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Director, Missile Defense Agency
Missile Defense Program and Fiscal Year 2005 Budget
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Good morning, Mr. Chairman, Members of the Committee. It is an honor to be here today to present the Department of Defense's Fiscal Year (FY) 2005 Missile Defense Program and budget.

Today, I would like to outline what we are doing in the program, why we are doing it, and how we are progressing. I also will address why we proposed taking the next steps in our evolutionary development and fielding program. Then I want to emphasize the importance of the acquisition strategy we are using and close with some observations about testing and the Department's approach to Missile Defense Agency (MDA) management.

Our National Intelligence Estimates continue to warn that in coming years we will face ballistic missile threats from a variety of actors. The recent events surrounding Libya's admission concerning its ballistic missile and weapons of mass destruction programs remind us that we are vulnerable**.** Ballistic missiles armed with any type warhead would give our adversaries the capability to threaten or inflict catastrophic damage.

Our direction from the President is 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. This budget continues to implement that guidance in two ways.

First it continues an aggressive Research, Development, Test and Evaluation (RDT&E) effort to design, build and test the elements of a single Ballistic Missile Defense (BMD) system in an evolutionary way. Second, it provides for modest fielding of this capability over the next several years.

We recognize the priority our nation and this President ascribe to missile defense, and our program is structured to deal with the enormity and complexity of the task. The missile defense investments of four Administrations and ten Congresses are paying off. We are capitalizing on our steady progress since the days of the Strategic Defense Initiative and will present to our Combatant Commanders by the end of 2004 an initial missile defense capability to defeat near-term threats of greatest concern.

Ballistic Missile Defense System

Layered defenses help reduce the chances that any hostile missile will get through to its target. They give us better protection by enabling engagements in all phases of a missile's flight and make it possible to have a high degree of confidence in the performance of the missile defense system. The reliability, synergy, and effectiveness of the BMD system can be improved by fielding overlapping, complementary capabilities. In other words, the ability to hit a missile in boost, midcourse, or terminal phase of flight enhances system performance against an operationally challenging threat. See Chart 1.

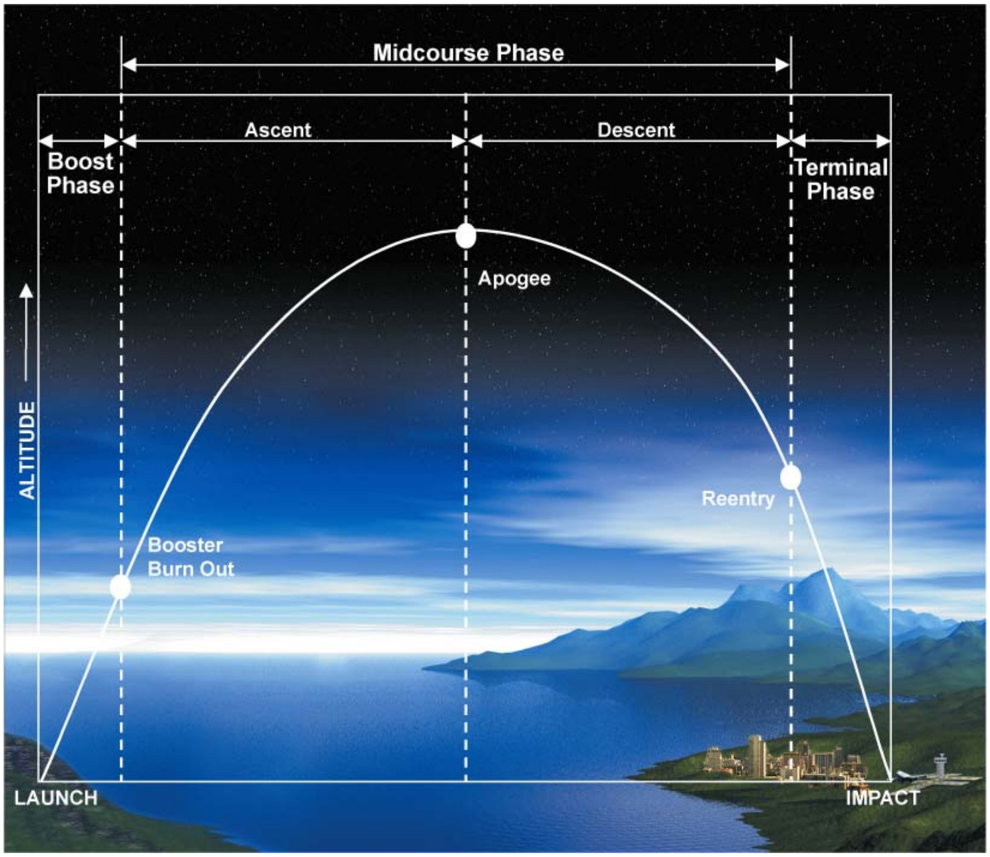


Chart 1: BMD System Engagement Phases

All of these layered defense elements must be integrated. And there must be a battle management, command and control system that can engage or reengage targets as appropriate. And it all must work within a window of a few minutes. We believe that a layered missile defense not only increases the chances that the hostile missile and its payload will be destroyed, but it also can be very effective against countermeasures and must give pause to potential adversaries.

