Unclassified Statement of

Lieutenant General Ronald T. Kadish, USAF

Director, Missile Defense Agency

Before the

Senate Armed Services Committee
Strategic Forces Subcommittee

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Biography

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Lieutenant General Ronald T. Kadish
United States Air Force
Director, Missile Defense Agency

Lieutenant General Ronald T. Kadish is the director of the Missile Defense Agency (MDA), Office of the Secretary of Defense, Pentagon, Washington, DC. The MDA is Presidentially-chartered and mandated by Congress to acquire highly effective ballistic missile defense systems for forward-deployed and expeditionary elements of the U.S. Armed Forces. Additionally, MDA will develop options, and if directed, acquire systems for ballistic missile defense of the United States. As director, General Kadish is the Acquisition Executive for all Ballistic Missile Defense systems and programs.

The general entered the Air Force in 1970 after graduating from the Reserve Officer Training Corps program at St. Joseph's University. He was the program director for the F-15, F-16 and C-17 System Program offices, as well as director for manufacturing and quality assurance for the B-1B System Program Office. He is a senior pilot with more than 2,500 flying hours, primarily in the C-130. Before assuming his current position, he was commander, Electronic Systems Center, Air Force Materiel Command, Hanscom Air Force Base, MA. He was responsible for the Air Force's Center of Excellence for command and control systems, handling more than $3 billion in programs annually.

EDUCATION:
1970 Bachelor of science degree in chemistry, St. Joseph's University, Philadelphia
1975 Master's degree in business administration, University of Utah
1975 Squadron Officer School, Maxwell Air Force Base, AL.
1981 Distinguished graduate, Air Command and Staff College, Maxwell Air Force Base, AL.
1988 Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, DC
1990 Defense Systems Management College, Fort Belvoir, VA.

ASSIGNMENTS:
1. June 1970 - June 1971, student, undergraduate pilot training, Vance Air Force Base, OK

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2. June 1971 - June 1974, C-130E pilot and instructor pilot, 62nd Tactical Airlift Squadron, Little Rock Air Force Base, AR
3. June 1974 - June 1976, wing operations staff officer, 314th Tactical Airlift Wing, Little Rock Air Force Base, AR
4. June 1976 - June 1977, Air Force Institute of Technology's Education-with-Industry, Vought Corp., Dallas
5. July 1977 - August 1980, subsystem co-production officer, F-16 System Program Office, Aeronautical Systems Division, Wright-Patterson Air Force Base, OH
6. August 1980 - June 1981, student, Air Command and Staff College, Maxwell Air Force Base, AL
7. June 1981 - March 1982, C-130E instructor pilot, 37th Tactical Airlift Squadron, Rhein-Main Air Base, West Germany
8. April 1982 - January 1983, wing and base chief, aircrew standardization and evaluation division, 435th Tactical Airlift Wing, Rhein-Main Air Base, West Germany
9. January 1983 - July 1984, operations officer, 37th Tactical Airlift Squadron, Rhein-Main Air Base, West Germany
10. July 1984 - September 1985, director for manufacturing and quality assurance, B-1B System Program Office, aeronautical systems division, Wright-Patterson Air Force Base, OH
11. September 1985 - July 1987, executive to the commander, Aeronautical Systems Division, Wright-Patterson Air Force Base, OH
12. July 1987 - June 1988, Student, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, DC
13. June 1988 - July 1989, chief, program integration division, Office of the Secretary of the Air Force for Acquisition, Washington, DC
14. July 1989 - May 1990, military assistant to the Assistant Secretary of the Air Force for Acquisition, Office of the Secretary of the Air Force for Acquisition, Washington, DC.
15. May 1990 - September 1990, student, Defense Systems Management College, Fort Belvoir, VA
16. September 1990 - August 1992, F-15 program director, Aeronautical Systems Center, Wright-Patterson Air Force Base, OH
17. August 1992 - September 1993, F-16 program director, Aeronautical Systems Center, Wright-Patterson Air Force Base, OH
18. October 1993 - August 1996, program director for the C-17 System Program Office, Aeronautical Systems Center, Wright-Patterson Air Force Base, OH
19. August 1996 – June 1999, commander, Electronic Systems Center, Hanscom Air Force Base, MA
20. June 1999 – present, director, Missile Defense Agency (MDA), Office of the Secretary of Defense, Pentagon, Washington, DC

(MORE)

FLIGHT INFORMATION:

Rating: Senior pilot
Flight hours: More than 2,500
Aircraft flown: C-130, T-37, T-39, F-16, F-15, C-17

MAJOR AWARDS AND DECORATIONS:

Defense Distinguished Service Medal
Legion of Merit
Meritorious Service Medal with three oak leaf clusters
Air Medal
Air Force Commendation Medal with two oak leaf clusters
Air Force Outstanding Unit Award
Air Force Organizational Excellence Award with three oak leaf clusters
Combat Readiness Medal
Air Force Recognition Medal
National Defense Service Medal with service star
Air Force Overseas Ribbon - Long
Air Force Longevity Service Award Ribbon with six oak leaf clusters
Small Arms Expert Marksmanship Ribbon
Air Force Training Ribbon

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant June 3, 1970
First Lieutenant December 14, 1971
Captain December 14, 1973
Major November 28, 1979
Lieutenant Colonel March 1, 1985
Colonel September 1, 1989
Brigadier General September 1, 1993
Major General October 1, 1995
Lieutenant General August 16, 1996

(Current as of January 2002)

The Missile Defense Program
Lieutenant General Ronald T. Kadish, USAF
Director, Missile Defense Agency
Fiscal Year 2003 Budget

Good morning. It is a pleasure to appear before you today to present the Department of Defense's Fiscal Year (FY) 2003 Missile Defense Program and budget.

The Department of Defense is developing effective missile defenses for the territories and deployed forces of the United States, allies, and friends. Ballistic missiles already pose a threat to the United States and to U.S. interests, forces, allies and friends. The missiles possessed by potential adversaries are growing in range, reliability, and accuracy. The proliferation of ballistic missile technologies, materials, and expertise can also occur in unexpected ways, enabling potential adversaries to accelerate missile development or quickly acquire new capabilities. Missiles carrying nuclear, biological, or chemical weapons could inflict damage that far surpasses what we experienced last September 11. The events of that day underscored the vulnerability of our homeland, even to assault from distant regions.

