CHAPTER 6
NUCLEAR FORCES AND MISSILE DEFENSES

Nuclear forces and missile defense are critical elements of U.S. national security and will remain so into the future. Strategic forces continue to provide a credible and a highly 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. The Administration is also committed to developing a capability that could protect the United States, its forces abroad, and its friends and allies from the effects of nuclear, biological, and chemical weapons and the missiles that can deliver them. The United States has a comprehensive strategy for countering such threats, a key component of which is missile defense. The structure of the theater and national missile defense programs meets present and projected future missile threats, provides the best technology to meet these threats, and is fiscally prudent.

STRATEGIC AND THEATER NUCLEAR FORCES

Nuclear forces are an essential element of U.S. security, serving as a hedge against an uncertain future and as a guarantee of U.S. commitments to allies. Accordingly, the United States must maintain survivable strategic nuclear forces of sufficient size and diversity—as well as the deployment of theater nuclear weapons to NATO and the ability to deploy cruise missiles on submarines and aircraft—to deter potentially hostile foreign leaders with access to weapons of mass destruction.

The United States continues to work toward further agreed, stabilizing reductions in strategic nuclear arms, and is confident that once the Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) has entered into force, it can maintain the required deterrent at the force levels envisioned in a future treaty (START III), as agreed to in the Helsinki Accords and reinforced at Cologne, Germany, in June 1999, and in Moscow, Russia, in June of 2000.

START TREATIES

The START I Treaty entered into force on December 5, 1994. The United States and the four successor states that assumed the rights and obligations of the former Soviet Union under START—Belarus, Kazakhstan, the Russian Federation, and Ukraine—are working to achieve the final phase of nuclear force reductions by December 2001, as mandated by that treaty. The Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II), approved by the U.S. Senate in January 1996, has been ratified by Russia but has not yet entered into force because of certain conditions the Russian Duma attached to it. START II calls for reductions in aggregate force levels, conversion or elimination of multiple-warhead intercontinental ballistic missile (ICBM) launchers, elimination of heavy ICBMs, and a limit on deployed submarine-launched ballistic missile (SLBM) warheads. It will eliminate the most destabilizing strategic nuclear systems—multiple warhead ICBMs—and will reduce deployed strategic nuclear warheads by

about two-thirds from Cold War levels. The original START II Treaty called for the final reduction phase to be completed no later than January 1, 2003.

At their March 1997 meeting in Helsinki, President Clinton and Russian President Yeltsin issued a joint statement establishing parameters for future reductions in nuclear forces beyond START II. In this statement, they agreed to an overall limit of 2,000 to 2,500 deployed strategic warheads for a future START III Treaty.

Table 6-1

Reductions in U.S. Operational Strategic Nuclear Arsenal Force Levels—FY 1990 through FY 2007

	FY 1990	FY 2000	START I December 5, 2001	START II December 31, 2007
ICBMs	1000	550	550	500
Attributed Warheads on ICBMs	2450	2000	Not over 2000	500
SLBMs	568[a]	432[b]	Not over 432	336
Attributed Warheads on SLBMs	4864[a]	3456[b]	Not over 3456	Not over 1750
Ballistic Missile Submarines	31[a]	18[b]	Not over 18	14
Attributed Warheads on Ballistic Missiles	7314[a]	5456[b]	Not over 4900	Not over 2250
Heavy Bombers	324	114[c]	97[c]	97[c]

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

[b] Excludes one Benjamin Franklin-class (Poseidon missile) (SSBNs) converted to Special Operations Forces that is still START accountable.

[c] Excludes 93 B-1s that are devoted entirely to conventional missions. B-1s are still accountable as a nuclear bomber under START I, but would not be accountable under START II.

They also agreed to extend the deadline for elimination of strategic nuclear delivery vehicles under START II to December 31, 2007, but stipulated that systems to be eliminated under START II must be deactivated by December 31, 2003.

These agreements were formalized in a Joint Agreed Statement and a Protocol to the treaty in New York in September 1997, extending the time period for full implementation of START II until December 31, 2007. In addition, letters were signed and exchanged 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. Although Russia has now ratified the START II Treaty, because of Russian conditions, the U.S. Senate must now give its advice and consent to ratify the Protocol to the START II Treaty and its associated Joint Agreed Statement before the Treaty can enter into force.