So, beginning in 2001 we proposed development of a joint, integrated BMD system. Yet such unprecedented complexity is not handled well by our conventional acquisition processes. At that time, the Services had responsibility for independently developing ground-based, sea-based, and airborne missile defenses. The Department's approach was element- or Service-centric, and we executed multiple Major Defense Acquisition Programs (MDAPs).

Today, as a result of defense transformation and a streamlined process instituted by the Secretary of Defense in 2001 to enhance overall integration, we are managing the BMD system as a single MDAP instead of a loose collection of Service-specific autonomous systems. We have come to understand over the years, though, that no one technology, defense basing mode, or architecture can provide the BMD protection we need. Redundancy is a virtue, and so we established a system-centric approach involving multiple elements designed, developed, and built with full integration foremost in our minds. When we made this change, we instituted a "capability-based" acquisition process instead of a "threat-based" process. Let me explain why this is important.

Most defense programs are developed with a specific threat—or threats—in mind. Twenty years ago, the ballistic missile threat was pretty much limited to Soviet intercontinental ballistic missiles (ICBMs) and sea-launched ballistic missiles. But today we have to consider a wide range of missile threats posed by a long list of potential adversaries. And those threats are constantly changing and unpredictable. Our potential adversaries vary widely in their military capabilities and rates of economic and technological development. Many of them have a tradition of political instability.

Weapon systems developed using a threat-based system are guided and governed by Operational Requirements Documents (ORDs). These documents establish hard thresholds and objectives for the development and deployment of every component. ORDs may be entirely appropriate for most development programs because they build linearly on existing systems. For example, aircraft program managers understand lift and thrust from previous programs going all the way back to the Wright brothers.

Not so for missile defense. Most missile defense development takes place in uncharted waters. Any ORD developed for an integrated, layered missile defense system would be largely guesswork. ORDs rely on very precise definitions of the threat and can remain in effect for years, making this process all the more debilitating for the unprecedented engineering work we are doing. The reality that we may have to introduce groundbreaking technologies on a rapid schedule and also deal with threats that are unpredictable render the threat-based acquisition structure obsolete.

A capability-based approach relies on continuing and comprehensive assessments of the threat, available technology, and what can be built to do an acceptable job, and does not accommodate a hard requirement that may not be appropriate.

Perhaps the most telling difference between the two acquisition approaches is that our capabilities to perform are updated every four to eight months to reflect and accommodate the pace of our progress. We are no longer compelled to pursue a one hundred percent solution for every possible attack scenario before we can provide any defense at all. We are now able to develop and field a system that provides some capability that we do not have today with the knowledge that we will continue to improve that system over time. We call this evolutionary, capability-based development and acquisition.

Initial Defensive Capability—The Beginning

On 16 December 2002, President Bush directed that we begin fielding a missile defense system in 2004 and 2005. The President's direction recognizes that the first systems we field will have a limited operational capability. He directed that we field what we have, then improve what we have fielded. The President thus codified in national policy the principle of Evolutionary, Capability-Based Acquisition and applied it to missile defense.

The President's direction also builds on the 1999 National Missile Defense Act. Under this Act, deployment shall take place "as soon as technologically possible." The fact is that ballistic missile defense has proven itself technologically possible. Not only have most of the well-publicized flight tests been successful, but so have the equally important computer simulations and software tests. Those tests and upgrades will continue for a long time to come—long after the system is fielded and long after it is deemed operational. After all, this is the heart of evolutionary, capability-based acquisition. This is not a concept designed to trick or mislead. It is simply the logical response to the following question: Defenseless in the face of unpredictable threats, which would we rather have—some capability today or none as we seek a one hundred percent solution?