Defensive capabilities to counter this threat cannot be deployed overnight. We also recognize that the threat is continually changing. So we are taking an approach to build missile defenses that will allow us to put capabilities "in play" as soon as practicable to provide the best defenses possible against the projected threat, based on technological progress and success in testing. After nearly a decade of steady developmental progress, we are deploying the first Patriot Advanced Capability 3, or

PAC-3, missiles to give our forces protection against short-range threats. In the coming years we plan to introduce new capabilities to defeat medium- and even longer-range ballistic missiles.

Over the past year, we have made considerable progress in demonstrating key missile defense technologies and integration concepts. This past January we took a significant step forward and broke new ground with the successful midcourse intercept of a medium-range ballistic missile target using a sea-based interceptor. Following successful intercepts of long-range targets in July and December of last year, we gained further confidence in our Ground-Based Midcourse Defense (GMD) design and capability. And with the Airborne Laser, or ABL, we are making steady progress in the development of directed energy technologies by achieving record power levels in the last two tests and successfully completing the final lasing test for Laser Module-1.

Some of our tests showed we need more work to achieve our design objectives. The third test late last year of the boost vehicle under development for the GMD element failed to launch as planned. Because a faster ground-based interceptor will increase significantly our engagement envelope, we are focusing intently to resolve the associated development problems. Recently, PAC-3 began a series of operational tests. In mid-February, PAC-3 teamed up with PAC-2 in a multiple simultaneous engagement test to intercept three air-breathing targets, but intercepted just one. Despite some setbacks, we continue to make remarkable strides, Mr. Chairman, and we grow increasingly confident in our ability to deliver effective missile defense capabilities over the next few years. Yet we should all recognize that there remains a long road ahead.

Approach to Missile Defense

The Missile Defense Agency (MDA) will develop incrementally a Ballistic Missile Defense (BMD) System that layers defenses to intercept ballistic missiles of all ranges in all phases of flight—boost, midcourse, and terminal.[1] These increments will be transferred to the Services for production and deployment as soon as practicable. We are working with the warfighters, the CINCs, and the Services throughout this process.

Based on the results of last year's rigorous missile defense review, the Department has moved away from an independently managed, element-centric approach and established a single program to develop an integrated BMD System. The BMD System will consist of elements configured into layered defenses to provide autonomous and mutual support, including multiple engagement opportunities, along a threat missile's flight path. The Missile Defense Program supports numerous risk reduction activities, including flight tests, ground simulations, and hardware-in-the-loop demonstrations.

Engineering complexities and operational realities associated with missile defense require operational and system integration as well as an ability to operate elements autonomously. Therefore, a key tenet of the missile defense program is robust, realistic testing within the BMD System Test Bed. This Test Bed is an integrated set of components that are widely dispersed among operationally realistic locations primarily throughout the Pacific and continental United States. While its specific components have independent utility, the Test Bed is designed to support development of missile defense elements and demonstrate an integrated, layered missile defense system. We will use the Test Bed over the next few years to validate the midcourse, boost, and terminal elements, including supporting sensors, and the necessary BM/C2 and communications components. This Test Bed was most recently used to test the Standard Missile-3 interceptor for Sea-based Midcourse Defense (SMD) and in FY 2002 it will host additional GMD and SMD intercept flight tests and a major System Integration Test.

The BMD System Test Bed includes prototypes and surrogates of the System elements as well as supporting test infrastructure to provide trajectory, sensing, interception, and BM/C2 and communication scenarios that resemble conditions under which the System might be expected to operate. It will enable testing against faster, longer-range target missiles than we are using today, and it will allow us to test using different geometric, operational, and element configurations.

As they become available, we could use prototypes and test assets to provide early capability, if so directed. A decision to employ test assets would depend upon the success of testing, the appropriate positioning of Test Bed components, the availability of test interceptors and other assets, and the international security environment. Our test

[1] On January 2, 2002, the Secretary of Defense established the Missile Defense Agency to manage the development of effective missile defenses.

infrastructure, in other words, will have an inherent, though rudimentary, operational capability.

Our program is now entering a new phase, moving from technology development to system engineering, and we face a very significant challenge of integrating many diverse elements into one system. We employ thousands of individuals throughout the United States. We also are collaborating extensively with all of the Military Departments and the Joint Staff as we investigate different basing modes and deal with associated operational and planning challenges. Our approach to managing resources is clearly an important element of our approach to missile defense. This committee's support for the President's "Freedom to Manage" initiative will reduce statutory requirements that can restrict management flexibility, allowing us to more efficiently and effectively execute the Missile Defense program.

Acquisition Strategy

The BMD System is highly complex, so we are using an acquisition approach that capitalizes on advances in missile defense technology and continually adjusts to changes in external factors (e.g., threat, policy, and priorities) as appropriate. We are following an aggressive research, development, test, and evaluation (RDT&E) acquisition strategy that allows us to respond to changes in the threat, manages changes in System technologies, and ensures progress in development and testing.

The BMD System architecture will take shape based on periodic decisions and assessments within the MDA and the Department's Senior Executive Council. Annual assessments will include evaluations of element test performance, system architecture, technological and basing alternatives, and the threat. The initial goal is to provide limited protection against long-range threats for the United States and potentially our allies within the 2004-2008 timeframe, while delivering more advanced capabilities against shorter-range threats.

The traditional requirements process has not worked well for missile defense. Missile defense is a cutting-edge development effort and an area where we have very little operational experience. The requirements definition process typically leverages operational experience to set system specifications many years before actual deployment, a process that can lead to a less than optimum deployed capability that does not take advantage of the most advanced technologies.

Let me illustrate what I mean. The B-52 bomber that first flew in 1952 is hardly the same aircraft that dropped bombs over Afghanistan in the war against terrorism. The original B-52 design, which gave us an early intercontinental bombardment capability, was enhanced over time through hardware and software improvements to meet evolving operational challenges. It may look the same, but today's B-52 is a very different aircraft.

Similarly, we enhanced over many years the Patriot batteries we saw in the 1991 Gulf War. Although its capability to defend small areas was improved during Desert

Shield, performance against Iraqi Scuds was not impressive. As a result, the Department initiated a follow-on enhancement program and replaced the original missile with a completely new interceptor.

These examples illustrate that in today's dynamic security environment, a requirement written in a system's development phase can quickly become irrelevant or a one-way street that leads developers into a technological cul-de-sac. Five years ago, nobody could have written a requirement for today's Internet and gotten it exactly right.

We, therefore, have modified our acquisition approach. In line with the Secretary's decision to cancel the current Operational Requirements Documents (ORDs) related to missile defense, we are using the ORDs as reference documents, but not as the final measures of development progress. Instead of developing a system in response to a clearly defined threat from a known adversary, we are looking at missile capabilities that any adversary could have in a given timeframe. We also continually assess missile defense technology options and availability. Using a capability-based approach to ensure that a militarily useful BMD System can be deployed as soon as practicable, we are setting initial capability standards and engaging the CINCs, Services, and industry. This acquisition approach supports the effective engineering and integration of the BMD System and ensures a transition of effective, threat-relevant system capabilities to the Services for production, deployment, and operations.

