

Missile Defense Agency

Fiscal Year 2007 (FY07)

Budget Estimate

Overview



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Outline

This budget overview summarizes our FY07 budget submission to Congress. It also may serve informed readers as a stand-alone, top-level description of the Ballistic Missile Defense (BMD) Program. The overview describes our priorities, the budget structure, management and oversight processes, and program goals. It also includes Future Years Defense Program (FYDP) highlights.

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MISSILE DEFENSE AGENCY FY 2007 BUDGET ESTIMATE OVERVIEW

I. INTRODUCTION

The Missile Defense Agency (MDA) is developing a Ballistic Missile Defense System (BMDS) to defend the United States, its deployed forces, friends and allies against ballistic missiles of all ranges and in all phases of flight. In 2005, we made significant progress with a series of successful tests unparalleled in our development efforts to date, and we recovered from the difficulties we experienced in 2004 and early in 2005. We also moved forward with fielding the first increment of the BMDS. In 2006 and beyond, we will build on our success with continued emphasis on mission assurance and quality, increasingly robust and realistic testing, fielding additional components as they are completed and developing new capability for integration into the system of the future. Our Fiscal Year (FY) 2007 program of work and our proposed Future Years Defense Program (FYDP) will focus on achieving five objectives which seek to:

- Complete development, fielding and verification of the initial capability;
- Provide the U.S. Combatant Commanders with support and sustainment for the Ballistic Missile Defense System;
- Develop a totally integrated capability during 2007 and beyond based on a strong core research and spiral development program;
- Execute an increasingly complex test program concurrent with operations; and
- Establish a robust international foundation for missile defense.

Each of these objectives is tied to one or more of the agency's strategic goals:

Competence – The Missile Defense Agency will demonstrate an evolving capability to defeat any adversary's ballistic missiles. We will build on our early successes to perfect our missile defense systems, structures and processes. We will create a "core competency" in missile defense to protect our nation, military services, combatant commands, and our international partners.

Dominance – The Missile Defense Agency will enable a Department of Defense capacity – both in equipment and proficiency – to dominate the missile defense battlespace and be able to defend the United States and its allies from ballistic missile attacks. Through our efforts, we also seek to contain and counter the proliferation of military technology by hostile forces, and render all adversary missiles ineffective through our highly effective defense systems.

Partnership – Recognizing that fielding effective ballistic missile defenses must be a global effort that welcomes and accommodates allied participation, we will expand ballistic missile defense systems and proficiencies among our allies and friends. In doing this, we will work closely with other nations to develop and field missile defense capabilities that perform to the highest standards of mission assurance, reliability and cost effectiveness.

Efficiency – Recognizing that effective planning and efficient resource management are the keys to providing the portfolio of capabilities required to defeat today’s missile threats and overcome tomorrow’s challenges, we will sustain continuous improvement within the Missile Defense Agency, and optimize mission area management and business practices to achieve peak performance in a resource-constrained, evolutionary acquisition environment.

The Evolving Security Environment. Proliferating and evolving ballistic missile systems and associated technologies and expertise continue to pose dangers to our national security. In 2005 there were more than seventy-five foreign ballistic missile launches around the world. Nearly sixty launches last year involved short-range ballistic missiles, approximately ten involved medium- and intermediate-range missiles, and about ten involved land- and sea-based long-range ballistic missiles.

Iran, which continues to show interest in developing nuclear capabilities, and nuclear-capable North Korea have not relented in their pursuit of longer-range ballistic missiles. North Korea has the indigenously-developed 1,300 km No Dong Medium-Range Ballistic Missile (MRBM), which can threaten Japan, South Korea, and U.S. bases in the region. North Korea could test at any time the Taepo Dong-2 (TD-2) ICBM, which the Central Intelligence Agency (CIA) assesses to be capable of reaching the U.S. with a nuclear weapon. These missiles can threaten European population centers and U.S. deployed forces as well. Iran continues to develop an improved version of its 1,300 km Shahab-3 MRBM and has publicly claimed a variant that has a range of 2,000 km. Iran may have the technical capability to develop an ICBM by 2015. We also face a threat from short-range ballistic missiles. Without major technical hurdles, an adversary could choose to launch a missile at the United States from a forward-based sea platform within a few hundred kilometers of U.S. territory. Our fielding activity is intended to respond directly to all of these dangers.