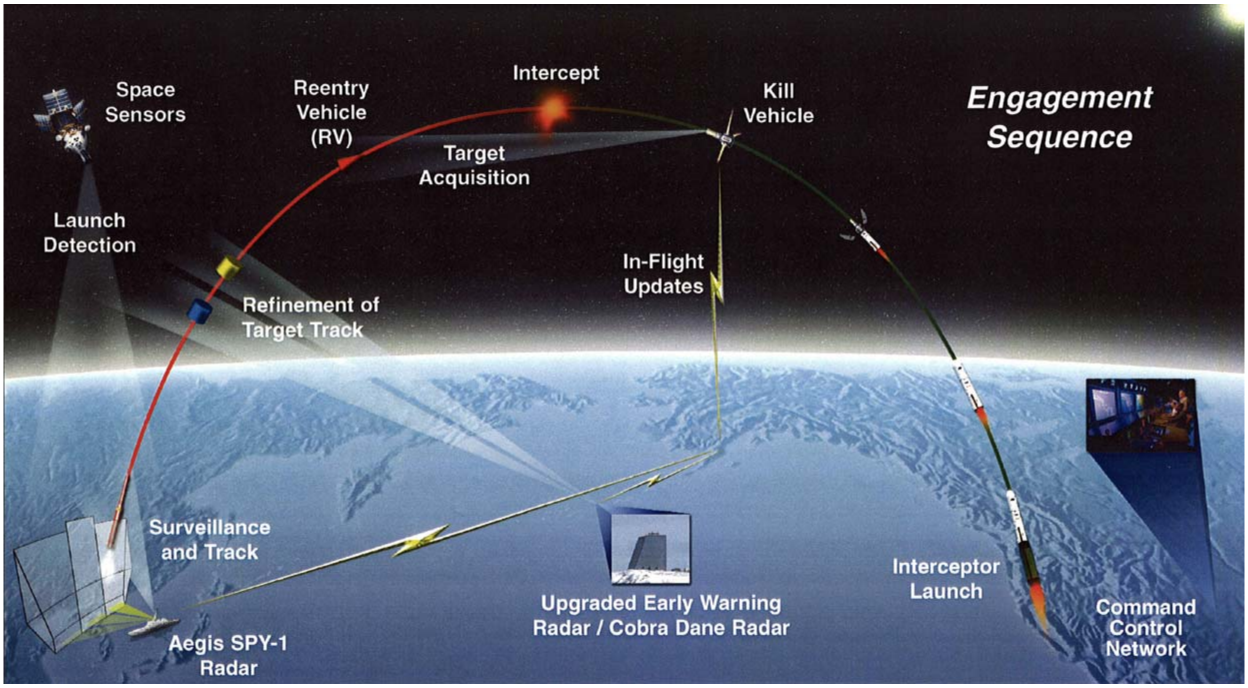
When we put the midcourse elements (GMD and Aegis BMD) of the BMD system on alert, we will have a capability that we currently do not have. In my opinion, a capability against even a single reentry vehicle has significant military utility. Even that modest defensive capability will help reduce the more immediate threats to our security and enhance our ability to defend our interests abroad. We also may cause adversaries of the United States to rethink their investments in ballistic missiles. Because of this committee's continued support we will have some capability this year against near-term threats.

I must emphasize that what we do in 2004 and 2005 is only the starting point—the beginning—and it involves very basic capability. Our strategy is to build on this beginning to make the BMD system increasingly more effective and reliable against current threats and hedge against changing future threats.

We have made significant strides towards improving our ability to intercept short-range missiles. Two years ago we began sending Patriot Advanced Capability 3 (PAC-3) missiles to units in the field. Based on the available data, the Patriot system, including PAC-3, successfully intercepted all threatening short-range ballistic missiles during Operation Iraqi Freedom last year. Today, it is being integrated into the forces of our allies and friends, many of whom face immediate short- and medium-range threats. We believe it is the only combat-tested missile defense capability in the world.

This year we are expanding our country's missile defense portfolio by preparing for alert status a BMD system to defend the United States against a long-range ballistic missile attack. Chart 2 provides a basic description of how we could engage a warhead launched against the United States.

Chart 2: Engagement Sequence



Last year, we made it clear that this initial capability would be very basic if it were used. We also emphasized that instead of building a test bed that might be used operationally, we would field more interceptors and have them available for use while we continue to test. Because the test bed provides the infrastructure for this initial capability, the additional budget request for the twenty Block 2004 interceptors and associated support was about $1.5 billion in FY 2004 and FY 2005.

Forces to be placed on alert as part of the initial configuration include up to 20 ground-based interceptors at Fort Greely, Alaska and Vandenberg AFB, an upgraded Cobra Dane radar on Eareckson Air Station in Alaska, and an upgraded early warning radar in the United Kingdom. We are procuring equipment for three BMD-capable Aegis cruisers with up to ten SM-3 missiles to be available by the end of 2005. The Navy is working very closely with us on ship availability schedules to support that plan. Additionally, ten Aegis destroyers will be modified with improved SPY-1 radars to provide flexible long-range surveillance and track capability of ICBM threats by the end of 2005, with an additional five destroyers with this capability by 2006, for a total of 15 Aegis BMD destroyers and three Aegis BMD cruisers.

The FY 2005 request funds important for Block 2006 activities to enhance those capabilities and system integration, which I will discuss in a moment.

The Missile Defense Agency, the Combatant Commanders, the Joint Staff, the Military Services, and the Director, Operational Test and Evaluation (DOT&E) are working together to prepare for Initial Defensive Operations (IDO). Using the core capability provided by Ground-based Midcourse Defense (GMD) and augmenting it with the appropriate Command, Control, Battle Management and Communications (C2BM/C) infrastructure between Combatant Commanders and exploiting the Aegis contribution in a surveillance and track mode, we have created an initial capability from which we can evolve.

Our current fielding plans have been built on the Test Bed configuration we proposed two years ago and are within 60 days of our schedule. Silo and facility construction at Fort Greely, Alaska and Vandenberg Air Force Base in California is proceeding well. Preparations at Eareckson Air Station in Shemya, Alaska are on track. Over 12,000 miles of fiber optic cables connecting major communication nodes are in place, along with nine satellite communications links. We are in the process of upgrading the Early Warning Radar at Beale Air Force Base and are well underway building the sea-based X-band radar. Our brigade at Schriever Air Force Base and battalion fire control nodes at Fort Greely are connected to the Cheyenne Mountain Operations Center. The C2BM/C between combatant commanders, so essential to providing situational awareness, is progressing well and is on schedule. Upgrades to the Cobra Dane Radar are ahead of schedule. The Chief of Naval Operations has identified the first group of Aegis ships to be upgraded with a BMD capability, and the work to install the equipment on the first of these ships has begun.