While we are moving away from some of the rigidities associated with the traditional acquisition process, we are not abandoning discipline in development. Capability-based acquisition requires continual assessment of technical and operational alternatives at the element and BMD System levels. We will build what we can technologically, and improve it as rapidly as possible. Configuration management and risk management will continue to guide the engineering processes.

In a capability-based approach that pursues parallel development paths, a risk management program is essential. To execute BMDS level risk management, we are identifying risk issues and an analytical basis for modifications and enhancements. This disciplined risk management process supports the annual review and assessment of the BMD System and accommodates significant user participation at the appropriate times during development.

The missile defense acquisition strategy engineers and tests the system using a two-year capability “Block” approach, with the initial introduction of elements into the expanded Test Bed starting as early as FY 2004. The initial BMD System capability (Block 2004) will evolve as technologies mature and are demonstrated satisfactorily in the BMD System Test Bed. This capability will be increased incrementally in future Blocks through the introduction of new sensor and weapon components, and by augmenting or upgrading existing capabilities.

Each BMD System Block is comprised of selected element configurations integrated into the overall System BM/C2. There will be annual decision points at which time assessments will be made on the basis of: effectiveness and synergy within the system; technical risk; deployment schedule; cost; and threat. This assessment of progress will determine whether a given developmental activity will be accelerated, modified, or terminated. Implementing changes expeditiously and prudently maximize value from our investments and allow more rapid program adjustments based on threat projections and technological progress.

Each subsequent Block will build on and be integrated into the capabilities provided by predecessor Blocks that make up the BMD System. This evolutionary strategy allows us to put the high performance technologies "in play" sooner than would otherwise be possible. Once they have been demonstrated, elements or their components will be available for emergency use, if directed, or for transfer to the Military Departments for production as part of a standard acquisition program.

Program Description

Our approach to developing missile defenses builds on the technological, engineering, and integration progress we have made to date. We are currently pursuing parallel development efforts in order to reduce risk in the individual RDT&E efforts and aggressively demonstrating technologies for integration on land, sea, air, and space-based elements. When a capability is sufficiently validated, that element or component will be ready for a decision regarding transition to production.

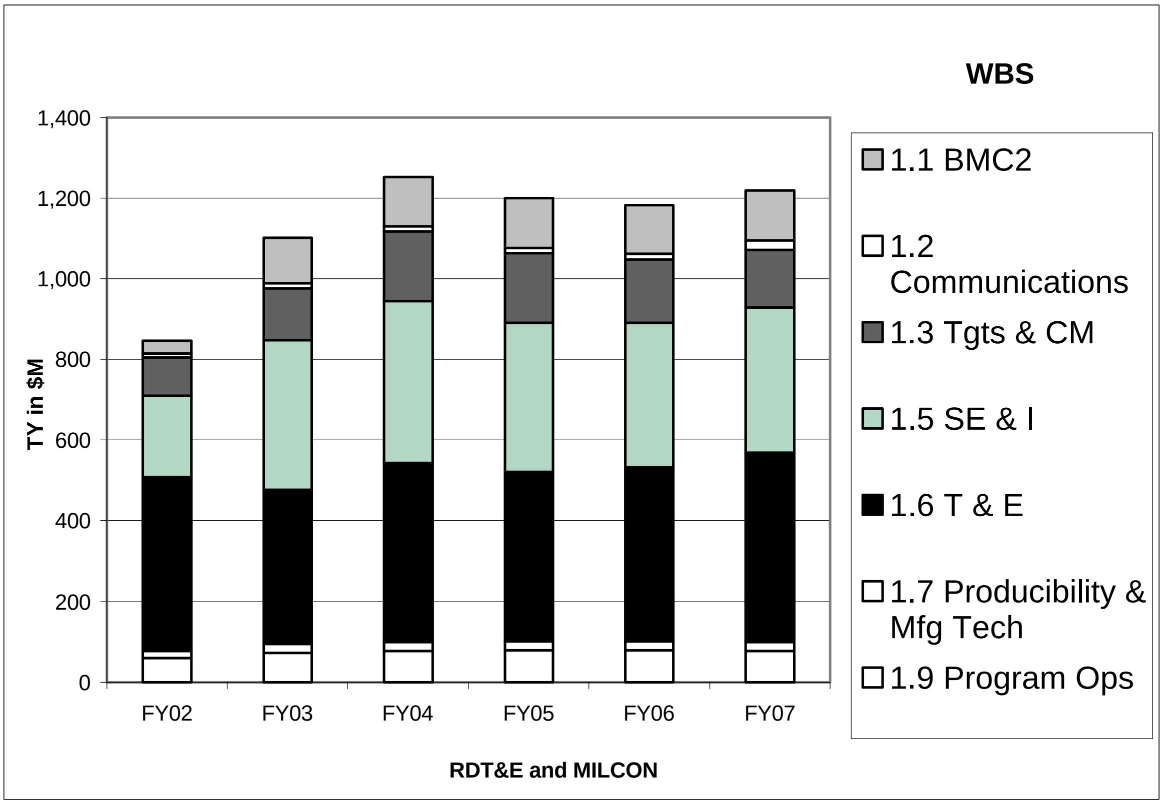
We are also exploring new concepts and experiments for the development of advanced sensor suites and kinetic and directed energy kill mechanisms for potential sea, ground, air, and space deployment. In line with our disciplined walk-before-you-run, learn-as-you-go approach to testing, we are incorporating more realistic scenarios and countermeasures into the missile defense development test program. The Test Bed will be expanded to accommodate this aggressive and robust testing approach.

