-Acquisition Equivalent/Line Officers	1292	63.0	2.4	N/A	

Source: Service Selection Board Results

CRITICAL ACQUISITION POSITION REVIEWS/REASSIGNMENTS DURING FY 1997 {SECTION 1762(C) (9), SECTION 1762 (C) (11) AND 1734 (E) (2)}					Table F-22	
Component	In CAP 3 years or Longer			In CAP 5 years or Longer		
	Number of Reviews	Number of Reassignments	Percent	Number of Reviews	Number of Reassignments	Percent
Army	1100	33	3.0%	872	112	12.8%
Navy	228	205	89.9%	320	281	87.8%
Marine Corps	5	5	100.0%	6	3	50.0%
Air Force	0	0	0.0%	204	185	91.0%
OSD, DoD agencies, and other components	9	3	33.0%	372	26	22.0%
Total	1342	246	18.3%	1774	607	34.2%

Source: Verified by OUSD(A&T)/AET&CD Records

^a Excludes ACAT I/II Program Managers/Deputy Program Managers

Appendix G

PERSONNEL READINESS FACTORS BY RACE AND GENDER

This appendix responds to the National Defense Authorization Act FY 1995 (Public Law 103-337, Section 533) which requires that the Department submit a report of readiness factors by race and gender as part of its annual report.

INDISCIPLINE TRENDS

DoD has been working to implement the Defense Incident Based Reporting System (DIBRS), a centralized data base of DoD criminal incidents. DoD issued directives in late 1996 requiring the Services and DoD components to implement DIBRS.

DIBRS incorporates the crime reporting requirements of the Uniform Federal Crime Reporting Act of 1988, the Victims Rights and Restitution Act of 1990, and the Brady Handgun Violence Prevention Act of 1994. DIBRS also requires the Services to report criminal incidents involving sexual harassment and race-bias motivated offenses.

DIBRS will produce automated reports of criminal activity and disciplinary infractions that include case dispositions in administrative, nonjudicial, court martial, and civilian court proceedings and discrimination and sexual harassment complaints.

The military departments began partial reporting of data to DIBRS in 1997. While substantial progress has been made, funding and other problems have prevented the Services from completely implementing DIBRS.

Military Complaint Trends

Since FY 1987, the Services have reported annually to DoD the number of resolved formal complaints of sexual harassment and all other discrimination (e.g., complaints based on race, sex, national origin, and religion) filed by military personnel. At the end of FY 1996, the number of formal complaints of sexual harassment and all other discrimination totaled 2,099, representing one complaint per thousand military personnel.

The percentage of confirmed sexual harassment complaints has remained above 50 percent since FY 1993. The percentage of all other discrimination complaints that have been confirmed has remained over 30 percent since FY 1993. Although not a direct comparison, these results are higher than the 12 percent confirmation rate for DoD equal employment opportunity complaints in FY 1993. While complaint confirmation rates may appear to be a positive sign, they are not clear-cut indicators of the effectiveness of Service military equal opportunity programs. Because several factors may lead to allegations of sexual harassment or discrimination (i.e., misperceptions, mismanagement, failures to communicate, etc.), complaints that were not confirmed may be indicative of other forms of organizational problems or morale issues. Service military equal opportunity programs are composed of several dimensions (e.g., formal and informal complaint systems, education and training, climate assessment, and affirmative action initiatives), which must be assessed collectively to rate program effectiveness.

Complaint trend data from FY 1987 through FY 1996 have been similar for both complaints of sexual harassment and all other discrimination.

Sexual Harassment Complaints

The total number of sexual harassment complaints began at 513 in FY 1987, fluctuated through FY 1996, but never fell below the starting figure. The number of sexual harassment complaints peaked at 1,599 in FY 1993. The percent of substantiated sexual harassment complaints reflects an upward trend from 38 percent in FY 1987 to a high of 59 percent in FY 1995s and 1996.