Once the system is placed on alert, we will continue to conduct tests concurrently to gain even greater confidence in its operational capability. Additionally, we plan activities to sustain the concurrent test and operations and support of the system. We are laying in the infrastructure to build, test, sustain, and evolve our system as a part of the capabilities-based approach inherent in our strategy.

An integral working relationship with the warfighter, the BMD system user, is critical to the success of this mission. We are working together to ensure that we field a system that is militarily useful and operationally supportable and fills gaps in our defenses. The support centers we are establishing will provide critical training to commanders in the field. The necessary doctrines, concepts of operation, contingency plans, and operational plans are being developed under the lead of U.S. Strategic Command (USSTRATCOM) and in cooperation with U.S. Northern Command, Pacific Command, European Command, and United States Forces in Korea.

Improving Fielded Capability Through Evolutionary Acquisition

The system's evolutionary nature requires us to look out over the next three or four years and beyond in our planning. Although it is not easy, we have laid out a budget and a plan to shape the missile defense operational architecture beyond the Block 2004 initial defensive capability.

In this budget, beginning with Block 2006 we will increase GMD Ground-Based Interceptors (GBIs) and Aegis SM-3 interceptors, deploy new capabilities (such as THAAD), expand our sensor net (with a second sea-based midcourse radar and forward deployable radars), and enhance the C2BM/C system integration. The FY 2005 request begins to fund important Block 2006 activities to enhance existing capabilities and system integration. Our improvement plan is to add up to ten GBIs to the site at Fort Greely and possibly initiate long-lead acquisition of up to ten more for fielding at a potential third site or at Fort Greely. We will continue to augment our sea-based force structure with additional SM-3 interceptors and BMD-capable Aegis-class ships.

Much of this system augmentation effort involves extending and building on capabilities that we have been working on over the past several years, so I am confident that what we are doing is both possible and prudent and in line with our missile defense vision.

The confidence we achieve through our entire test program is reinforced by the fact that many missile defense test articles fielded in the existing test bed are the same ones we would use in an operational setting. Except for interceptors, which are one-time use assets, we will use the same sensors, ships, communications links, algorithms, and command and control facilities. The essential difference between an inherent capability in a test bed and the near-term on-alert capability is having a few extra missiles beyond those needed for testing and having enough trained operators and logistics on hand and ready to respond around the clock. Once we field the system, we will be in a better position, literally, to test system components and demonstrate BMD technologies in a more rigorous, more operationally realistic environment. Testing will lead to further improvements in the system and refinement of our models, and the expansion and upgrades of the system will lead to further testing.

The system we initially will put on alert is modest. It is modest not because the inherent capabilities of the sensors and interceptors themselves are somehow deficient, but rather because we will have a small quantity of weapons. The additional ten missiles for Fort Greely will improve the overall system by giving us a larger inventory. Yet today, and over the near-term, we are inventory poor. Block activities throughout the remainder of this decade will be focused in part on improving the system by delivering to the warfighter greater capabilities with improved performance.

Why is this important? In a defense emergency or wartime engagement situation, more is better. A larger inventory of interceptors will handle more threatening warheads. Our planning beyond the Block 2004 initial configuration has this important warfighting objective in mind. There are no pre-conceived limits in the number of weapon rounds we should buy. We will build capabilities consistent with the national security objectives required to effectively deter our adversaries and defend ourselves and our allies.

We also must think beyond the initial defensive capability if we are to meet our key national security objective of defending our friends and allies from missile attack. In

Block 2006, we are preparing to move forward when appropriate to build a third GBI site at a location outside the United States. Not only will this site add synergy to the overall BMD system by protecting the United States, but it will put us in a better position to defend our allies and friends and troops overseas against long-range ballistic missiles. For the cost of ten GBIs and associated infrastructure, we will be able to demonstrate in the most convincing way possible our commitment to this critical mission objective. The location of this site is still subject to negotiation with no final architecture defined nor investment committed until FY 2006.

As I have said all along, we are not building to a grand design. We are building an evolutionary system that will respond to our technical progress and reflect real world developments. We added about $500 million to last year's projected FY 2005 budget estimate to begin funding our Block 2006 efforts. As you can see, the system can evolve over time in an affordable way in response to our perception of the threat, our technical progress, and our understanding of how we want to use the system. Yet even as it does evolve, our vision remains constant—to defeat all ranges of missiles in all phases of flight.

Testing Missile Defenses—We Need To Build It To Test It

Another key question surrounds the nature of missile defense systems themselves. How do you realistically test an enormous and complex system, one that covers eight time zones and engages enemy warheads in space? The answer is that we have to build it as we would configure it for operations in order to test it. That is exactly what we are doing by building our test bed and putting it on alert this year.

