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Missile Defense Program and Fiscal Year 2004 Budget
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Good morning, Mr. Chairman, Members of the Committee. It is an honor to appear before you to present the Department of Defense's Fiscal Year (FY) 2004 Missile Defense Program and budget.

In early 2001 we restructured the missile defense program to develop the capability to defend the United States, our allies and friends, and deployed forces against all ranges of missiles in all phases of flight. With the support of Congress, we have made considerable progress in demonstrating key ballistic missile defense (BMD) technologies and system integration. Our testing and analysis give us confidence that hit-to-kill technology works and that we can take the initial steps we are proposing to bolster defenses against short- and medium-range ballistic missiles and introduce a modest defensive capability to defeat a limited long-range threat. Today I will review our progress, discuss why we are confident in our approach, and outline our plans and challenges ahead.

Over the past two years we have conducted several successful intercept tests. We achieved four for five successful long-range, Ground-based Midcourse Defense (GMD) intercept flight tests, demonstrating the hit-to-kill technologies of the Exo-atmospheric Kill Vehicle, critical sensor technologies, and the integration of many geographically dispersed missile defense assets. The failure of the most recent such test (Integrated Flight Test-10) last December resulted from the non-separation of the interceptor and the surrogate booster rocket. This was not a failure of new missile defense technology, but a failure of our quality control processes. We are increasing our already focused quality control efforts. We are taking steps to ensure this separation problem is not repeated. Furthermore, future GMD tests will no longer use the surrogate booster and instead will use one or both of the boosters currently under development.

We are three for three in our ship-based exo-atmospheric intercept tests. Last year Aegis BMD successfully completed its Aegis Lightweight Exo-Atmospheric Projectile (LEAP) Intercept (ALI) project. Based on these results we accelerated the insertion of the follow-on Aegis BMD capability into the Test Bed. Our third intercept in November 2002 was the first ever intercept of a ballistic missile in the ascent phase of flight.

Patriot Advanced Capability 3 (PAC-3) has made significant strides. Since January 2001, we have had five for seven successful intercepts of ballistic missile targets and have begun fielding the first PAC-3 missiles. We also executed more than a dozen successful test flights of the Airborne Laser (ABL) aircraft, completed significant aircraft modifications, and accomplished successful subsystem testing and full-up ground-tests of the first laser module. While we are in the difficult phase of integrating the components into the ABL, our progress to date has increased our confidence that ABL can eventually be integrated into the BMD system (BMDS).

Mr. Chairman, America's missile defense program is on track. The Missile Defense Agency is doing what we told Congress it would do. We listened to your concerns and have sought to address them in a responsible manner. We have faced significant technical and management challenges, but through aggressive testing we have proven that hit-to-kill technology works. We have demonstrated system integration through complex system testing. These tests, combined with analysis of simulations and exercises, give us confidence that the system can take the first steps toward initial defensive operations while performing as a test bed for further realistic testing and continued spiral development.

The President's FY 2004 budget will allow us to continue this significant progress and is structured to incorporate the recommendations of the Defense Science Board summer study of 2002.

Evolutionary Approach to Missile Defense

The BMD system involves many sensors and interceptors that are integrated and layered to enable engagements against hostile missiles in the boost, midcourse, and terminal phases of flight. Layered defenses can allow multiple shot opportunities across all of the engagement segments and potentially within each one of those segments, greatly enhancing our ability to handle countermeasures and destroy in-flight missiles and their payloads.

As I have explained in past hearings, we are building the missile defense system using an evolutionary acquisition approach, so that the system's capability can be enhanced over time. Our plan continues to be one of incrementally providing the decision makers the ability to field militarily useful capabilities based on their technological readiness, suitability for operational use and threat developments.

Last December the President directed the Department to field an initial set of missile defense capabilities in order to reduce the vulnerabilities of the United States, our troops, and our allies and friends. Given our fielding approach, and given the successful testing we have accomplished to date, I believe we are ready for this. The proposed budget for FY 2004 and across the 2004-2009 Future Years Defense Program (FYDP) supports Research, Development, Test and Evaluation (RDT&E) activities to accomplish that goal. We plan to begin operating modest land and sea defense capabilities in 2004 to provide limited protection of our country as well as our troops and critical assets overseas.

In missile defense, we deal routinely with revolutionary technologies and unprecedented engineering requirements. The program we are currently executing recognizes the unique challenges we face and sets out a disciplined course to develop the BMD system in an evolutionary way. Having spent the last couple of years looking at different missile defense options, we are now narrowing our program activities and focusing on development and fielding of the most promising elements.

Consistent with the approach I have described in previous hearings, we are building and fielding limited, militarily useful capabilities as soon as they can be made available. This approach takes into account known and projected threats and the present state of technology. With a capability-based acquisition approach we put capability into the field, test it, use it, get comfortable with it, and learn what works well and what does not. We have structured Test Bed fielding opportunities to occur in “blocks” every two years to improve what we have fielded as needed. Block 2004 (initial defense capabilities) represents 2004-2005, Block 2006 represents 2006-2007, and so on. These blocks will deliver elements and components that are ready for continued rigorous testing and full integration into the system.

With the President's decision, we now have a basic near-term architecture for a limited system to address a range of missile threats. I want to stress that we have no fixed, long-term architecture. We will evolve and improve the capability of the Block 2004 system over time, so that what we propose to field initially in 2004 and 2005 may evolve to look very different a decade later. The number and type of missile defense assets and their locations and basing arrangements may be expected to change to make the system more integrated and capable.

We have adopted this evolutionary approach because a single acquisition cycle is not responsive to rapid changes in threat and technology and is not structured to deal with surprise. We want to avoid prematurely constraining system design by using the traditional requirements process and waiting up to twenty years or more for a defensive capability that would result from using traditional acquisition rules. In a world marked by increasing ballistic missile activity, our nation, forces, and allies cannot afford to wait that long.