All Other Discrimination Complaints

The total number of all other discrimination complaints in FY 1987 was 513, and has fluctuated in the period through FY 1996, though never falling below the starting figure. The number of all other discrimination complaints peaked at 2,103 in FY 1992. The percent of all other discrimination complaints that were substantiated reflects an upward trend from 26 percent in FY 1987 to a high of 41 percent in FY 1995, with a reported decline to 31 percent in FY 1996.

NONDEPLOYABILITY TRENDS

The Office of the Secretary of Defense, in conjunction with the Services, has continued to review permanent and temporary limitations on the deployability of service members and to address the issue of nondeployability in relation to readiness. In general, when a unit deploys, the individuals assigned to that unit are expected to participate in that deployment; the overwhelming majority do, regardless of personal circumstances. However, it is inevitable that a temporary medical condition or a family emergency, for example, may temporarily prevent some members from accompanying their unit. Each problem is unique to the service member and to the circumstances of his/her unit and is properly managed at the unit level. Current Department policy recognizes Service-unique and unit-unique circumstances, and provides the Services with the flexibility to manage those situations to meet readiness goals. Accident, illness, and family emergencies are inherently unplanned and pose the greatest challenges to commanders of units about to deploy.

Nondeployability is measured in three permanent condition categories: HIV-positive, other Medical Permanent, and Hazardous Duty Restriction. The five temporary condition categories are AWOL/Deserter, Legal Processing, Pregnancy, Medical Temporary, and Administrative. A service member can be counted as nondeployable in one category only. Since the Services are given some latitude in determining who is or is not deployable based on certain conditions, a meaningful comparison between the Services in a number of categories is not always possible.

Permanent medical limitations (HIV-positive, cancer, heart disease, asthma, diabetes, and other progressive medical conditions) are a small part of the overall nondeployable population. The Department's July 1997 *Report to Congress on Permanent Medical Nondeployables* provides some detailed analysis of this particular. The actual number of members with permanent limitations remains small—around three-tenths of 1 percent of the active force—and is far too small to exert a significant impact on readiness. This small number is manageable through the assignment process to minimize readiness impacts.

DoD's focus in data collection has been to capture the nondeployability of unit personnel who directly contribute to unit readiness and whose availability for duty is controllable by a unit, installation, or senior local commander. Non-unit personnel (i.e., transients, trainees/students, long-term patients, prisoners, and personnel awaiting separation) are treated separately and not counted against readiness billets. Therefore, DoD does not include them in data reported here.

Tables G-23 to G-27 present the data for all of DoD and each of the Services as of the end of FY 1997. The nondeployable category totals and rates reflect only the quantities associated with service members assigned to units (i.e., that portion of each Service's active end strength that is applied against the manpower requirements of their programmed force structure, also known as the operating strength).

Retention Rates

The Department of Defense has been able to maintain the overall retention rates while preserving a quality force despite personnel turbulence reflected in the past years. These achievements can be attributed to the skillful execution and management of Services' programmed retention strategies.

Each Service's retention rates have been somewhat consistent for FY 1995, FY 1996, and FY 1997. The rates may have increased or decreased from one year to the next by a small margin, but there are no significant increases or decreases in the numbers. After years of focusing on drawing down the force, the Services have refocused on retention of the right number of quality people to retain to successfully meet Service missions well into the next century.

Retention of quality personnel in sufficient numbers to meet Service requirements remains a top priority. DoD has improved the quality of the force and its readiness while maintaining the commitment to treat people equal and fair. Today the nation has a force that is smarter, more experienced, and more diverse. This ensures that the country's best people, regardless of gender, are continuously encouraged to remain in the force.

In summary, the Department continues to improve the quality of U.S. forces and its readiness while maintaining its commitment to treat people fairly. The Department of Defense is pleased with the success attained this year and is ready to meet upcoming retention challenges.

First-Term Reenlistment Rates

The overall first-term reenlistment rate has been declining. The Army's first term reenlistments have increased from FY 1996. The Marine Corps is somewhat stable, given the fact that it only has a set number of slots available for reenlistments. The Navy and Air Force have shown a decrease each year. The decrease is believed in part to be due to a number of influencers, i.e. erosion of benefits, strong economy, family separation, quality of life, and career instability.