By hooking it all up and putting what we have developed in the field, we will be in a better position to fine-tune the system and improve its performance. Testing system operational capability in this program is, in many ways, different from operational testing involving more traditional weapon systems. All weapon systems should be tested in their operational environments or in environments that nearly approximate operational conditions. This is more readily accomplished for some systems, and is more difficult to do for others.

For example, an aircraft's operational environment is the atmosphere. Similarly, when we conduct rigorous operational tests of our Navy's ships, we do so at sea – in their environment. The BMD system's operational environment is very different. It is a geographically dispersed region that is also a test bed. For both missile defense testing and operations, geography counts. After we have gone through the simulations, the bench tests, and the flybys, we want to test all missile defense parts together under conditions that are as nearly operationally realistic as we can make them – with sensors deployed out front, with targets and interceptors spaced far enough apart to replicate actual engagement distances, speeds and sequences, with communication links established, and with command and control elements in place. We in fact have conducted a number of events that exercise the projected communication and command and control paths required to link elements of the BMD system in what we call "Engagement Sequence Groups," building our confidence that we can combine threat data from different systems across a third of the globe to allow for the engagement of ballistic missiles threats to the entire United States.

One of the key questions that we have to answer is: What is the role of operational testing in an unprecedented, evolutionary, capability-based program? The answer is that the Director, Operational Test and Evaluation, and the Operational Test Agencies play a critical role in missile defense. Since evolutionary, capability-based processes do not fit the traditional ORD-based operational test methodology, we have applied an assessment approach that provides for a continuous assessment of the capabilities and limitations of the BMD system. Since testing is central to our RDT&E program and our operational understanding of the system, we are continuing to modernize and improve our test infrastructure to support more operationally realistic testing.

We are working very closely with Mr. Christie, the DOT&E, and the operational test community. As our tests are planned, executed, and evaluated, the BMD system Combined Test Force, which brings together representatives from across the testing community, is combining requirements for both developmental and operational capability testing. Wherever possible we are making every test both operationally realistic and developmental. We have been working daily with the appropriate independent operational test agencies (OTA) to ensure they are on board with our objectives and processes. There are approximately 100 operational test personnel embedded in all facets of missile defense test planning and execution who have access to all of our test data. They have the ability to influence every aspect of our test planning and execution.

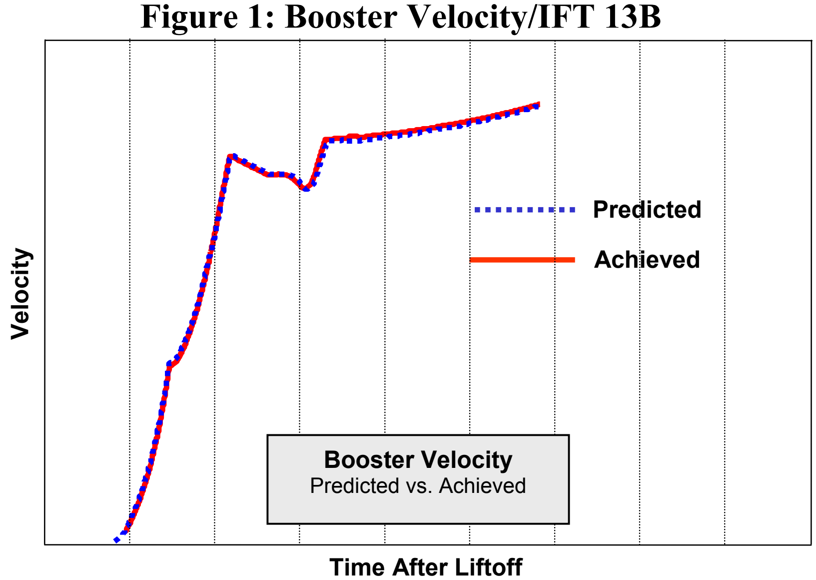
Now, how much confidence should we have in using this test bed in an alert status? The full range of missile defense testing—from our extensive modeling and simulation and hardware-in-the-loop tests to our ground and flight testing—makes us confident that what we deploy will work as intended. We do not rely on intercept flight tests to make final assessments concerning system reliability and performance. Our flight tests are important building blocks in this process, but the significant costs of these tests combined with the practical reality that we can only conduct a few tests over any given period of time mean we have to rely on other kinds of tests to prove the system. System capabilities assessed for IDO will be based on test events planned for FY 2004 as well as data collected from flight- and ground tests and simulations over the past several years.

The missile defense test program helps define the capabilities and limitations of the system. The thousands of tests we conduct in the air, on the ground, in the lab, and with our models and simulations in the virtual world predict system performance and help identify problems so that we can fix them. They also highlight gaps so that we can address them. This accumulated knowledge has and will continue to increase our confidence in the effectiveness of the system and its potential improvements. None of our tests should act as a strict "pass-fail" exercise telling us when to proceed in our development or fielding. We can approximate realistic scenarios, though, after we have put interceptors and sensors in the field and integrated them with our C2BM/C network.

We conduct other kinds of tests that provide valuable information about the progress we are making and the reliability of the system. Integrated ground tests, for example, are not subject to flight test restrictions and can run numerous engagement scenarios over the course of a few weeks. Our modeling and simulation activity is an even more powerful system verification tool. It is important to understand that in the Missile Defense Program we use models and simulations, and not flight tests, as the primary verification tools. Missile defense ground and flight tests anchor the data we insert in our models, which in turn enhance our confidence regarding the operational capability we can achieve, because we can understand the system's behavior in many hundreds of test runs.