In using this evolutionary approach, we still have the ability to incorporate the discipline and intent of the traditional acquisition process. For example, the warfighting community has been heavily involved from the beginning in the development of system elements and components. We are successfully using a spiral development process to put new technologies into play more quickly than if we were to use the traditional approach.

Spiral development requires regular dialogue and active participation between user and developer for delivering a militarily useful set of capabilities. Once we field the initial capability, uniformed personnel will operate the system.

Despite the many uncertainties we face, this approach allows us to be good stewards of the taxpayers' money. The President's recent announcement stands as a good example of this. We are not making an early commitment to large-volume serial production and very large-scale investments. Our fielding commitment will be scaled over time and rise with our confidence that we are on the right development path for this complex, multifaceted system.

Aggressive Research, Development and Test Activities

As we prepare to implement the President's directive, we plan to continue the program's intensive testing activities up to and beyond the 2004-2005 timeframe. We have a single, robust RDT&E program dedicated to the development and demonstration of missile defense technologies and integration concepts. In fact, consistent with our investments over the past two years, the lion's share of the FY 2004 budget request of $7.7 billion for the Missile Defense Agency, roughly $6 billion, will support RDT&E activities that are not directly tied to system fielding. Significant development efforts in FY 2004 include continued work on Theater High Altitude Area Defense (THAAD), ABL, and kinetic energy boost-phase interceptors in the post-Anti-Ballistic Missile (ABM) Treaty environment.

These aggressive RDT&E activities are the basis for proceeding as the President has directed and for continuing development work to build a multi-layered BMD system. We will continue our practice of assessing these activities on a regular basis to see if they can be accelerated or whether they must be truncated or modified in some manner. RDT&E activities occurring in FY 2004 will contribute to Blocks 2004, 2006, 2008 and 2010.

We are still evaluating the impact of our withdrawal from the ABM Treaty. The treaty successfully did what it was intended to do. It severely restricted missile defense development and fielding options. The President's action has made it possible to begin to develop and test aggressively the full range of missile defense technologies and pursue capabilities that make the most sense from the standpoints of technology, operations, and cost.

For example, as a result of the treaty withdrawal, Aegis BMD, the sea-based defense element, began its successful participation in GMD integrated flight tests conducted last October and December. While initially only collecting boost and ascent phase radar data, Aegis BMD has begun engineering efforts to become a full participant in future tests and will eventually provide fire control data to the BMD system.

Our intercept tests against long-range ballistic missiles are very complex, yet since October 1999 we were forced to restrict ourselves to the same intercept flight geometries because of artificial constraints in our current Test Bed and our obligation to remain compliant with the ABM Treaty. Today, in order to test our GMD interceptors, we must launch targets from Vandenberg, AFB in California and interceptors from Kwajalein Atoll in the Pacific Ocean. We are changing that. The Test Bed we are building will introduce flexibility into our test approach and help overcome some basic geographic and geometric limitations by allowing us to test weapons and sensors against ballistic missiles of all ranges along different azimuths and using different trajectories. For test purposes we will introduce variable target launch and impact points and engagement areas.

Robust, realistic testing is absolutely critical to developing an effective missile defense system. Over the past two years we conducted a total of 55 flight tests and 60 ground tests. Seventeen of these tests were flight-intercept tests. Each test builds our confidence in the BMD system. From our flight-testing, we know that the hit-to-kill approach works. We know our sensors can successfully detect and track the target and that our software algorithms can discriminate between reentry vehicles and basic decoys and debris. We know our battle management system can generate orders that put a kill vehicle in a position to achieve intercept. We will continue to refine and improve the system's performance in all areas. Our test program continues to add to our confidence that the basic technologies are sound and that they will work together to provide the nation an effective BMD system.

Our program and budget will continue to maintain a high tempo of increasingly complex ground- and flight-testing. Over the next two years we are planning another 68 flight tests, 58 ground tests, and maintaining the same pace of intercept tests as before. We do system testing to give us confidence that we have the ability to integrate geographically dispersed missile defense elements and components into an effective system. This does not include the many experiments we conduct routinely, the modeling and simulation activity, and the wargame exercises. Our computer predictions are very valuable in this process and give us a great deal of confidence that we are on the right paths.

We remain committed to our aggressive testing approach, where we mature midcourse, boost, and terminal missile defense components and elements through rigorous testing under increasingly realistic and challenging conditions. When we have adequately demonstrated technologies, decisions can then be made concerning their integration into blocks for fielding. Testing activities remain central to what we do and are well supported within our funding request.

Initial Defense Capabilities

The Congress has already funded plans to put five midcourse interceptors into the test bed in silos at Fort Greely in Alaska, develop Aegis BMD, and test the SM-3 interceptor at the Pacific Missile Range Facility in Hawaii. Other activities are currently underway to improve the missile defense Test Bed by upgrading or developing launch sites (including Vandenberg, AFB), radar sensors, battle management and command and control components, communications terminals and networks, and associated test infrastructure in the United States and the Marshall Islands (including airborne, sea-based, and ground-based data collection assets).

Today we are asking the Congress to authorize funds that will allow us to add to this Test Bed and make it operational by 2004. These initial defense capabilities, fielded over a two-year period, will include ground-based interceptors to counter long-range threats, sea-based interceptors to defeat short- and medium-range threats, additional

PAC-3 units, and early warning and tracking sensors based on land, at sea, in the air, and in space.