Since establishment of the Cooperative Threat Reduction (CTR) program in 1991, the United States has been assisting Russia, Ukraine, Belarus, and Kazakhstan in implementing strategic force reductions required under the START I Treaty. In anticipation of further reductions mandated by the START II Treaty and in potential support of a negotiated START III Treaty, the United States is planning additional CTR projects with Russia.

FORCE STRUCTURE AND CAPABILITIES

Until START II enters into force, the United States is protecting options to maintain a strategic nuclear arsenal at essentially START I levels. If START II is implemented as amended by the Helsinki Summit letters, accountable warheads will be reduced by the end of 2007 to a level of 3,000 to 3,500, of which no more than 1,750 may be carried on SLBMs. Strategic nuclear delivery vehicles that will be eliminated under START II will be deactivated by December 31, 2003, providing the benefits of a reduced force structure four years prior to the agreed 2007 date for full elimination.

LAND-BASED INTERCONTINENTAL BALLISTIC MISSILES

At the end of FY 2000, the United States had 500 Minuteman III ICBMs and 50 Peacekeeper missiles. If START II enters into force, the United States will modify all Minuteman III missiles to carry only one warhead and will retire all Peacekeeper missiles. In this transition, DoD will redeploy the Mark 21 reentry vehicle (RV), currently deployed on Peacekeeper, on a portion of the single RV Minuteman force. Mark 21 RVs contain features that further enhance nuclear detonation safety and reduce the risk of plutonium dispersal in the unlikely event of a fire or other mishap.

The United States is not developing or producing any new ICBMs. This makes it difficult to sustain the industrial base needed to maintain and modify strategic ballistic missiles. To maintain the Minuteman ICBM system and to preserve key industrial technologies needed to sustain ICBMs and SLBMs, the Department plans to replace guidance and propulsion systems, as well as to preserve a core of expertise in the areas of reentry vehicle and guidance system technology. Further, the Air Force is exploring plans for a replacement to the Minuteman III around 2020.

SEA-BASED BALLISTIC MISSILES

The Ballistic-Missile Submarine (SSBN) fleet has reached its planned total of 18 Ohio-class submarines. The first eight Ohio-class submarines each carry 24 Trident I (C-4) missiles; the final ten are each equipped with 24 Trident II (D-5) missiles. The SSBN fleet's survivability and effectiveness are enhanced through the D-5 missile's improved range, payload, and accuracy. The Future Year Defense Plan (FYDP) 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. Backfits during regularly scheduled ship depot maintenance periods began in 2000. The United States will retain 14 SSBNs armed with D-5s, while the four oldest Ohio-class SSBNs will be eliminated or converted. D-5 missiles aboard the 14 boats, capable of carrying eight warheads a piece, will be downloaded consistent with START II limits. The FYDP also supports Navy planning for a life extension to the D-5 SLBM to match missile life to the recently extended Trident submarine service life of 44 years.

HEAVY BOMBERS

The U.S. bomber force consists of 93 B-1s, 94 B-52s (includes 18 attrition/reserve aircraft), and 21 B-2s. Operational B-2s, all deployed from Whiteman AFB, Missouri, are Block 30 configuration aircraft. B-2 and B-52 bombers can be used for either nuclear or conventional missions. The B-1 force is dedicated to, and has been equipped exclusively for, conventional operations.

READINESS

Selected elements of U.S. strategic forces maintain the highest state of readiness to perform their strategic deterrence mission. And while these forces can respond promptly to aggression if necessary, they can only be used with proper authorization from the National Command Authorities. A credible and effective nuclear deterrent requires proper support for all of its components: attack platforms, other weapons systems, command and control elements, the nuclear weapons stockpile, research and development capabilities, the supporting industrial base, and well trained, highly motivated people.