For example, our modeling and simulation capabilities are very accurate and allow us to mirror the achieved outcome of a flight test. The graphic below provides an example of why we believe our simulation capabilities to be the most powerful tools for projecting the reliability of the initial BMD system. In Figure 1 we have mapped out the predicted performance of the Integrated Flight Test 13B interceptor and matched it up with performance data we collected during the flight. The match up is nearly exact, and it shows that the Exo-atmospheric Kill Vehicle Mass Simulator was very close to the predicted insertion point velocity.

Figure 1: Booster Velocity/IFT 13B



Generally, when we deploy a weapon system in a traditional mission area, it is appropriate to conduct initial operational testing to ensure that the replacement system provides a better capability than the existing system. Put another way, there is a presumption that the deployed system should be used until a better capability is proven. In the current situation, where we have no weapon system fielded to defend the United States against even a limited attack by ICBMs, that presumption must be re-examined. With the provision of a militarily useful capability, even if it is limited, it is presumed that the capability can be fielded unless it is determined that operating the initial capability is considered to be an unacceptable danger to the operators, or any other similar reality.

USSTRATCOM will factor in all available test information into its military utility assessment of the fielded condition.

Ballistic Missile Defense System Research and Development Program

We have requested $7.6 billion in FY 2005 to continue our investment in missile defense RDT&E. Why do we need this level of investment in RDT&E? We need to press forward with our missile defense research and development if we are to improve the system by integrating upgraded or more advanced components and by exploiting new basing modes to engage threat missiles in, for example, the boost phase of flight. We have to lay the RDT&E foundation for evolutionary improvements to the BMD system.

We intend to improve the capability of the midcourse phase while adding additional layers.

The RDT&E program is working. The ability to make trade-offs among our development activities has allowed us to focus on the development of the most promising near-term elements, namely, GMD, Aegis BMD and PAC-3. GMD and Aegis BMD make up elements of the midcourse defense layer while PAC-3 provides capability in the terminal layer. The GMD FY 2005 budget request is $3.2 billion; the request for Aegis is $1.1 billion.

In this budget we increase investment in the development of a boost layer. Two program elements, a high energy laser capability and a new kinetic energy interceptor (KEI) or “hit to kill” capability, represent parallel paths and complement each other. Achieving capability in the boost phase as soon as practicable would be a revolutionary, high-payoff improvement to the BMD system. Although the technologies are well known, the engineering and integration required to make them work are very high risk. Therefore, having parallel approaches, even on different timelines, is a very prudent program management approach. We expanded our efforts in the boost phase as soon as we were able after withdrawal from the 1972 Anti-Ballistic Missile (ABM) treaty, which specifically prohibited boost phase development against long-range missiles.

The Airborne Laser (ABL) program has been in development since 1996. Development of an operational high energy laser for a 747 aircraft is a difficult technical challenge. Although we have had many successes in individual parts of the program, we have not been able to make some of our key milestones over the past year. The last 20%

of the program effort has proven to be very difficult, and some of the risks we took early in the program have impaired our present performance. Consequently, I reviewed the program late last year and directed a restructure that focused on our near-term efforts, delaying the procurement of the second aircraft until we could gain more confidence in our ability to meet schedules. I have adjusted the resources accordingly.

We no longer plan for ABL to deliver a contingency capability in Block 2004. There have been, nevertheless, several technical accomplishments to date. We have demonstrated the capability to track an ICBM in the boost phase using ABL technologies and improved beam control and fire control technologies. At this time there is no reason to believe that we will fail to achieve this capability. This is such a revolutionary and high payoff capability; I believe we should again be patient as we work through the integration and test activities. But the risks remain high. The FY 2005 budget request is $474 million for ABL.

We undertook the KE boost effort in response to a 2002 Defense Science Board Summer Study recommendation. In December 2003 we awarded the contract for development of the KEI boost effort. This was the first competition unconstrained by the ABM Treaty. It was also the first to use capability-based spiral development as a source selection strategy. The contract requires development of a boost phase interceptor that is terrestrial-based and can be used in other engagement phases as well—including the midcourse and possibly exo-atmospheric terminal phases. In other words, it could provide boost phase capability as well as an affordable, competitive next-generation replacement for our midcourse interceptors and even add a terminal phase capability should it be required. In 2005, we will begin conducting Near-Field Infrared Experiments to get a close-up view from space of rocket plumes to support the development of the terrestrial-based interceptor seeker and provide additional data needed for the development of a space test bed.

We have budgeted about $500 million for the KE boost effort for FY 2005. I believe this funding is necessary for a successful start. Those who would view this amount as a significant increase that is unwarranted for a new effort do not understand the importance of prudent programming and the preparatory work required to make such a program ultimately succeed. There are many examples of an under-funded systems engineering effort, where engineering costs sky-rocketed because adequate upfront work was not done. Mr. Chairman, I urge the committee to look carefully at our proposal and allow us to get a solid start on this essential piece of the layered BMD system.