FY03 Budget Allocation by Work Breakdown Structure (TY $Million) *

WBS	FY02	FY03	FY04	FY05	FY06	FY07
1.0 BMDS	846	1,101	1,252	1,200	1,182	1,219
2.0 Terminal Defense Segment	2,026	1,128	927	1,078	1,149	1,499
3.0 Midcourse Defense Segment	3,762	3,193	3,074	3,016	2,969	2,596
4.0 Boost Defense Segment	600	797	1,390	1,400	1,591	2,275
5.0 Sensor Segment	335	373	489	1,146	900	1,008
6.0 Technology	139	122	155	130	143	147
MDA Total	7,709	6,714	7,287	7,970	7,934	8,743

The Missile Defense Program allocates resources required for the BMD System, including the integration of individual elements into a single, synergistic system to defend the territories and deployed forces of the United States, allies, and friends. The BMD System segment comprises System Engineering and Integration (SE&I), BM/C2, Communications, Targets and Countermeasures, Test and Evaluation, Producibility and Manufacturing Technology, and Program Operations (which includes Management Headquarters and Pentagon Reservation). Funding in this segment provides resources to define, select, test, integrate, and demonstrate the elements in the Terminal Defense, Midcourse Defense, Boost Defense, and Sensor segments. The tasks included in this segment are those that will benefit the entire BMD System, not just a particular element or program. This segment also includes management efforts to ensure architectural consistency and integration of missile defense elements within the overarching missile defense mission.

The President's Budget requests $1.1 billion in FY 2003 for RDT&E in the BMD Segment, an increase of $255 million over the FY 2002 enacted funding level. RDT&E and military construction funding in this segment across the FY 2003-07 FYDP is about $6.0 billion.



As the central engineering component within MDA, the Systems Engineering and Integration activity provides the overall system engineering development and integration of the BMD System. SE&I activities will define and manage the layered BMD System collaboratively by providing detailed systems engineering and integration across the entire spectrum of System capabilities. Capability-based acquisition requires continual assessment of technical and operational alternatives at the component, element, and system levels. The systems engineering process involves setting BMD System Technical Objectives and Goals; addressing existing, emerging, and postulated adversary capabilities; assessing and determining System design and element contributions; synthesizing System Blocks; introducing new technologies and operational concepts; conducting System risk analyses; and considering impacts of potential foreign contributions to BMD System capabilities.

The BM/C2 activity will develop and integrate the BM/C2 and communications functions for the BMD System. To provide maximum flexibility to the war fighter, this activity includes the development of specifications needed to ensure Terminal Defense, Midcourse Defense, Boost Defense, and Sensor segments are properly integrated and interoperable with external systems, to include those of allies. Communications funding consolidates and refines BMD system-wide communication links to allow components of the BMD System to exchange data and to permit command and control orders to be transmitted to weapons and sensors.

The Targets and Countermeasures program provides capability-based ballistic missile targets, countermeasures, and other payloads to support system-testing as well as element testing across the segments. Standard interfaces are being defined between payloads and boosters, so that we can introduce different targets into BMD System flight test scenarios with greater efficiency. Beginning in FY 2002, we are establishing an inventory of target modules (boosters, reentry-vehicles, countermeasures, and instrumentation) to shorten the build-cycle and support more frequent flight tests.

The Test and Evaluation program includes the test and evaluation infrastructure, tools for program-wide use, and execution of system-level testing. Individual BMD System elements will conduct risk reduction, developmental, and operational testing. System level tests go beyond these, testing synergy, interoperability, BM/C2 and communication links across the elements. Also resourced are those tests conducted for the purpose of making critical measurements required across the missile defense regime, for example, measurements of adversary missile characteristics such as plume signatures, lethality measurements, and characterization of potential countermeasures. Such data collection becomes an important input to the design and development of effective defenses.

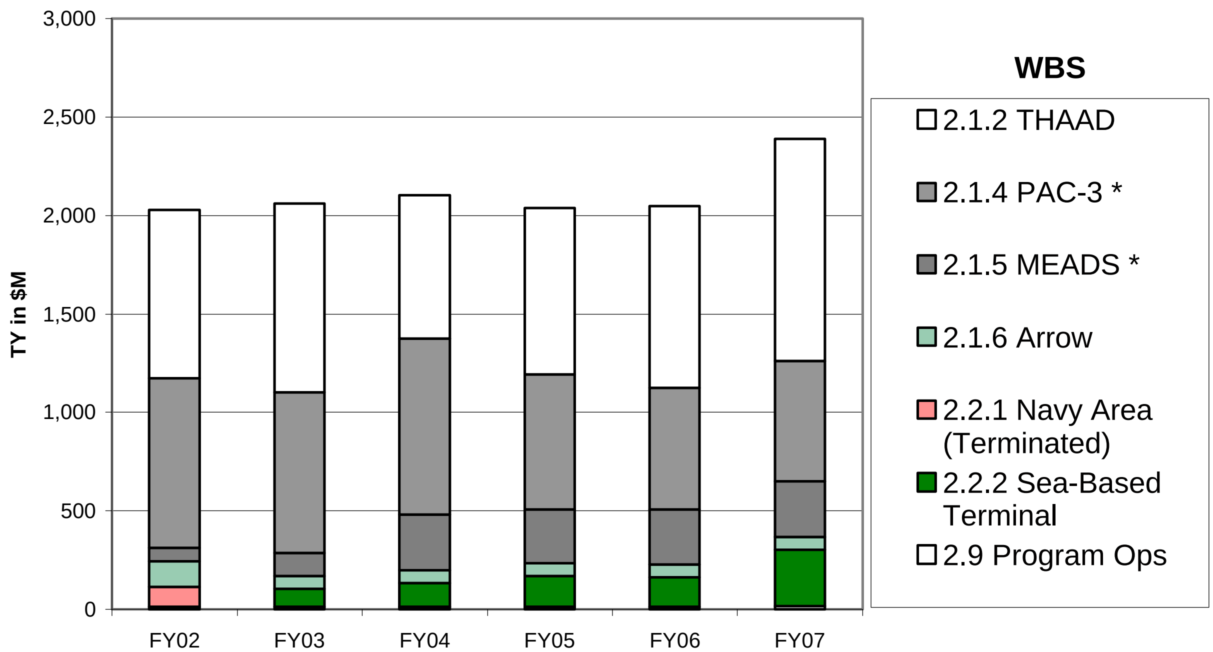
Supporting robust, realistic testing requires a significant investment in the development and maintenance of the requisite test infrastructure, analytical tools, and computational capabilities. Because this supports both the System and all of its elements, it is resourced centrally at the System level. The BMD System test infrastructure includes a number of critical, specialized ground test facilities, test range facilities, launch capabilities, and instrumentation, such as several airborne sensor platforms and other mobile capabilities unique to missile defense testing. Core models and simulations, both for engineering and integration purposes, are also developed, validated, and maintained. These range from detailed phenomenology and lethality codes used by all the System elements to large-scale wargaming simulations required for BM/C2 and operational concept of operations development. A number of computational facilities, data libraries, and simulation facilities are also resourced at the System level.