U.S. ICBMs and SLBMs on day-to-day alert are not targeted against any specific country. The missiles, however, can be assigned targets on short notice. The United States maintains two full crews for each SSBN, with about two-thirds of operational SSBNs routinely at sea. At least one and often two U.S. SSBNs are undergoing long-term overhauls at any given time and are not available for immediate use. All 550 ICBMs, with the exception of a few undergoing routine maintenance, are maintained on a continuous day-to-day alert. The bomber force is no longer maintained on day-to-day alert, although it can be returned to alert status within a few days if necessary. No nuclear weapons can be executed except by direction of the President. This has been a longstanding U.S. policy and remains so.

NUCLEAR MISSION MANAGEMENT

The Department relies upon the Nuclear Mission Management Plan (NMMP) to provide an integrated approach for the support of the nuclear mission. The NMMP provides the policy backdrop for the maintenance of the nation's nuclear forces, describes their integrated architecture as it exists today, and summarizes the efforts of the Services and defense agencies to sustain and modernize a credible deterrent. A concise, comprehensive reference on DoD programs supporting the nuclear deterrent, the NMMP is a valuable tool for decision making in the Department.

STOCKPILE STEWARDSHIP

The President declared that maintenance of a safe and reliable nuclear weapon stockpile is a supreme national interest of the United States. The Department of Energy's Stockpile Stewardship Program (SSP) is the United States' primary means of ensuring the safety and reliability of its nuclear deterrent, absent nuclear testing. The SSP develops new tools to supplant nuclear explosive testing as the means to sustain the confidence obtained in the past from nuclear explosive testing. There was high confidence in the enduring stockpile when the United States entered into a nuclear testing moratorium in 1992. Since that time, the SSP, principally its surveillance program, has uncovered problems including those associated with aging. Through the SSP, an understanding of those problems has been developed, coupled with programs to address them. The SSP still faces challenges; but as long as it continues to get the resources it needs, it will keep pace with the complex problems likely to be encountered in the future to resolve a safety or reliability issue relating to a warhead critical to the U.S. deterrent. Should annual certification reveal a

problem that can only be resolved by nuclear explosive testing, the Secretaries of Defense and Energy will inform the President and Congress of the need to resume nuclear testing.

FUNDING AND MODERNIZATION

Funding for strategic nuclear forces—ICBMs, SLBMs, and nuclear bombers—has significantly declined in recent years, as has the fraction of the total defense budget that is devoted to nuclear forces. A few modernization programs for strategic forces are currently under way: B-2 modifications, primarily for conventional missions; D-5 SLBM life extension activities and procurement; conversion of four SSBNs from the C-4 to the D-5 missile systems; and Minuteman III life extension activities. With most nuclear modernization efforts complete, programs to sustain nuclear forces and their readiness now account for most strategic nuclear funding.

THEATER NUCLEAR FORCES

As reaffirmed by NATO in its April 1999 Strategic Concept, theater nuclear forces, in the form of dual-capable aircraft, in the United States and NATO are an essential political and military link between the European and North American members of the Alliance. They also contribute to the spectrum of response options to deter aggression. The United States will continue to maintain these weapons in NATO, but at levels significantly below Cold War levels. All naval theater nuclear weapons are in storage. Nuclear weapons capability on surface ships has been eliminated, but the capability to deploy Tomahawk Land Attack Missiles armed with a nuclear weapon on submarines has been maintained.

COMPREHENSIVE TEST BAN TREATY

On October 13, 1999, the United States Senate rejected the Comprehensive Test Ban Treaty (CTBT). Nevertheless, the President stated that the United States would not abandon it. Rather, he stated he fully intends that the United States will eventually ratify the treaty. Accordingly, the administration will work with the Senate to ensure that the merits of the CTBT are well understood and to address Senators' legitimate concerns. Former Chairman of the Joint Chiefs of Staff, General John Shalikashvili, was appointed special advisor to the President and Secretary of State on CTBT to address Senate concerns about the CTBT and help build bipartisan support for eventual advice and consent to ratification of the Treaty.

The President also reaffirmed U.S. policy of maintaining a moratorium on nuclear explosions, a policy that has been in place since 1992. The other nuclear weapon states also have policies of not conducting any nuclear explosions, pending CTBT entry into force. The United States will continue to urge the nuclear weapon states to maintain the moratorium on nuclear testing that they have declared and all other states to show similar restraint.