Other Budget Highlights

Funding in the FY 2005 request supports the Block 2004 initial configuration as well as activities to place the BMD system on alert. It also lays the foundation for the future improvement of the system. We are requesting $9.2 billion to support this program of work, which is approximately a $1.5 billion increase over the FY 2004 request. The increase covers costs associated with fielding the first GMD, Aegis BMD, sensor, and command, control and battle management installments and will allow us to purchase long-lead items required for capability enhancements in Block 2006.

We have made a successful transfer of the PAC-3 program to the Army and remain convinced that the Department made the right decision in doing so. In the Patriot system, missile defense and air defense are so intertwined that attempting to manage them separately would be difficult if not futile. We continue to believe that the Army is in the best position, given the maturity of the PAC-3, to manage future enhancements and procurements. Meanwhile MDA remains fully cognizant of the Army's efforts and maintains the PAC-3 in the BMD system as a fully integrated element, with interfaces controlled by our configuration management process. PAC-3 is part of our ongoing system development and testing.

The FY 2005 funding request will buy equipment to ramp up the testing of THAAD, which, once fielded, will add endo-atmospheric and exo-atmospheric terminal capabilities to the BMD system to defeat medium-range threats. Terminal High Altitude Area Defense (THAAD) is progressing well and will add capabilities to engage in the late midcourse and terminal layers. THAAD recently completed the Design Readiness Review, and development hardware manufacturing is underway. The FY 2005 budget request is $834 million for THAAD. Delivery of the THAAD radar was completed ahead of schedule and rolled out this month. Flight testing is scheduled to begin in the first quarter of FY 2005 at White Sands Missile Range, New Mexico.

We will be able to begin assembly and integration of two Space Tracking and Surveillance System (STSS) satellites. The FY 2005 budget request for STSS is $322 million.

We will continue development of the C2BM/C "backbone" to provide real-time sensor-netting to the warfighter for improved interoperability and decision-making capability. Additional BMD system C2BM/C suites and remote capability will be deployed to Combatant Commanders as the system matures.

We also have several Science and Technology initiatives to increase BMD system firepower and sensor capability and extend the engagement battle space of terminal elements. One of our main efforts is to increase BMD system effectiveness in the midcourse phase by placing Multiple Kill Vehicles on a single booster, thus reducing the discrimination burden on BMD sensors. We also are conducting important work on advanced systems to develop laser technology and laser radar, advanced discrimination, improved focal plane arrays, and a high-altitude airship for improved surveillance, communication, and early warning. In support of this, we have requested about $200 million in the FY 2005 budget request for the development of advanced systems.

International Partnerships

In December 2003, through a formal Cabinet Decision, the Government of Japan became our first ally to proceed with acquisition of a multi-layered BMD system, basing its initial capability on upgrades of its Aegis destroyers and acquisition of the SM-3 missile. In addition, Japan and other allied nations will upgrade their Patriot units with PAC-3 missiles and improved ground support equipment. We have worked closely with Japan since 1999 to design and develop advanced components for the SM-3 missile. This project will culminate in flight tests in 2005 and 2006 that incorporate one or more of these components. These decisions represent a significant step forward with a close ally and we look forward to working together on these important efforts.

We are undertaking major initiatives in the international arena in this budget. Interest among foreign governments and industry in missile defense has risen considerably over the past year. We have been working with key allies to put in place mechanisms that would provide for lasting cooperative efforts.

We will begin in FY 2005 to expand international involvement in the program by encouraging international industry participation and investment in the development of alternative boost/ascent phase element components, such as the booster, kill vehicle, launcher, or C2BM/C. This approach reduces risk, adds options for component evolution for potential insertion during Block 2012, and potentially leads to an indigenous overseas production capability. We intend to award a contract for this effort this year.

In 2003 the United States signed a Memorandum of Understanding on Ballistic Missile Defense with the United Kingdom and an annex enabling the upgrade of the Fylingdales early warning radar. We are continuing our consultations with Denmark regarding the upgrade of the Thule radar site in Greenland. Australia has announced plans to participate in our efforts, building on its long-standing defense relationship with the United States. Canada also has entered into formal discussion on missile defense and is considering a BMD role for the U.S.-Canadian North American Aerospace Defense Command (NORAD). Our North Atlantic Treaty Organization partners have initiated a feasibility study for protection of NATO territory against ballistic missile attacks, which builds upon ongoing work to define and develop a NATO capability for protection of deployed forces.

We are continuing work with Israel to implement the Arrow System Improvement Program and enhance its missile defense capability to defeat the longer-range ballistic missile threats emerging in the Middle East. We are also establishing a capability in the United States to co-produce specified Arrow interceptor missile components, which will help Israel meet its defense requirements more quickly and maintain the U.S. industrial work share. We are intent on continuing U.S.-Russian collaboration and are now working on the development of software that will be used to support the ongoing U.S.-Russian Theater Missile Defense exercise program.

We have other international interoperability and technical cooperation projects underway as well and are working to establish formal agreements with other governments. Our international work is a priority that is consistent with our vision and supportive of our goals.