Terminal Defense Segment (TDS)

The Terminal Defense Segment involves development and upgrades of missile defense capabilities that engage short- to medium- range ballistic missiles in the terminal phase of their trajectory. The missile or warhead enters the terminal phase when it reenters the atmosphere. This is a short phase, lasting less than a minute. Elements in this defense segment include Theater High Altitude Area Defense (THAAD), PATRIOT Advanced Capability Level 3 (PAC-3), Medium Extended Air Defense System (MEADS), and a sea-based terminal concept definition element (successor to the Navy Area activities). Additionally, other elements funded by the MDA are the Israeli Arrow Deployability Program, which includes the Israeli Test Bed (ITB), Arrow System Improvement Program, and studies via the Israeli Systems Architecture and Integration effort.

The MDA budget allocation for TDS activities in FY 2003 is $1.1 billion, which includes funds for RDT&E and military construction. The MDA budget includes about $5.8 billion in FY 2003-2007 for the terminal defense segment. These figures reflect a decision by the Department to transfer to the Army all funding for PAC-3 and MEADS from FY 2003 to FY 2007.

The Congress returned PAC-3 and MEADS to MDA for FY 2002 pending the fulfillment of congressionally mandated requirements. Upon satisfaction of all congressional directives, we will transfer the PAC-3 to the Army.



*** Includes Army funding for PAC-3 and MEADS in FY03-07**

RDT&E, Proc, and MILCON

<u>TDS Elements</u>

THAAD is designed to defend against short- to medium-range ballistic missiles at endo- and exo-atmospheric altitudes, which can make effective countermeasures against THAAD difficult to employ. It also allows multiple intercept opportunities, and can significantly mitigate the effects of weapons of mass destruction. THAAD will protect forward-deployed U.S. and allied armed forces, broadly dispersed assets, and population centers against missile attacks.

In FY 2003, we will complete missile and launcher designs and initiate manufacturing of missile ground test units, continue fabrication of the first and second radars, and continue to fabricate and test the BM/C2 hardware and software. We will support robust ground-testing and flight-hardware testing in preparation for missile flights in FY 2004 at the White Sands Missile Range. The element development phase will refine and mature the THAAD design to ensure component and element performance, producibility, and supportability. There are five major THAAD components: missiles, launchers, radars, BM/C2, and THAAD-specific support equipment.

PAC-3 provides terminal missile defense capability to protect U.S. forward-deployed forces, allies, and friends. PAC-3 can counter enemy short-range ballistic missiles, anti-radiation missiles, and aircraft employing advanced countermeasures and a low radar cross-section. PAC-3 successfully completed development testing last year, during which there were three intercepts of ballistic missiles, two cruise missile intercepts, and four multiple simultaneous engagements of ballistic and cruise missiles.

The start of PAC-3 operational testing in February 2002 shows that we still have work to do. In FY 2003, we will execute activity to develop, integrate, and test evolutionary block upgrades. Plans include transitioning PAC-3 to full rate production to build up PAC-3 missile inventory and field additional PAC-3 capabilities.

The Department decided in December 2001 to cancel the Navy Area program after a Nunn-McCurdy breach. Nonetheless, the need for timely development and deployment of a sea-based terminal ballistic missile defense capability remains. We have initiated the sea-based terminal study directed by the Department, which we expect to conclude this spring.

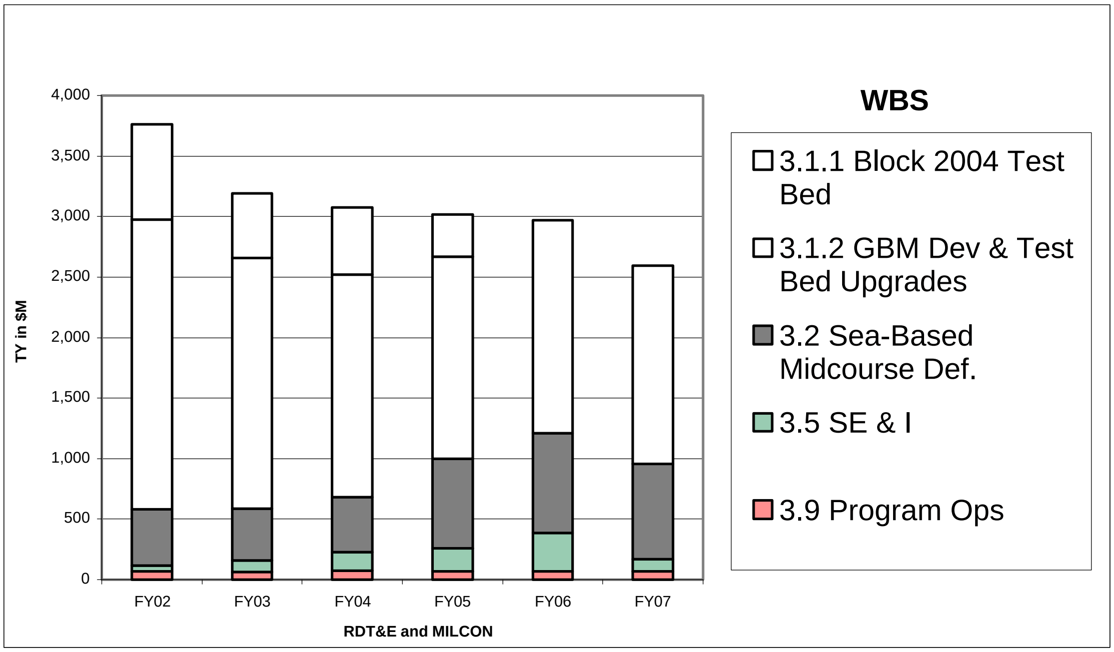
MEADS is a cooperative effort between the U. S., Germany, and Italy. MEADS will provide robust, 360-degree protection for maneuver forces and other critical forward-deployed assets against short- and medium-range missiles and air-breathing threats, such as cruise missiles and aircraft. In FY 2001, the trilateral MEADS activity embarked on a three-year Risk Reduction Effort. In FY 2003, MEADS will continue design and development activities for key system components, which includes efforts to integrate the PAC-3 missile with MEADS.

The Arrow Weapon System (AWS), developed jointly by the United States and Israel, provides Israel a capability to defend against short- to medium-range ballistic missiles. The Arrow Deployability Program allows for Israel’s acquisition of a third Arrow battery and Arrow’s interoperability with U. S. systems. The Arrow System

Improvement Program will include both technical cooperation to improve the performance of the AWS and a cooperative test and evaluation program to validate the improved AWS performance. We will support additional flight-testing and supply of components for additional missiles to be built in Israel. Continued U. S. cooperation with Israel will provide insight to Israeli technologies, which may be used to enhance U.S. ballistic missile defenses.