The purpose of the CTBT is to ban all nuclear explosions and thus help constrain nuclear proliferation. The CTBT cannot prevent proliferation. However, the prohibition of all nuclear explosions will help make it more difficult for states possessing nuclear weapons to improve existing types or to develop advanced new types of nuclear weapons.

The CTBT would prohibit only nuclear explosions. It would not prohibit stockpile stewardship activities the United States needs to carry out to maintain its nuclear deterrent. Such activities include non-nuclear

testing, subcritical experiments, preparations to resume full-scale nuclear testing, computer modeling and simulation of nuclear explosions, and any other stockpile maintenance activities not involving a nuclear explosion. Similarly, the treaty would not prohibit design, development, production and remanufacture of nuclear weapons.

MISSILE DEFENSES

The proliferation of nuclear, biological, and chemical (NBC) weapons, in addition to conventional warheads, and the missiles that can deliver them pose a major threat to the security of the United States, 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 to deliver them. Some of these countries are pursuing capabilities for much longer-range ballistic missiles. The U.S. missile defense program reflects the urgency of this immediate threat through both its Theater Air and Missile Defense (TAMD) programs and its National Missile Defense (NMD) program. The objective of these programs is to develop as quickly as possible a highly effective defense system against ballistic missiles from states of concern. Finally, the Department is continuing development of technology to integrate and 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 seeks to shape the international security environment in ways favorable to U.S. interests, respond to the full spectrum of threats, and prepare for an uncertain future. Missile defense is a key component of this strategy. Missile defenses may contribute to the reduction and prevention of missile proliferation and strengthen regional stability by undermining the utility of ballistic missiles to potential aggressors, both critical for shaping the international security environment. Theater missile defenses (TMD) are key to protection of deployed forces as they act in defense of U.S. national security interests. Additionally, the U.S. ability to provide missile defense protection to allies, in conjunction with the extended deterrent from the U.S. nuclear umbrella, may contribute to mitigating the desire of many states to acquire NBC weapons and ballistic missiles.

At the same time, missile defenses are essential for responding to growing ballistic and cruise missile threats. The threat of missile use in regional conflicts has grown substantially. The potential combination of NBC weapons with theater-range missiles poses very serious challenges to U.S.-led coalition defense efforts. 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 intimidate allies or friends and discourage them from seeking U.S. protection or participating in coalitions with the United States. Even small-scale theater missile threats, coupled with NBC weapons, dramatically raise the potential costs and risks of military operations. Effective theater missile defenses will ensure that the United States is prepared to confront regional instability or conflict successfully in such an environment.

NATIONAL MISSILE DEFENSE PROGRAM

The NMD program has anticipated for some time the possibility that states of concern could come to possess intercontinental ballistic missiles that could threaten the United States. This possibility was underscored by the August 1998 North Korean attempt to launch a satellite on a Taepo Dong-1 (TD-1)

missile. The launch demonstrated some important aspects of ICBM development, most notably multiple-stage separation. While the Intelligence Community expected a TD-1 launch for some time, it did not anticipate that the missile would have a third stage or that it would be used to attempt to place a satellite in orbit. A three-stage variant of the TD-1, if successfully developed and deployed, could pose a threat to portions of the United States as well as to the territory of U.S. allies.

The Intelligence Community's current view, however, is that North Korea is more likely to develop the Taepo Dong-2 (TD-2) missile as a weapon. The TD-2 is a derivative of TD-1 technology, and a two-stage TD-2 could have the range to reach Alaska, while a three-stage variant could bring most of the lower 48 states within range of North Korean ballistic missiles. The Intelligence Community believes North Korea could launch a TD-2 at any time, unless it is further delayed for political reasons. Other states of concern, particularly Iran, could test an ICBM in the latter half of this decade, using foreign assistance. These nations may also pursue a TD-type ICBM, possibly with North Korean assistance or purchase such a North Korean system outright, in the next few years.