World-Class Systems Engineering—The Key Success Factor

The President’s direction to defeat ballistic missiles of all ranges in all phases of flight drove us to develop and build a single integrated system of layered defenses and forced us to transition our thinking to become more system-centric. We established the Missile Defense National Team to solve the demanding technical problems ahead of us and capitalize on the new engineering opportunities created by our withdrawal from the ABM Treaty. The National Team brings together the best, most experienced people from the military and civilian government work forces, industry, and the federal laboratories to work aggressively and collaboratively on one of the nation's top priorities. No single contractor or government office has all the expertise needed to design and engineer an integrated and properly configured BMD system. Let me give a perspective on why the National Team is so important.

What we have accomplished is an unprecedented integration of sensors communications infrastructure, and weapons that cut across Service responsibilities on a global scale. Even our first engagement sequence involves an unparalleled accomplishment.

The BMD system will engage a long-range ballistic missile threat across 9,500 miles. Threat messages sent by an Aegis destroyer will pass this data across eight BMD system communication nodes. System data travels across approximately 48,000 miles of communication lines. The engagement takes place 3,500 from Fort Greely at an altitude of 100 kilometers. At no time in history has there been an engagement performed by detection and weapon engagement systems separated by such distances. Over the past year and a half, we have rapidly built confidence in this weapon engagement capability through the use of proven systems and technologies coupled with robust integrated tests and exercises.

The National Team's job has not been easy. System engineers work in a changed procurement and fielding environment, which in the missile defense world means making engineering assessments and decisions based on technical objectives and goals and possible adversary capabilities rather than on specifications derived from more traditional operational requirements documents. This unified industry team arrangement does not stifle innovation or compromise corporate well-being. There is firm government oversight and greater accessibility for all National Team members to organizations, people, and data relevant to our mission. We accomplished this without abandoning sound engineering principles, management discipline, or accountability practices.

Significant benefits have resulted from this unique approach. Early on, this team brought to the program several major improvements, including: system-level integration of our command and control network; adoption of an integrated architecture approach to deal with countermeasures; development of a capability-requirement for forward-based sensors, such as the Forward Deployable Radar and the Sea-Based X-Band Radar; and identification of initial architecture trades for the boost/ascent phase intercept mission. The National Team also developed and implemented an engagement sequence group methodology, which optimizes performance by looking at potential engagement data flows through the elements and components of the system independent of Service or element biases. If we had retained the traditional element-centric engineering approach, I am doubtful that any one of the element prime contractors would have entertained the idea of a forward-based radar integrated with a "competing" system element. The National Team is central to this program.

Responsible and Flexible Management

Congressional support for key changes in management and oversight have allowed us to execute the Missile Defense Program responsibly and flexibly by adjusting the program to our progress every year, improving decision cycle time, and making the most prudent use of the money allocated to us.

One of the key process changes we made in 2001 was to engage the Department's top leadership in making annual decisions to accelerate, modify, or terminate missile defense activities. We take into account how each development activity contributes to effectiveness and synergy within the system, technical risk, schedules, and cost, and we then assess how it impacts our overall confidence in the effort. We have successfully used this process over the past three years.

Today's program is significantly different from the program of three years ago. In 2001 and 2002 we terminated Space-Based Laser development in favor of further technology development; restructured the Space-Based Infrared Sensors (Low) system, renaming it the Space Tracking and Surveillance System, to support more risk reduction activities; cancelled the Navy Area program following significant cost overruns; and accelerated PAC-3's deployment to the field. We also proposed a modest beginning in fielding the BMD system and put Aegis BMD and its SM-3 interceptor on track to field.

This year we have restructured the ABL program to deal more effectively with the technical and engineering challenges before us and make steady progress based on what we know. We also decided to end the Russian-American Observation Satellite (RAMOS) project because of rising levels of risk. After eight years of trying, RAMOS was not making the progress we had expected in negotiations with the Russian Federation. So we are refocusing our efforts on new areas of cooperation with our Russian counterparts.

These periodic changes in the RDT&E program have collectively involved billions of dollars—that is, billions of dollars that have been invested in more promising activities, and billions of dollars taken out of the less efficient program efforts. The ability to manage flexibly in this manner saves time and money in our ultimate goal of fielding the best defenses available on the shortest possible timeline.

Such decisive management moves were made collectively by senior leaders in the Department and in MDA. I believe these major changes are unprecedented in many respects and validate the management approach we put in place. The benefits of doing so are clearly visible today. When something is not working or we needed a new approach, we have taken action.

Closing

Mr. Chairman, I would like to recognize the many talented and dedicated people across this country who have made, and are continuing to make, our efforts successful. I have met with people from manufacturing facilities, R&D centers, and test centers. I have met with people from many different parts of the world who are working on our international efforts. Our fellow citizens should be proud of the talent, commitment, and dedication that every one of these people provides.

We take our responsibilities very seriously. We have an obligation to the President, the Congress, and the American people to get it right. With the continued strong support of Congress and this committee, we will continue our progress in defending the United States, our troops, and our allies and friends against all ranges of ballistic missiles in all phases of flight.

Thank you, and I look forward to your questions.