Midcourse Defense Segment (MDS)

Midcourse Defense Segment elements engage threat ballistic missiles in the exo-atmosphere after booster burnout and before the warhead re-enters the earth's atmosphere. The Ground-based Midcourse Defense and Sea-Based Midcourse Defense elements of the MDS are the successors to the National Missile Defense and Navy Theater Wide programs, respectively. The Sea-based Midcourse activity includes a cooperative missile technology development effort with Japan. Our budget for this segment in FY 2003 (RDT&E and military construction) is almost $3.2 billion, or $570 million less than the funding enacted for FY 2002. MDS funding is about $14.8 billion across the FYDP.



MDS Elements

The Ground-based Midcourse Defense (GMD) will engage threat missiles primarily during the descent phase of midcourse flight. Our GMD development activity has three main objectives: (1) demonstrate Hit-to-Kill; (2) develop and demonstrate an integrated system capable of countering known and expected long-range threats; and (3) develop infrastructure and assets for the initial GMD components of the BMD System Test Bed to conduct realistic tests using operationally representative hardware and software and produce reliable data for GMD and BMD System development.

During FY 2002, the GMD element will build upon the successful intercept tests of July and December 2001 by further demonstrating hit-to-kill and discrimination capabilities using increasingly complex and realistic test-scenarios. Development of the 2004 BMD System Test Bed continues with an upgraded COBRA DANE radar in Alaska as a temporary surrogate for Upgraded Early Warning Radars (UEWRs); an accelerated version of the In-Flight Interceptor Communications System (IFICS) and Battle Management, Command, Control and Communications (BMC3) capability; five "common" silos with sparing; Command Launch Equipment (CLE); and software upgrades.

In FY 2003 five Ground-Based Interceptors using a precursor of the objective booster and an operationally representative kill vehicle will be developed for installation and testing in FY 2004. MDA will continue to develop the objective booster and continue with the complementary EKV activity. This objective may allow for a common EKV for Ground and Sea-based Midcourse Defenses. BM/C2 and communications incremental prototypes will be integrated and demonstrated at multiple locations and assessed with user participation. The Prototype Manufacturing Rate Facility will continue in FY 2003 to support a wide range of interceptor needs for the increased rate of flight tests. Research and development efforts for Block 2004 and subsequent Blocks will support the development of the initial GMD parts of the Block 2004 BMD System Test Bed. This facility will also support continued development and testing of more-capable interceptors, sensors, and targets.

Sea-based Midcourse Defense will develop a ship-based capability to intercept threat missiles early in the ascent phase of midcourse flight. SMD continues to build upon the existing Aegis Weapons System and Aegis Light-weight Exo-Atmospheric

Projectile (LEAP) Intercept (ALI) activities while pursuing alternative kinetic warhead technologies.

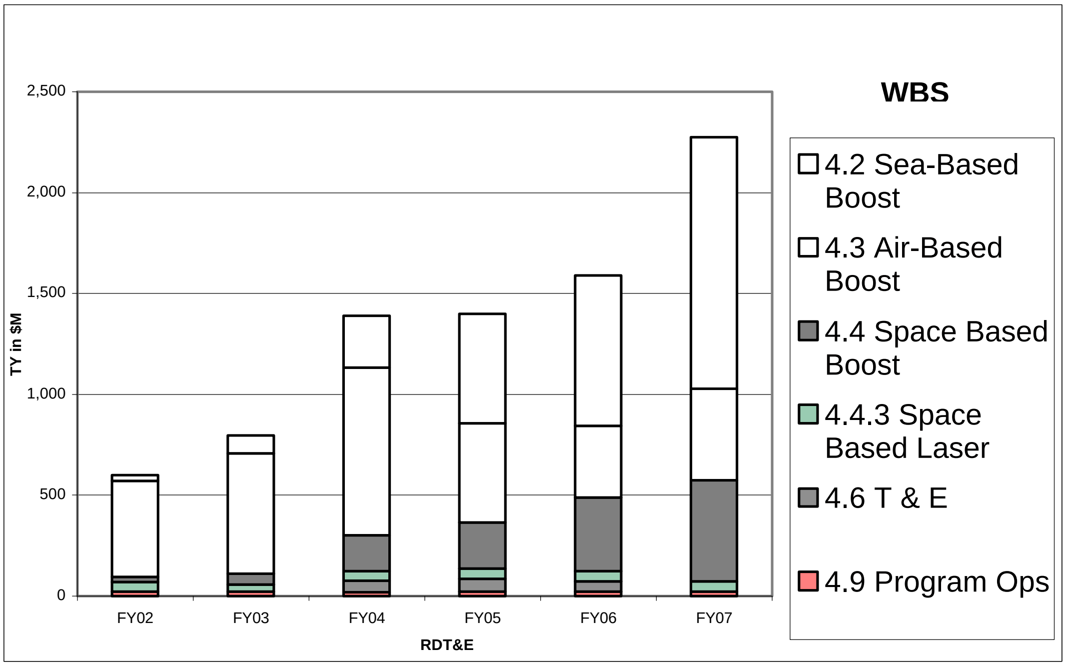
In January 2002, we conducted the first of many flight tests for the Standard Missile 3 (SM-3) in order to demonstrate kill vehicle guidance, navigation, and control against a live ballistic missile target. The SM-3 launched from the USS LAKE ERIE, which was positioned in the BMD System Test Bed more than 500 kilometers away from the Pacific Missile Range Facility, and successfully collided with its target missile in space using infrared sensors. This was the first intercept for the hit-to-kill SMD element.

Funding in FY 2003 continues for concept definition, risk reduction and testing to further the development of a capability to defeat medium- to intermediate-range threats. The SMD project has three primary objectives in FY 2003: 1) continue testing and complete ALI Flight Demonstration Project; 2) design and develop a contingency ship-based ascent and midcourse ballistic missile intercept capability based on ALI and associated technologies; and 3) continue an effort initiated in FY 2002 to provide a ship-based missile defense system designed to provide an ascent midcourse phase “hit-to-kill” technology in the FY 2008-2010 timeframe.

The United States and Japan, under a 1999 Memorandum of Understanding, are conducting a cooperative systems engineering project to design advanced missile components for possible integration into the SMD element. This project leverages the established and demonstrated industrial and engineering strengths of Japan and allows a significant degree of cost sharing.