In the past several years, the Department of Defense has made significant progress on the NMD program, including the completion of environmental impact statements for possible interceptor sites in Alaska and Grand Forks, North Dakota. The Department also conducted three intercept tests (in October 1999 and January and July 2000). In September 2000, the President determined that there was not sufficient information about the technical and operational effectiveness of the entire NMD system to move forward with deployment at that time, although the program is sufficiently promising and affordable to justify continued development and testing. In making this decision, the President considered four factors: whether the expected threat is materializing; the status of the technology based on an initial series of rigorous flight tests; affordability; and the implications that going forward with the limited NMD deployment would hold for the overall strategic environment and U.S. arms control objectives, including efforts to achieve further reductions in strategic nuclear arms under START II and START III.

The FYDP continues to demonstrate the Administration's commitment to an NMD system, and includes a significant level of funding for deploying and NMD system. The deployment, if approved by the next President, would proceed in phases. As an immediate goal to meet early threats, an initial NMD system would be optimized for the most immediate threat—that from North Korea. It would be capable of defending all 50 states against a launch of a few tens of warheads accompanied by simple penetration aids. It would also be capable of defending the U.S. from a handful of warheads from other states of concern. For planning purposes, this first-phase NMD architecture would include 100 Ground-Based Interceptors (GBIs) deployed in Alaska; an X-Band Radar (XBR) deployed at Shemya, Alaska; upgrades to five existing ballistic missile early warning radars; and a combination of the Defense Support Program (DSP) and the Space-Based Infrared Satellite-High (SBIRS-H) satellite systems.

The NMD development program will continue to be conducted in compliance with the Anti-Ballistic Missile Treaty. NMD deployment would require modifications of the treaty, and the U.S. is engaging the Russians on the changes to the ABM Treaty that would permit deployment of a limited NMD system.

THEATER AIR AND MISSILE DEFENSE PROGRAMS

In light of the widespread deployment of theater ballistic missiles today, the Department's immediate missile defense priority is to develop, procure, and deploy TAMD systems to protect key facilities and

forward-deployed elements of the U.S. armed forces, as well as allies and friends. This plan envisions time-phased acquisition of a multi-tier, interoperable ballistic missile defense system that provides defense in depth against theater ballistic and cruise missiles. The Ballistic Missile Defense Organization and the Joint Theater Air and Missile Defense Organization are working together to institute an improved capability to defend against air and missile threats. The increased emphasis on interoperable air and missile defenses has led to a family of systems concept. A key aspect of the family of systems approach is to leverage the synergy among air, ballistic, and cruise missile defenses, and to integrate otherwise separate systems in a comprehensive effort to defeat the threat. This concept calls for a flexible combination of integrated, interoperable TAMD systems capable of joint theater operations. It includes several individual weapon systems, various sensors, and advanced battle management/command, control, communications, computers, and intelligence capabilities.

Lower-tier systems remain the top priority to defeat short-range ballistic missiles. The Patriot Advanced Capability-3 (PAC-3) and the Navy Area Defense systems are the key lower-tier systems for the TAMD mission. PAC-3 will provide air defense of ground combat forces and defense of high-value assets against high-performance, air-breathing, and theater ballistic missiles. The program has completed six successful intercepts, and was awarded a decision in October 1999 to proceed into low-rate initial production.

The Navy Area Theater Ballistic Missile Defense program, using a reconfigured SPY-1 phased-array radar and an upgraded version of the Standard Missile (Block IV-A) on Aegis-equipped ships, will provide U.S. forces, allied forces, and areas of vital national interest at sea and in coastal regions with an active defense against theater ballistic and cruise missiles. Since the second quarter of FY 1999, an interim Navy Area TBMD tracking software capability, Linebacker, has been deployed on two ships and is operational.

The Department has worked with its international partners, Germany and Italy, to restructure the program for the Medium Extended Air Defense System (MEADS), a follow-on lower-tier TMD system. The Department selected an international contractor in 1999 to proceed with the new approach. The new effort will focus on developing a fire control radar and mobile launcher, the key elements needed to fulfill requirements for a highly mobile, rapidly deployable TMD system capable of providing 360-degree coverage for troop defense. The restructured program will allow the Department to take advantage of attractive, less costly program options that build on the capabilities of elements from existing TMD weapons systems, such as PAC-3. The Department is committed to the development of MEADS and has budgeted $1.3 billion in the FYDP.