Before the President's decision, the FY 2004 President's Budget would have reflected the development of a set of Test Bed capabilities that could have been made operational. Instead of building a Test Bed that might be used operationally, we are fielding an initial defensive capability that we will continue to test. All RDT&E activities will support the initial defense capability, and the system elements and components we field will continue to support RDT&E. Because of the relationship between initial defense capabilities and testing, we are asking that all funding associated with both efforts be under Defense-wide appropriations RDT&E. With the December announcement we have quickened the pace at which we are moving forward, but we have not changed the direction in which we are moving.

We are proposing to do in FY 2004 what we said we were going to do in previous hearings, that is, field tested missile defenses a little at a time using a step approach. The missile defense operations we are proposing are unprecedented, and there still is much to learn. I believe there is tremendous benefit in putting this unprecedented technology into the field, in manageable increments, to provide some defense, to learn more about it, gain experience with it, and improve it over time.

The Israeli Arrow program stands out as an example of how fielding militarily useful capability in block increments and in a timely manner can work and how successful it can be. With only four successful intercept flight tests, Israeli officials declared their first Arrow battery operational on October 17, 2000 and fielded that country's first capability to defeat incoming ballistic missiles launched from nearby states. The Israeli system has been operational for more than two years now, and during that time it has conducted additional intercept and flight tests to enhance the system's performance. Plans are moving forward to augment it even further. Surrounded by states having an active interest in ballistic missiles, Israel found a way to field a limited defensive capability on an accelerated timeline and at a time when it could not afford to wait for system testing to be completed.

We in the United States, of course, are not strangers to fielding an unprecedented military capability on an accelerated schedule. Our leadership struggled in the early stages of deploying the first reconnaissance satellites and land- and sea-based ballistic missiles. Urgent national security requirements pressed us to deploy capability soon, and through trial and error we did. Despite test failures, the country persevered and made militarily useful capabilities operational. Since that time, we have dramatically improved the capabilities of those first-generation systems. The parallels between these pioneering programs and the missile defense program are clear.

I believe, Mr. Chairman, that we are ready to take this next step in missile defense. Our fielding approach will not only help rationalize the force structure we deploy from the technological and threat standpoints, but also from the standpoint of cost. We do not now have adequate understanding to submit a bill of many tens of billions of dollars for a huge, long-term fixed architecture. We are able, however, to purchase, produce, and field capabilities in small numbers. This approach will allow us to control costs. With a modest investment and increase by the Department of a total of $1.5 billion spread over the FY 2004 and 2005 budgets, we will provide this country with militarily useful capabilities where none exists today.

In short, this $1.5 billion primarily will add a small number of ground-based interceptors as well as more SM-3 interceptors to the test bed capability we are already building. Future fielding decisions, as we have said all along, will be made in the outlying years based on the progress of technology and the evolution of the threat, subject to the annual congressional appropriations process.

Confidence in Initial Defensive Operations

In assessing our level of confidence with the planned initial missile defense capabilities, we have to strike a balance between our desire for perfection in the missile defenses we deploy and our desire to have as soon as possible a defensive capability where none exists today.

Adequate testing is the key to achieving that balance. And while this testing may not fit the mold of classical operational testing that would traditionally take place prior to full-rate production, we do follow a testing discipline that I believe can give us the confidence to say that what we deploy will work as we have said it would under threat circumstances that we believe we might have to face.

I believe that to strike the right balance we must go through an intense period of testing to demonstrate that the technologies on which we are relying can work consistently under conditions that are increasingly stressful and realistic. We have spent the past two years demonstrating the technologies we propose to employ in the Block

2004 Test Bed. We have said all along that when we do field we will not field a system that will fully meet our missile defense needs. We will face limitations and have gaps, let there be no illusions there. The system we are initially fielding will be limited operationally. But we went down this road knowing that there would be gaps and with a process that is specifically designed to fill those gaps and make up for performance limitations as soon as practicable.

Among the limitations that should be included here is that of operational experience. We need to build operational experience over time with the system that will be guarding our nation and our troops. There is no better way to do that then to put basic elements out into the field and to begin working with those assets to develop the doctrine and concepts of operation we will need and to train the military personnel who will operate it.

We have spent significant amounts of money on testing the GMD and Aegis BMD elements of system. All of the tests to date have been what we have called "developmental tests." Regardless of the names we apply to our testing, we must have assets and infrastructure in the field if we are going to begin to test that system under operationally realistic conditions. If we do not have the weapons and sensors fielded at operationally useful locations, we cannot really do a good job of hooking it all up to make sure it works.

The President's decision allows us to put this materiel out in the field for testing, in locations that make sense from an operational point of view. Given the recent events in the international security environment, the President's decision reflects an urgent need to make that test bed as operational as we possibly can. That decision also recognizes that we will not be fielding the perfect system at the outset.

What we are faced with today is a timing issue. Must we do what has been traditionally called "operational testing" before we can say that we have a capability we can use in an extreme security situation, or can we do both? Can we continue to test the elements and components of a system we also could use to defend ourselves if needed? I believe we can.

Why do I believe that? Because we have shown that the nuts and bolts of the missile defense capabilities we are planning to field in Block 2004 can work. We have had a significant degree of repeatability represented in the tests we have conducted to date, and we are well along in our goal of conducting these tests reliably. We are now to the point where we need to assemble selected missile defense elements into a test bed that will permit operationally realistic testing using different azimuths and trajectories, different launch and target points, and different arrangements in our sensors and weapons. That test bed will allow us to test in different ways so that we can refine our all-too-important battle management and command and control infrastructure. The elements of the test bed also will have some inherent defense capability. We can do operational development testing while having the system on alert. We should take advantage of that.