Boost Defense Segment (BDS)

The Boost Defense Segment addresses both Directed Energy and Kinetic Energy (KE) boost phase intercept (BPI) missile defense capabilities to create a defense layer near the hostile missile's launch point. To engage ballistic missiles in this phase, quick reaction times, high confidence decision-making, and multiple engagement capabilities are desired. The development of high-power lasers and faster interceptor capabilities are required to engineer kinetic and directed energy capabilities to provide options for multiple shot opportunities and basing modes in different geographic environments. MDA RDT&E funding in the Boost Defense Segment is $797 million in FY 2003, an increase of $197 million over FY 2002 enacted funding, and is approximately $7.5 billion from FY 2003 to FY 2007.



The BDS employs multiple development paths. Information derived from this approach will help evaluate the most promising BPI projects to provide a basis for an architecture decision. The BDS will demonstrate the ABL for the Block 2004 Test Bed. It will define and evolve space-based and sea-based kinetic energy BPI concepts. Also, we will evaluate space-based laser technologies. At the appropriate time, based on mature system concepts and technologies, we will initiate a focused demonstration of this concept in the Test Bed.

BDS Elements

ABL will acquire, track, and kill ballistic missiles in their boost phase of flight. Management and funding responsibility for ABL has officially transferred from the Air Force to the Missile Defense Agency. ABL integrates three major subsystems (Laser; Beam Control; and Battle Management, Command, Control, Communications, Computers and Intelligence (BM/C^4I)) into a modified commercial Boeing 747-400F aircraft. ABL-specific ground support equipment also will be developed.

Building on successful sub-system testing and the modification of aircraft structures, in FY 2003 we will commence major subsystem integration and testing activities. The ABL Block 2004 phase culminates in a lethality demonstration (missile shoot-down) against boosting ballistic missile threat-representative targets and delivers one aircraft for integration and testing. If directed, this aircraft could also provide an emergency defensive capability. We plan to develop a second test aircraft, which will further develop this new technology.

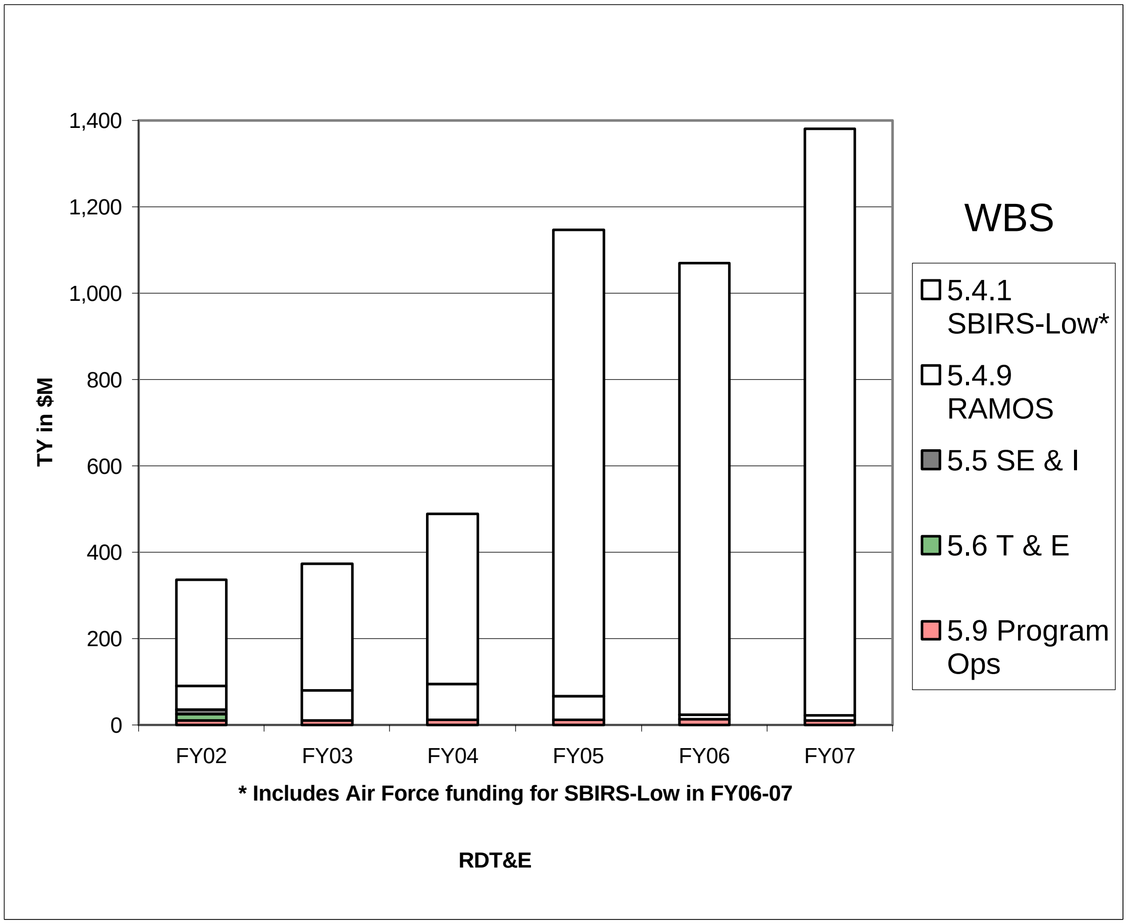
The Kinetic Energy Boost defense activity reduces the technical and programmatic risks of fielding a boost phase intercept capability. The KE Boost strategy is to define and assess militarily useful boost phase concepts, invest in focused risk reduction activities, and execute critical experiments. We will tap the brightest minds in the public and private sectors to define the most effective approach to killing ballistic missiles as they boost. We identified several lucrative technology candidates for immediate investment, including fast burn and flexible axial propulsion technologies, agile kill vehicles, early detection and track sensors, quick-reaction BM/C2, and affordable weapons platforms. We will assess these component technologies through rigorous ground and flight tests.

We will evaluate prototype component and element configurations under realistic operational conditions. We will experiment using emerging component technologies and test infrastructure to resolve tough technical challenges, such as predicting the point of intercept and finding the missile tank in the presence of hot exhaust. When possible, we will exploit targets of opportunity by tracking space launch vehicles and test missions launched out of Vandenberg, Air Force Base. The test data we collect from our risk reduction work and critical experiments will help guide decisions concerning focused demonstrations in FY 2005.

We are evaluating options for continuing SBL activity. The SBL project involves technology development and risk reduction activities in the key areas of laser output, beam control, and beam director design to demonstrate feasibility of boost phase intercept by a high-energy laser in space. These efforts leverage work started under previous SBL-funded technology development programs.