Upper-tier systems—the Theater High Altitude Area Defense (THAAD) system and the Navy Theater Wide (NTW) program—are designed to intercept incoming missiles at high altitudes in order to defend larger areas, to defeat medium- and intermediate-range ballistic missiles, and to increase theater commanders' effectiveness against weapons of mass destruction. THAAD will make possible more effective protection of broad areas, dispersed assets, and population centers against TBM attacks. With the recent two successful intercept tests, the Department has determined that the THAAD program has met the exit criteria necessary for entering the engineering and manufacturing development (EMD) phase of acquisition. Based on this decision, an FUE of FY 2007 is anticipated for THAAD. The NTW Theater Ballistic Missile Defense (TBMD) system builds upon the existing AEGIS Combat System and the Navy Area Defense TBMD system. NTW takes advantage of available sea room and ship mobility to achieve intercepts on the target TBM in the ascent, mid-course, and terminal stages of exo-atmospheric flight. The

present focus of the NTW program is the AEGIS Leap Intercept (ALI) demonstration project. The ALI project is a series of exo-atmospheric flight tests culminating in the intercept of a TBM target in the last half of 2001. The test series began in FY 1999 and should be completed in FY 2002. ALI will test the four stages of the Standard Missile III (SM-3) missile flight.

As an additional layer of missile defense, the Airborne Laser (ABL) will destroy theater-range ballistic missiles during their boost phase of flight. By terminating powered flight early, ABL causes a missile's warhead to fall short of its intended target. ABL development is paced to accomplish a lethality demonstration against an in-flight ballistic missile in FY 2003.

All TMD programs that are sufficiently mature to permit an ABM Treaty compliance determination have been determined to be compliant, as currently planned, with U.S. ABM Treaty obligations.

Cruise missile defenses (CMD) are either evolving from existing systems or are being developed from scratch. The Cooperative Engagement Capability is being used to net together air defense radar systems while investigations of selected BMD weapons' elements, such as missile defense sensors; battle management/command, control, and communications; and weapons, are underway to adapt and apply them to CMD. The investigations include elements from PAC-3 and Navy Area Defense lower-tier systems. The CMD development strategy is to identify and leverage the synergy possibilities among ballistic missile, cruise missile, and air defense, and to employ them to build-up CMD via an integration of weapons systems into a comprehensive network that can defeat the cruise missile threat. In addition, CMD-focused advanced technology programs are investigating ways to add depth to existing capability, such as shooting down land attack cruise missiles at extended ranges, possibly even over an adversary's territory. To position the Department to capitalize on all CMD developments, a collaborative process is underway to devise concepts for joint employment and a TAMD investment plan, including CMD. The combatant commanders, the Services, the Ballistic Missile Defense Organization (BMDO), and the Joint Theater Air and Missile Defense Organization are participating in this collaborative process.

COOPERATION WITH ALLIES, FRIENDS, AND STRATEGIC PARTNERS

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 theater ballistic missile defense cooperation with its allies and friends. The objectives of U.S. cooperative efforts are:

- To provide effective missile defense for U.S., allied, and friendly troops, and for allied and friendly civilian populations.
- To strengthen U.S. security relationships.
- To enhance collective deterrence of missile attacks.
- To share the burden of developing and fielding theater missile defenses.
- To enhance interoperability between U.S. forces and those of allies and friends.

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 of TMD components or entire systems. Furthermore, as part of an ongoing initiative aimed at countering the TBM threat, the United States is sharing early warning data on launches of theater-range ballistic missiles with allies and friends as a means of engendering greater cooperation on theater missile defense.