Our intentions are to test the complete system and to be ready to respond to ballistic missile threats against the United States, our deployed forces, and our friends and allies. We have conducted the rigorous testing needed to give us the confidence that we are far enough along to do operationally realistic testing in an integrated way. Testing will always be an important part of this system—always. We will always be improving what we have in the field. The budget we have submitted will support the testing required to ensure that the elements of the Block 2004 system we would like to field will adequately serve the defense needs of this nation.

Our RDT&E activities are extensive and are important part of our acquisition approach. Below are three areas of special interest.

BMD System Radar Activity

The MDA's Family of Radar concept is continuous and flexible global detection, tracking, discrimination, and hit assessment. Ideally, we want to be able to watch missile payloads deploy and accomplish prompt and early battle assessment. We are currently pursuing multiple sensor technologies and identifying and developing sensors to give the BMD system the "eyes" it will need. In order to identify the most promising technologies and reduce risk, we are investigating, in parallel, sensor alternatives on land-, sea-, air- and space-based platforms to add robustness to the BMD system and improve opportunities to collect multiple phenomenology on the threat missile or target complex. Evaluations of different sensor and weapon combinations and alternatives will help us assess their overall benefit to an integrated, layered BMD system. An important element in this effort is the mobile Sea-Based X-Band radar (SBX), which we plan to build by September 2005 to greatly improve both testing and our initial defense capability.

The BMDS Radar project, a new activity, is funded in the FY 2004 budget to expand the engagement battle space and assess missile defense concepts of operation that we were not allowed to consider under the ABM Treaty. We will validate the concept of forward-basing and sensor layering and evaluate advanced algorithms using both MDA- and non-MDA-owned sensors. Current plans call for the BMDS Radar to be available for integration into the Test Bed in late 2006. We will support continuous sensor research to improve capabilities and develop advanced algorithms for Block 2008 and beyond.

BMD System Infrared Sensor Activities

The Department restructured the Space Based Infrared System-Low (SBIRS Low) element in FY 2002, renaming it the Space Tracking and Surveillance System (STSS). We will explore new technologies to enhance missile detection, improve reporting on ballistic missile launches regardless of range, azimuth, or launch point, and provide critical midcourse tracking and discrimination data.

The Russian-American Observation Satellites (RAMOS) project is a cooperative effort between the United States and the Russian Federation to improve early warning technologies. RAMOS represents an innovative space-based sensor R&D initiative. We are proceeding towards a joint Preliminary Design Review this summer and expect to conclude the design and development phase in early FY 2005. The United States is actively striving to reach a bi-lateral agreement to conduct activities beyond the design and development phase. If we are able to move forward with this project, we would launch two satellites in late FY 2008.

BMD System Interceptor Activity

Our longer-term goal is to develop low-cost enhanced interceptors for integration with different platforms to defend against missiles in the boost, midcourse, and exo-atmospheric terminal phases of flight. We are consolidating all next-generation kinetic energy interceptor (booster and kill vehicle) development efforts and placing them under our BMDS Interceptor activity. Relying heavily on existing hardware and proven technology, we will develop a hit-to-kill boost phase capability by Block 2008 and deliver capability enhancements for Block 2010 and beyond.

In FY 2004 we will begin developing a space-based kinetic energy interceptor Test Bed to explore the technological feasibility and operational advantages of engagements from space. This plan is consistent with the Defense Science Board's recommendation, released last August, to establish a comprehensive development program for a space-based kinetic system. Following up on last year's successful experiments to understand key sensor technologies, we will conduct in 2004 a Near Field Infra-Red Experiment to observe from space a boosting rocket. This data will assist in the selection of seeker and sensor technologies for a ground-based boost interceptor and development of interceptor guidance and homing algorithms.

Block Activities and Budget

We are working within the MDA and with the Department's operational community to meet the President's objective to establish an initial defense capability in 2004, which begins with Block 2004. The following describes by block our planned fielding opportunities across the FYDP.

Block 2004

This block continues development and integration of elements, components, and facilities in the Test Bed. Block 2004 RDT&E funding will deliver capabilities directed by the President for operational use in FY 2004-2005. We plan to add different capabilities to point-defense capabilities already provided by PAC-3 units. This initial fielding will grow the RDT&E program and expand the physical infrastructure of the Test Bed.

Funds in this block will enable us to conduct major target and countermeasure development and capability demonstrations, integration tests, and experiments. We are investing in a substantive system test program to test system command, control, and battle management (C2BM) and communications across the elements. The Block 2004 Master Test Plan lays out the strategy for conducting a comprehensive set of integrated and distributed ground- and flight-tests to verify performance and characterize the capability of the system. This test program will form the basis of operational and military utility assessments of the Block 2004 initial defense capability.

We will have three major system integration flight tests, the first of which is a large-scale integration event that tests C2BM and communications during multiple element intercept tests. We plan to demonstrate C2 capabilities and communications among C2 and battle management nodes, weapons, and sensors and to continue work with the Services, Combatant Commands, and the Office of the Secretary of Defense to ensure BMD system interoperability with legacy and planned Department systems and standards.

We are requesting $3.2 billion in FY 2004 to support RDT&E for fielding Block 2004. Our estimated expenditure for Block 2004 activities across the FYDP is $6.2 billion (see Table 1).

Table 1: Block 2004 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2004	21	80	114	79	0	0	0	0	194	295
Hercules Block 2004	0	0	18	27	0	0	0	0	46	46
Joint Warfighter Support Block 2004	0	0	24	13	0	0	0	0	37	37
Test & Evaluation Block 2004	47	57	37	33	0	0	0	0	70	174
Targets & CM Block 2004	75	104	197	170	0	0	0	0	367	547
THAAD Block 2004	808	888	622	635	65	0	0	0	1322	3018
GMD Test Bed Block 2004	636	452	1205	868	0	0	0	0	2073	3161
Aegis BMD Test Bed Block 2004	413	440	648	894	98	0	0	0	1640	2492
ABL Block 2004	454	348	345	150	0	0	0	0	494	1296
TOTALS	2454	2369	3212	2868	163	0	0	0	6242	11065

*Numbers may not add exactly due to rounding.