Overall, reenlistment indicators are stable at the macro, but the Services are monitoring micro indicators closely. Each Service is experiencing pockets of retention difficulties and is addressing the causes.

TRENDS IN PROPENSITY TO ENLIST

Since 1975, the Department of Defense annually has conducted the Youth Attitude Tracking Study (YATS), a computer-assisted telephone interview of a nationally representative sample of 10,000 young men and women. This survey provides information on the propensity, attitudes, and motivations of young people toward military service. Enlistment propensity is the percentage of youth who state they definitely or probably plan to be serving on active duty in one of the Services in the next few years. Research has shown that the expressed intentions of young men and women are strong predictors of enlistment behavior.

Enlistment Propensity Trends

Results from the 1997 YATS show that, overall, young men's propensity for military service has not changed significantly in the last three years (see table G-18). In 1997, 26 percent of 16-21 year-old men expressed propensity for at least one active-duty Service, about the same as in 1996 (27 percent) and 1995 (28 percent). Propensity for each of the Services also remained about the same in 1997 as in 1995 and 1996.

However, the propensity of young Hispanic men dropped significantly, from 44 percent in 1995 to 37 percent in 1997. Following the Cold War, young black men's propensity dropped from 54 percent in 1989 to the 32 in 1994. White men's propensity also dropped, from 26 percent in 1989 to 22 percent in 1994. Neither propensity of black nor white young men has changed significantly since 1994. Until the current year, Hispanic men's propensity declined only slightly from Cold War levels.

Propensity of 16-21 year-old women also declined significantly, from 14 percent in 1996 to 12 percent in 1997. In the previous 5-year period, as career opportunities in the Services opened to women and more women enlisted, women's propensity had increased gradually, from 12 percent in 1992 to 14 percent in 1996. The 1997 drop, returning women's propensity to 1992 levels, is consistent across all four Services. The 1997 drop in young women's propensity crosses racial and ethnic lines; for whites, blacks, and hispanics, 1997 propensity statistics are roughly four-fifths of 1996 figures.

To downsize the military following the Cold War, the Services reduced their accession objectives below the levels required to replace those leaving military service. Although the post-Cold War decline in young men's propensity was troubling, nevertheless sufficient numbers of men enlisted to allow the Services to meet reduced recruiting goals. Now, as force drawdown objectives are met, recruiting missions are rising to levels required to replace those leaving service. Current YATS results indicate the supply of young men and women with a propensity for military service, relative to accession requirements, is less than before the end of the Cold War. Thus, recruiting high quality youth into the armed forces will continue to be a challenge.

Factors Influencing Propensity

Regardless of their propensity for military service, YATS respondents are asked to provide, in their own words, reasons for joining and not joining the military. The most frequently mentioned

reasons for joining are money for college, job training and/or experience, duty to country, pay, travel, and self-discipline.

Most young men and women see postsecondary education as the key to prosperity and job security. The percent of youth going to college is increasing, and YATS results show that young people are aware that the military offers money for a college education. Educational funding is the most frequently cited reason for enlisting, and the percent of youth mentioning education funding is growing. In 1997, 32 percent of men and 36 percent of women identified money for college as a reason for joining; comparable 1991 figures were 24 percent of men and 31 percent of women. Extended in-depth interviews with selected YATS respondents suggest that, for affluent youth, acquiring funding for college was never a concern, and military service was never a consideration. In fact, analysis of YATS data shows youth most likely to go to college have below-average propensity but are most likely to cite educational funding as a reason for joining. Nonetheless, many young people have the will and the talent for college, but lack the funds. The Montgomery GI Bill, the Army/Navy/Marine Corps College Funds, the Service academies, and Reserve Officer Training Corps scholarship programs provide the Services with an effective means of attracting these talented young men and women to the military, and provide these youth the means to gain a college education.