In its 1999 New Strategic Concept, NATO reaffirmed the risk posed by the proliferation of WMD and ballistic missiles. The Alliance reached general agreement on the framework for addressing these threats. As part of NATO's Defense Capabilities Initiative, Allies agreed at the April 1999 Washington Summit to develop Alliance forces that can respond with passive and active measures to protect forces and infrastructure from WMD attack. At the Summit the allies agreed that layered ballistic missile defense is necessary for NATO's deployed forces. A notable achievement in this area was the creation in December 1999 of a trilateral U.S.-Dutch-German Extended Air Defense Task Force. This task force, building on the enormous success of the Dutch-led Optic Windmill series of TMD exercises, will ensure interoperability of the three nations' Patriot forces and pioneer operational concepts for multinational missile defense operations. For the past several years, DoD has also held discussions with Japan regarding cooperative research in support of developing a TMD capability. Japan has decided to participate in such cooperative research, which is aimed at providing enhanced capabilities for the Navy Theater Wide program.

U.S. TMD cooperation with Russia is an excellent example of how cooperative approaches to dealing with new regional security challenges of mutual interest, such as the proliferation of ballistic missiles, can advance U.S. security objectives. The United States and Russia have conducted two TMD exercises and agreed to a third, multiple-phase effort. These exercises have provided a practical basis for U.S. and Russian forces to develop agreed procedures to conduct theater missile defense operations during regional contingencies where they could be deployed together, facing a common adversary that resorts to employment of theater ballistic missiles.

Building upon the September 1998 Joint Summit Statement and the successful U.S.-Russian operation of a temporary Joint Missile Warning Center during the millennium rollover, Presidents Clinton and Putin signed an agreement in June 2000 to establish a jointly-manned center in Russia for the timely sharing of information on the launches of ballistic missiles and space launch vehicles detected by each sides' early warning systems. The United States and Russia have also negotiated the establishment of a prelaunch notification of planned missile launches. These initiatives are designed to minimize the risks associated with dangerous reactions to false warning of a missile attack.

In addition, BMDO is engaged in a variety of basic and applied research programs as well as technology cooperation projects such as the Russian Observation Satellites (RAMOS) program. The RAMOS program is a space-based remote sensor research program initiated in 1992. The program will design, build, launch, and operate two satellites that will provide observations of the earth's atmosphere and ballistic missile launches in the short and mid-to-long wavelength infrared bands. The U.S. contribution to RAMOS is planned to be $344 million.

U.S.-Israeli cooperative programs, including shared early warning on theater missile launches, the development of the Arrow TMD system and Tactical High Energy Laser air and missile defense system,

assist Tel Aviv in developing a ballistic missile defense capability to deter and, if necessary, defend against current and emerging ballistic missile threats in the region. Planned interoperability with U.S. theater missile defense systems will afford Israel a more robust defense. Moreover, the program provides technical benefits for both sides by expanding the theater missile defense technology base and providing risk mitigation for U.S. weapon systems.

ADVANCED TECHNOLOGY DEVELOPMENT

Activities in the missile defense technology base are key to countering future, more difficult threats. The technology base program underpins the theater ballistic missile defense, cruise missile defense, and National Missile Defense programs. Advanced Technology Development provides real benefits to the Department's capabilities by reducing development risk in existing and new weapon system and accelerating the introduction of new technologies via upgrades to baseline programs. Moreover, Advanced Technology Development programs provide innovative technologies that counter, or even forestall, an adversary's emerging technologies, and importantly, reduce the cost of future weapons systems. Advanced technologies are also being exploited to reduce the cost of future missile defense systems, as well as advancing U.S. capabilities in Attack Operations, reducing the pressure placed on theater air and missile defense systems.

CONCLUSION

Strategic forces remain a critical element of the U.S. policy of deterrence. Although U.S. nuclear forces have been reduced substantially in size and the percentage of the defense budget devoted to them has been greatly reduced as well, strategic forces continue to provide a credible and a highly 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. The Administration is also committed to developing a capability that could protect the United States, its forces abroad, and its friends and allies from the effects of nuclear, biological, and chemical weapons and the missiles that can deliver them. The United States has a comprehensive strategy for countering such threats. The structure of the theater and national missile defense programs meets present and projected future missile threats, provides the best technology to meet these threats, and is fiscally prudent.