Boost Elements. We are developing directed energy and kinetic energy boost phase intercept capabilities to create a defense layer near the hostile missile's launch point. We require quick reaction times, high confidence decision-making, and redundant engagement capabilities to counter ballistic missiles in this phase.

ABL is currently under development to acquire, track, and kill ballistic missiles in boost phase using speed-of-light technology. 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. We will continue major subsystem integration and testing activities. Block 2004 activities involve completion of ground-testing, to include first light on the test bed aircraft, first flight of the complete weapons system, and the successful track and high-energy laser engagement of a missile-shaped target board dropped from high-altitude. In FY 2005, we will deliver one aircraft for BMD system integration and testing and demonstrate a missile shoot-down against a boosting threat-representative target.

Midcourse Elements. Midcourse defense elements engage ballistic missiles in space after booster burnout and before the warhead re-enters the atmosphere. The GMD element defends against long-range ballistic missile attacks, and Aegis BMD will counter from the sea medium- and short-range ballistic missiles.

The Department's plans are to add by the end of FY 2004 one more Ground-Based Interceptor (GBI) at Fort Greely in Alaska for a total of six GBIs at that site, and four interceptors at Vandenberg, Air Force Base, for a total of up to 10 interceptors at both sites. The decision to develop two interceptor sites is consistent with our layered approach and operational concept and will allow us to work through critical integration, battle management, and command and control issues early on.

There are a number of other activities we need to undertake in FY 2005. We are asking for appropriations to produce up to ten additional GBIs for fielding at the Fort

Greely site, for a total of sixteen interceptors in Alaska and four in California. We also plan to produce by the end of 2005 between ten and twenty SM-3 missiles for deployment on three Aegis ships converted to the missile defense mission. Because we are starting from a base of zero, each interceptor we field between now and 2005, up to the full complement of twenty ground-based and twenty sea-based interceptors, will increase significantly our overall capability to defend this country, our troops, and friendly countries against long- and medium-range threats.

Included in the Test Bed and as part of the initial missile defense architecture are plans for integrating Early Warning Radars (EWR) at Eareckson AS (the Cobra Dane radar at Shemya, Alaska) and Beale AFB (Upgraded EWR). We will add to this infrastructure multiple fire control nodes and improved lines of communications connecting sites in Alaska and the continental United States using fiber optics and satellites. As you know, the Administration is working to secure allied approval to upgrade and integrate into the BMD system early warning radars currently located in the United Kingdom and Thule, Greenland to view threat missiles launched out of the Middle East. The United Kingdom already has approved the use of the Fylingdales radar. We also plan to build by September 30, 2005 a Sea-Based X-Band Radar (SBX) to improve the testing regime and enhance initial missile defense system performance.

We have made dramatic progress in recent months with the GMD element, including in the areas of silo construction, development of a nationwide communications network, and integrated flight-testing. We have excavated six silos at Fort Greely, seven weeks ahead of schedule, and we are in the process of constructing and establishing appropriate security for multiple Test Bed facilities at Fort Greely and Eareckson.

By the end of 2005, we will upgrade SPY-1 radars on fifteen Aegis warships for enhanced surveillance and track capability. Three prototype surveillance and track Aegis destroyers will be available starting in 2003; we will modernize additional destroyers for surveillance and track and BMD engagement capability. Two Aegis cruisers in addition to the USS LAKE ERIE, our test cruiser, will receive BMD engagement modifications.

The next SM-3 flight test, scheduled for later this year, will use a reengineered Monolithic Divert and Attitude Control System (MDACS) for the first time in the interceptor's kinetic warhead. MDACS has proved to be more reliable than the previous model, faster to build, and less expensive. Five at-sea flight tests and numerous tracking exercises, including participation in GMD integrated flight-tests, are planned through 2005. Our cooperative research with Japan will continue to enhance the capabilities of the SM-3 interceptor. The focus of that research is on four components: sensor, advanced kinetic warhead, second stage propulsion, and lightweight nosecone.

Terminal Elements. THAAD is designed to be rapidly deployable and protect forward-deployed U.S. and friendly troops, broadly dispersed assets, population centers, and sites in the United States by engaging short- to medium-range ballistic missiles or their payloads at endo- and exo-atmospheric altitudes. THAAD could have more than one intercept opportunity against a target, a layering potential that makes it more difficult for an adversary to employ countermeasures effectively. This terminal defense capability will help mitigate the effects of a WMD payload.

This year we will complete missile and launcher designs, initiate manufacturing of missile and launcher ground test units, and begin testing the first completed radar antenna. We will continue fabrication of the second radar and building the battle manager and launcher test beds. A total of four exo-atmospheric flight tests at the White Sands Missile Range, New Mexico are planned for FY 2004-05.

PAC-3 provides terminal missile defense capability against short- and medium-range ballistic missiles, anti-radiation missiles, and aircraft with a low radar cross-section employing advanced countermeasures. PAC-3 successfully completed initial operational testing last year, intercepting ballistic missiles, aircraft, and cruise missiles. The tests uncovered problems that we have since corrected in collaboration with the Army. We have completed development of the PAC-3 missile and made C2BM modifications to enable PAC-3's integration into the BMD system. We will continue to conduct PAC-3 tests this year. Later in Block 2004 we will demonstrate PAC-3's integration with other BMD system elements.

With the support of Congress, the Department already has accelerated PAC-3 missile production and currently has a plan to increase that production rate to 20 missiles per month in 2005. Given current production plans, by the end of 2005 the PAC-3 inventory will stand at 332 missiles.