Sensor Segment

Sensors developed in this segment will have multi-mission capabilities intended to enhance detection of and provide critical tracking information about ballistic missiles in all phases of flight. The FY 2003 budget request for RDT&E in this segment is $373 million, which represents an increase of $38 million over FY 2002 funding. The MDA budget provides $3.9 billion for the sensor segment during FY 2003 to FY 2007.



The Space Based Infrared System-Low (SBIRS Low) element will incorporate new technologies to enhance detection; improve reporting on ballistic missile launches regardless of range or launch point; and provide critical mid-course tracking and discrimination data for the BMDS. When SBIRS Low is integrated with other space-based infrared, interceptor, and surface-based radar sensors, the BMD System will have a capability to counter a broad array of midcourse countermeasures. Moreover, SBIRS Low will not carry many of the risks associated with forward deployed ground-based sensors, which can be vulnerable to attack and for which foreign basing rights must be negotiated.

Per direction in the FY 2002 National Defense Appropriations Conference Report, plans for Satellite Sensor Technology, including SBIRS Low, will be provided to congressional defense committees by May 15, 2002. The restructured SBIRS Low activity will support numerous risk reduction activities, including technology maturation, ground simulations, and hardware-in-the-loop demonstrations. Based on cost, schedule, capability, and threat assessments, decisions will be made regarding production of a demonstrated SBIRS Low capability.

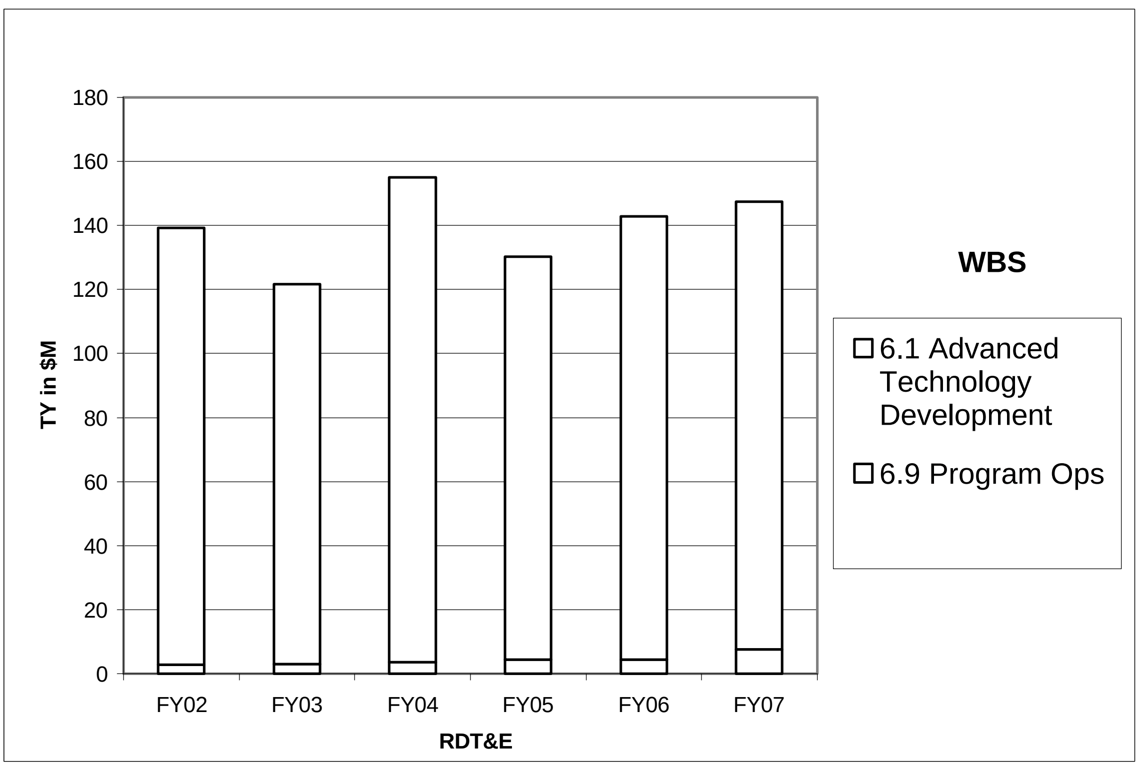
The international component of the Sensor Segment is the Russian-American Observation Satellite (RAMOS) project. We are cooperating with the Russian Federation in the area of early warning missile defense technologies. RAMOS is an innovative U.S.-Russian space-based remote sensor research and development initiative that engages Russian early warning satellite developers in the joint definition and execution of aircraft and space experiments.

The Russians continue to review the agreement to execute the RAMOS project presented last July by the United States. Assuming agreement is reached this summer, in FY 2003 we will complete detailed designs of the satellites and sensor payloads, begin fabrication and assembly of U. S. sensors and ground support equipment, and continue sensor software and modeling and simulation development. Launches of the first and second RAMOS satellites are projected to occur in FY 2006.

Technology

The Technology effort will develop components, subsystems and new concepts based on high-risk, high-payoff approaches. The primary focus of this effort is the development of sensors and weapons for future improved missile defense platforms. Investments maintain a balance between providing block upgrades to current acquisition programs and developing the enabling technologies for radically new concepts.

Our budget for the Technology segment in FY 2003 is $122 million (RDT&E), a reduction of $18 million from FY 2002 enacted level. Funding from FY 2003 to FY 2007 is projected to be about $697 million.



To enable the BMD System to pace the threat, the Advanced Technology Development (ATD) effort is focused in four primary areas: (1) Terminal Missile

Defense, (2) Midcourse Counter-Countermeasures, (3) Boost Phase Intercept, and (4) Global Defense. In addition to these tasks, investments are made in a strong technology base to move beyond the state-of-the-art in radars, infrared sensors, lasers, optics, propulsion, wide band gap materials, photonic devices, and other innovative concepts. The ATD office also works with the Systems Engineer and other segments to ensure seamless transition of proven advanced technology products into the BMD System.

Summary

The BMD System will counter the full spectrum of ballistic missile threats, capitalize on existing technologies and capabilities, and foster innovation. It will incrementally incorporate capabilities needed to detect, track, intercept, and destroy ballistic missiles in all phases of flight using kinetic and directed energy kill mechanisms and various deployment approaches. We have implemented a disciplined and flexible acquisition strategy to provide a timely, capable system. This approach protects against uncertainty by ensuring that the United States will have the ability to defend itself, its deployed forces, allies, and friends from a ballistic missile attack should the need arise.

I believe the approach I have outlined here toward developing and deploying missile defenses can meet the growing threat and provide for the earliest possible fielding of effective defensive capabilities.

Thank you, Mr. Chairman. I would be happy to answer any questions.