For many noncollege youth, military service offers an opportunity for job experience and specialized training. In 1997, 25 percent of men, and 17 percent of women mentioned job training and experience as a reason for entering military service. Other reasons for joining are mentioned much less frequently. In 1997, pay was mentioned by 12 percent of men and 10 percent of women; duty to country was mentioned by 11 percent of men and 9 percent of women; travel by 8 percent of men, 6 percent of women, and discipline by 6 percent of men, 4 percent of women. The percentages of men and women mentioning job training, pay, duty to country, travel, and discipline as reasons for joining have not changed significantly in the past few years.

The most frequently cited reason for not entering military service concerns military lifestyle, mentioned by 17 percent of men and 22 percent of women in 1997. Military service evokes images of discipline and regimentation for most young men, regardless of current or past propensity. These images tend to deter many college-bound youth from interest in the military. Young people believe they have the self-discipline to achieve their goals and see regimentation as stifling. Others, however, see externally imposed discipline as beneficial. Following the 1995 YATS, DoD conducted extended interviews with young men who seemed likely to enter military service. Some noted that learning discipline served an important maturing role in their lives; others look forward to learning this critical life lesson in military service. The military would provide a guiding structure within which to get their priorities straight. It is ironic that the reason most frequently cited for not entering military service might, for many, be the primary motivation for enlisting.

Other reasons for not entering military service suggest, not rejection of the military, but commitment to an alternative. In 1997, 10 percent of men and 7 percent of women mentioned other career interests as a reason for not joining. Seven percent of men and 14 of women mentioned family obligations; many enlistment-age youth feel they are not able to enlist because

they are needed to care for ailing parents or for their own families. Some youth (9 percent of men; 8 percent of women) suggested the length of commitment to the military is too long. While some military service might be beneficial, it does not offset deferring other career or education plans for 4 years. Finally, about 9 percent of men and 6 percent of women cite danger as a reason for not entering military service; 6 percent of men and 4 percent of women stated military service was against their beliefs.

Relative to whites and Hispanics, young black men and women are more likely to mention pay as a reason for joining, and less likely to mention educational funding or duty to country. As reasons for not entering military service, white men and women are more likely to mention other career interests, or to object to the length of commitment, perhaps because they have more career opportunities than minority men and women. Finally, familial obligations are mentioned as an obstacle to military service more frequently by women (compared to men) and Hispanics (compared to whites and blacks).

YATS respondents are also asked whether their interest in military service has increased or decreased and, if so, why it has increased or decreased. These questions elicit much of the same information described above. Educational funding and job training are the most common reasons for increased interest. Going to school and other career plans are the most common reasons for decreased interest. These questions, however, also point to the role of influencers (e.g., parents, friends) as a factor affecting propensity for military service. In 1997, 11 percent of young men and 13 percent of young women cited conversations with military members or veterans as a reason for increased interest. Ten percent of both men and women whose interest had decreased cited conversations with military members or veterans as a reason for decreased interest. Among both those whose interest had increased and those whose interest had decreased, conversations with military members (other than recruiters) and veterans were more frequently mentioned than recruiter contact and recruiting advertising combined. Over 4 out of 5 young people know someone who is, or has been, in the military, and conversations with military members and veterans influence propensity to enlist. Fortunately, the evidence shows veterans' influence is more often positive than negative.

CONCLUSION

Both men's and women's propensity remain substantially below pre-drawdown levels and, if past experience is a guide, below the levels needed to meet increased accession requirements while maintaining the high quality required for today's military. These findings underscore the need for college funds to attract an important segment of college-bound youth (those needing money). Many other youth, however, are attracted by the prospects of job training and experience, and by the discipline universally viewed as intrinsic to military service. To meet recruiting goals, DoD must address the needs of all market segments.

Most young people know someone who is, or has been, in the military. Propensity for military service is strongly influenced by what these people say, and how they behave. It will continue to be important for Department of Defense leaders to ensure that the people currently in the military not only believe they are fairly treated, but also derive pride and satisfaction from their

experiences. Veterans who have served will always be a powerful influence on the attitudes and perceptions of potential recruits.