The Department is transferring this month PAC-3 procurement and RDT&E funding to the Army, which is reflected in the Army's FY 2004 budget request. The MDA will retain responsibility for defining and testing BMD system interoperability and continue to work with the Army on PAC-3 engineering, development, and testing. The

Department is currently preparing to transfer later this year RDT&E funding for the Medium Extended Air Defense System (MEADS) from the MDA to the Army.

The Arrow Weapon System, developed jointly by the United States and Israel to counter short- to medium-range ballistic missiles, is operational at two sites in Israel and interoperable with U.S. missile defense elements. We worked with Israel to deploy its first two Arrow batteries, and are currently assisting that country to procure a third battery.

The Arrow System Improvement Program, a spiral development upgrade of the current operational system, includes technical cooperation to improve the performance of the Arrow system and test it at a U.S. test range. The first flight test was conducted successfully on January 5, 2003. We continue to support additional Arrow flight-testing to assess technology developments and overall system performance and to collect data and conduct annual hardware-in-the-loop exercises with Israel to enhance interoperability.

Block 2006

Block 2006 work continues to improve existing capabilities and provide new sensors and interceptors for integration with fielded elements. Our focus will be on evolving and integrating the capability to achieve a more synergistic and layered BMD system. We will continue rigorous system and element flight-test demonstration and validation efforts and use wargames to help develop concepts of operation and operational procedures.

We are requesting $2.2 billion in FY 2004 to support RDT&E for Block 2006. Our estimated expenditure for Block 2006 activities across the FYDP is $11.3 billion (see Table 2).

Table 2: Block 2006 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2006	4	27	53	104	116	0	0	0	273	304
Hercules Block 2006	0	0	19	18	45	45	0	0	127	127
Joint Warfighter Support Block 2006	0	0	0	12	24	12	0	0	48	48
Test & Evaluation Block 2006	1	1	2	9	41	39	0	0	92	93
Targets & CM Block 2006	1	4	32	110	213	172	0	0	526	530
THAAD Block 2006	0	0	109	208	598	498	113	0	1525	1525
GMD Block 2006	2460	2109	1605	1774	1354	1235	0	0	5969	10538
Aegis BMD Block 2006	0	0	24	73	377	299	0	0	773	773
ABL Block 2006	0	0	10	86	150	79	81	55	461	461
BMDS Radars Block 2006	0	0	101	145	134	0	0	0	380	380
STSS Block 2006	55	232	276	285	285	204	75	35	1160	1447
TOTAL	2520	2372	2232	2823	3335	2583	270	90	11333	16225

*Numbers may not add exactly due to rounding.

Boost Elements. We will enhance and test the integration of the ABL aircraft into the BMD system. Candidate enhancements include improvements in BMC4I, interoperability, pointing and tracking, and target engagement. We will continue evaluation of the ABL test aircraft capability against a range of threats. This aircraft will be available to provide an emergency operational capability except for a maximum of six months during FY 2007 when it may undergo modifications and enhancements.

Midcourse Elements. We plan to enhance defensive capability and further develop the Test Bed by maturing hardware and software of all GMD interceptor, sensor, and C2BM components. We will continue our ground- and flight-testing to demonstrate improved weapon and discrimination performance and critical interfaces with external sensors. We also plan to complete the upgrade of the Thule EWR should we get approval from Denmark.

Aegis BMD flight missions will incorporate remote engagements of targets as well as demonstrations against intermediate-range ballistic missile (IRBM) targets. We will continue development of Aegis BMD sensor discrimination capability. Prototype BMD signal processors will be tested aboard Aegis ships with SPY-1 radar modifications. SM-3 missile deliveries will begin in 2004. Our plans are to build an inventory of up to thirty-five SM-3 interceptors by the end of 2006. Also, if directed, we would prepare to field up to twenty additional SM-3 interceptors in 2007. We will proceed with our cooperative BMD research with Japan to enhance the SM-3. We have two joint flight tests of the advanced nosecone planned in the FY 2005-2006 timeframe, and we will continue to look at possibilities for co-development.

Terminal Elements. The THAAD interceptor begins in the third quarter FY 2006 a series of five flight tests that are scheduled to conclude in first quarter FY 2008. We will improve THAAD's exo-atmospheric and endo-atmospheric endgame discrimination capability against increasingly complex targets.

Sensors. Current plans call for a new forward-based radar in late 2006 for positioning close to the threat at sea or on land. Enhanced forward-based sensor capabilities and improved sensor netting will enable the BMD system to handle threats posing a more difficult discrimination challenge and provide a launch-on-remote capability. A midcourse radar will be added as part of our layered approach. Additional radar configurations will be procured as necessary to satisfy Block 2006 objectives.

Current plans are to launch two low-earth orbit satellites in FY 2007 to validate space-based sensor concepts for target acquisition, tracking, and discrimination and to provide a space node for the Test Bed. STSS will improve in subsequent blocks to provide data fusion, radar/sensor cueing over-the-horizon, and interceptor handover and fire control. Production alternatives will be evaluated at least annually based upon element performance and integrated BMD system performance.

Block 2008

Block 2008 represents a major step in BMD system evolution. We plan to complete multiple layers of weapons and sensors, based on fixed and mobile platforms, to counter a range of ballistic missiles. This block will include C2BM components that enable integrated control of all system assets throughout the battlespace. Primary development projects include adding boost phase weapons to the Test Bed, integrating space sensor platforms, and fusing multi-sensor discrimination products. We will integrate capability-based targets and payload suites (to include new and more complex countermeasures) into our system testing to demonstrate effectiveness against evolving threats.

We are requesting $572 million in FY 2004 to support RDT&E for Block 2008. Our estimated expenditure for Block 2008 activities across the FYDP is $16.3 billion (see Table 3).

Table 3: Block 2008 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2008	0	0	1	12	27	144	145	147	476	476
Hercules Block 2008	0	0	19	17	17	17	62	60	192	192
Joint Warfighter Support Block 2008	0	0	0	0	0	12	29	31	71	71
Test & Evaluation Block 2008	0	0	1	1	4	13	85	87	190	190
Targets & CM Block 2008	0	0	0	57	77	68	239	253	694	694
THAAD Block 2008	0	0	0	0	237	227	369	300	1134	1134
GMD Block 2008	0	0	0	0	0	0	878	877	1756	1756
AEGIS BMD Block 2008	0	0	0	116	186	322	470	386	1481	1481
ABL Block 2008	11	237	256	402	582	561	366	267	2435	2683
BMDS Radars Block 2008	0	0	0	0	0	136	102	22	261	261
STSS Blk 2008	0	0	0	0	0	82	177	89	348	348
BMDS Interceptor Block 2008	54	100	296	529	1013	1562	1939	1890	7229	7383
TOTAL	65	337	572	1134	2145	3146	4862	4409	16268	16669

*Numbers may not add exactly due to rounding.

Boost Elements. ABL will integrate new technologies to improve performance and lethality and enhance operational suitability. We will continue development of promising technologies for insertion into Block 2008 and beyond and design and develop a system-level ground-test facility for ABL. We plan to test a second ABL aircraft in the Test Bed during Block 2008.

Plans also are to develop and integrate a mobile ground-based boost phase hit-to-kill capability into the Test Bed for flight-test demonstration. We will initiate a space-based test bed development to determine the feasibility of intercepting missiles from space. Initial on-orbit testing would commence with three to five satellites in Block 2008.

Midcourse Elements. We will conduct up to three GMD flight-tests annually to demonstrate advanced engineering and pre-planned equipment improvements for the boosters, interceptors, early warning and fire control radars, and C2BM and communications software builds. We plan to enhance the Aegis Weapons System

AN/SPY-1 radar to improve discrimination for engaging both unitary and separating targets. We will assess GMD integration with the BMDS Interceptor and also test the interceptor on board an Aegis warship.

Terminal Elements. We will complete the development and testing of the THAAD weapon system. We are planning up to eight developmental and operational-type flight tests to stress interceptor, radar, and C2BM performance in realistic scenarios that include advanced countermeasures.

Sensors. Our work will build on the initial BMDS Radar configuration and conduct sensor research to improve capabilities and develop advanced algorithms. We will improve Family of Radar coverage, performance, and flexibility and address vulnerability within the context of the overall BMD system global sensor network. STSS operations will continue to be integrated with other BMD elements in the Test Bed and support enhanced C2BM development initiatives. STSS will demonstrate the ability to acquire, track, and discriminate midcourse objects with space-based infrared sensors.

Block 2010

Work in this block will continue spiral development projects for weapon and sensor improvements and platform integration. C2BM and communications improvements will enable highly resolved sensor data to be exchanged with all BMD system elements.

We are requesting $24 million in FY 2004 to support RDT&E for Block 2010. Our estimated expenditure for Block 2010 activities across the FYDP is $4.7 billion (see Table 4).

Table 4: Block 2010 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
AEGIS BMD Block 2010	0	0	0	0	0	8	104	145	257	257
STSS Block 2010/2012	179	55	24	44	232	565	750	1065	2680	2914
BMDS Interceptor Block 2010	0	0	0	0	97	146	585	974	1803	1803
TOTAL	179	55	24	44	329	719	1439	2184	4740	4974

*Numbers may not add exactly due to rounding.

Boost Elements. Block 2010 activities will improve exo-atmospheric BMDS Interceptor performance and enable greater basing mode flexibility, to include possible adaptation to sea-based platforms. We will develop and test an advanced space-based test bed to augment or replace the Block 2008 space-based test bed.

Midcourse Elements. We will continue flight-testing improved weapon and sensor components and work toward the integration of an advanced BMDS Interceptor. Aegis BMD will incorporate prior block developments into the Navy-developed next-generation, open architecture Combat System.

Terminal Elements. THAAD will integrate proven technologies to enhance its capability against longer range and faster ballistic missiles without sacrificing existing mobility and performance. Fielding and survivability upgrades also are planned to demonstrate a capability against both IRBM and ICBM threats.

Sensors. New technologies will be inserted into subsequent STSS blocks to provide precise threat tracking and improved discrimination. We will develop and launch a satellite with improved sensors integrated into the first common satellite bus, and develop and integrate advanced ground station equipment and software. The Block 2010 STSS will deliver a space-based capability to acquire, track and discriminate ballistic missiles based on larger aperture track sensors, increased vehicle lifetime, and increased, near-real-time on-board data processing. The funding also includes launch services for Block 2010 satellites. C2BM funding focuses on integrating STSS data into the sensor net.

Mission Area Investments

Our Mission Area Investments are investments common to the entire BMD system that enable us to implement over time our block fielding approach. Mission Area Investments maintain core development and testing infrastructure and facilitate the integration of future block capabilities. The President's Budget requests $1.69 billion in FY 2004 for these investments. This program activity accounts for about $11.3 billion, or just over 20% of the total funding estimate across the FYDP. Table 5 provides a detailed breakdown of funding for each investment activity.

Table 5: Mission Area Investments Funding FY02-09 ($M Then-year)*

Investment Activity	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
System Engineering	236	397	436	474	501	510	580	578	3079	3713
C2, BM & Communications	16	16	119	125	178	201	204	218	1045	1076
Test & Targets	359	332	338	332	328	352	316	333	1998	2688
International Programs	211	205	148	215	129	100	89	89	769	1185
Advanced Concepts	347	176	388	418	363	437	524	534	2664	3187
Program Operations	232	170	264	252	283	306	317	333	1754	2156
TOTAL	1400	1296	1692	1817	1783	1904	2029	2083	11309	14005

*Numbers may not add exactly due to rounding.

The significant Mission Area Investments are as follows:

System Engineering

The System Engineering activity defines, manages, and integrates the layered BMD system. Capability-based acquisition requires continual assessment of technical and operational alternatives at the component, element, and system levels. Our system engineering process assesses and determines system design and element contributions and the impact of introducing new technologies and operational concepts to ensure properly synthesized system blocks. These activities provide the technical expertise, tools, and facilities to develop the BMD system and maintain an intelligence and research capability to ensure that the system evolves in a way that is responsive to known and anticipated threats.

We are increasing our focus on risks related to producibility, manufacturing, quality, cost, and schedule of the BMD system elements. We dedicate resources to examine the applicability of technology to system needs and transition readiness. Industrial and manufacturing investment strategies for achieving system affordability and facilitating insertion of successive new capabilities are increasingly vital to the program.

Command and Control, Battle Management & Communications (C2BMC)

Our activities related to C2BMC create interoperability among a wide variety of legacy systems and emerging elements over joint and coalition networks. The C2BMC activity will continue development and integration of the C2BM and communications functions for the BMD system. By fielding software development spirals that improve system synergism, integration capability, and interoperability with external systems, this activity expands the inherent C2BM capabilities of fielded terminal, midcourse, and boost defenses. Communications funding will develop and improve BMD system-wide communication links and sensor netting functions to enable enhanced early warning and quicker interceptor response times. The Joint National Integration Center (JNIC) provides a common environment for the BMD elements to conduct experiments, demonstrations, and exercises and is a key-operating C2BM component of the Test Bed.

BMD Tests & Targets

The missile defense program includes significant test and evaluation infrastructure, test execution capabilities, and analytical tools for program-wide use. The Agency conducts risk reduction, developmental, and operational element and component testing as well as tests to collect critical measurements, such as plume signatures. We also have a rigorous measurements test program to collect data in support of design, development, and engineering activities. Measurements from dedicated test events and targets of opportunity enable us to design components, characterize potential countermeasures, test algorithms, undertake lethality and kill assessment, and validate our critical models and simulations.

Investments providing ballistic missile targets, countermeasures, and other payloads support our test objectives. Presentation of the targets and payloads for flight test events involves designing, prototyping, developing, procuring, certifying, and qualifying for testing. In FY 2003 we will establish a single prime contractor to further enhance system level management of targets and countermeasures activities.

In FY 2004 we will continue to resource critical test facilities, launch capabilities, instrumentation, telemetry, communications, and safety systems underpinning our testing regime. With the enhanced realism of the Test Bed, the increasing complexity of our tests, and the escalating tempo of test activity, our investments in this area will emphasize flexibility, standardization, and mobility.

International Programs

The President has underscored the importance of working with other countries to develop missile defenses and provide protection against ballistic missile threats. We are building defensive layers that could potentially involve a variety of locations around the globe and probably involve many other countries. Last summer interagency teams briefed key allies on the international participation framework. Today we are well along in our discussions with several governments regarding their possible participation in the missile defense program and improvements in our industrial relationships.

Advanced Concepts

We have several Science and Technology (S&T) initiatives to increase BMD system firepower and sensor capability and extend the engagement battle space of terminal elements. In FY 2004, we will continue to focus on the Miniature Kill Vehicle (MKV) project, which could lead to a flight-test in FY 2005. FY 2004 funding will support investigating Early Detection and Tracking (ELDT) technology, Laser/LADAR technologies for improved tracking, weapon guidance, and imaging, and technologies for a space-based, high-power laser. While our S&T activities are not on a critical path for insertion into the BMD system, each one of them is being considered for their block enhancement value.

Program Operations

Our Program Operations expenses are primarily for government personnel performing management support activities, contractors that assist in performing these activities, and O&M-like costs associated with operations and maintenance at numerous facilities around the country, supplies and equipment, communications and printing, travel and training, and information technology management.

Management and Oversight

The missile defense program uses an acquisition approach tailored to the unprecedented nature of the technology involved in missile defense. We will continue to work very hard to ensure that the program has adequate management and congressional oversight. There is an improved process in place within the Department that preserves management, technical, and financial oversight by cognizant authorities on the Senior Executive Council and the Missile Defense Support Group. Senior warfighters, including the Joint Requirements Oversight Council, have reviewed missile defense objectives and will continue to do so several times a year. Internally we have in place configuration management procedures, and we produce on a regular basis the necessary threat, system, and configuration control documentation to ensure that our activities continue to support our development and fielding objectives. As directed in the 2002 and 2003 Defense Authorization Acts, we have identified cost, schedule, testing, and performance goals and developmental baselines in the President's FY 2004 Budget justification materials and shown clear linkages between the Agency's budget and key performance measures.

Closing

Mr. Chairman, we are on track with our missile defense program. We know that the technology fundamental to the current generation of missile defenses works. We have demonstrated many times over the past two years that we can collide with a warhead and destroy it. We have the confidence to proceed with plans for an initial defense capability. A few years ago, I could not have said this to the American people. Today I can. We will build confidence in the system over time as we invest in the program.

We also recognize that we have much more work to do to improve the BMD system. The architecture we have in 2004 and 2005 will probably be very different a decade later, depending on how our RDT&E efforts proceed. Our objective continues to be one of improving missile defense capability over time. We have made considerable progress in missile defense over the past three years. With the President's direction, and with your approval of our budget request, we will take another important step on that long road before us.

Thank you, Mr. Chairman.