Ballistic missiles remain the weapon of choice among our potential adversaries. The Gulf Wars in 1991 and 2003 demonstrated that hostile countries are willing to use ballistic missiles against coalition forces and our allies and friends. We can expect in the future our adversaries will use ballistic missiles to thwart our foreign policy objectives by holding hostage our cities and other high value assets. They will use them to deny our forces access to theaters of conflict or to coerce us. Ballistic missiles could provide strategic leverage to our enemies and we must continue our efforts to counter them.

II. PROGRAM HIGHLIGHTS

In this section, we address the major objectives of our program of work. In subsequent sections we describe significant changes from the FY06 budget submission, we provide highlights of planned capability improvements by Block, and we address our Budget Structure and Organization.

Initial Capability and Recent Successes. The BMDS program, as represented by the FY07 MDA budget submission, is focused on the continued development and fielding of ballistic missile defense capability. We will build on the successes we had in 2005 and our anticipated progress in 2006. In the latter part of 2005, we made major progress in developing and

deploying both sensors and weapons. In November, we had a successful Aegis Ballistic Missile Defense (BMD) intercept test and a successful Terminal High Altitude Area Defense (THAAD) flight test. On December 13, we had a successful flight test of the Ground-Based Interceptor (GBI) in its operational configuration. We added a second Aegis BMD engagement cruiser to our force and emplaced two more Ground-Based Interceptors at Fort Greely, Alaska, bringing our total number of interceptors in Alaska to eight. Two additional interceptors are at Vandenberg Air Force Base in California.

Our Command, Control, Battle Management, and Communications (C2BMC) element also took the first step in integrating the BMDS which is necessary to establish an affordable and effective global, layered defense. Both hardware and software were installed at the United States Northern Command (USNORTHCOM), United States Strategic Command (USSTRATCOM), and United States Pacific Command (USPACOM), with C2BMC capability and support also initiated at USPACOM. C2BMC capabilities include basic deliberative crisis action planning and common situational awareness at these Combatant Commands (COCOMs). In addition, we now provide common situational awareness directly to the Secretary of Defense and the President of the United States to aid in decision-making via our C2BMC system.

We successfully acquired and tracked Intercontinental Ballistic Missiles (ICBMs) with our Forward-Based X-Band-Transportable (FBX-T) radar, completed the upgrade to the Beale Air Force Base early warning radar and tested the Cobra Dane radar against an air-launched target. Our fire control system processed the information from Cobra Dane to generate an intercept solution for the target. We achieved high-power radiation with the successful tests in the Gulf of Mexico of our Sea-Based X-Band radar, which is now in Hawaii, and we added four Aegis BMD Long-Range Surveillance and Tracking destroyers to our force, bringing the total to ten.

Our Airborne Laser achieved operational power for the full duration of a test and completed the initial flight tests while operating its beam control, fire control system on the heavily modified 747 aircraft. Finally, our Kinetic Energy Interceptor (KEI) team successfully built a mobile fire control prototype with direct downlink capability. The fire control prototype validates engagement sequence groups and timelines for KEI through real time processing of global target of opportunity data. Six tests using the prototype demonstrated our ability to close the fire control solution for the boost phase intercept mission. The program also successfully demonstrated overhead non-imaging infrared data fusion processing, and concurrently demonstrated the use of national sensor data for intercept operations in the field and characterized the value of timely receipt of national sensor data in the Kinetic Energy Interceptor fire control solution. The KEI program completed an in-flight communications system waveform study and antenna design, which identified a feasible waveform to optimize for anti-jamming and operations in a nuclear environment to meet core standards in these areas.

These successes were challenging, particularly in light of the difficulties we faced in the early part of 2005 and in 2004, but our rededication to mission assurance and quality proved effective and demonstrated the soundness of our technical approach to developing ballistic missile defenses.

During 2006, we will build on this progress by continuing to emplace Ground-Based Interceptors (GBIs) in Alaska, adding Standard Missile-3 sea-based interceptors, adding Aegis BMD Long-Range Surveillance and Tracking destroyers and upgrading Aegis BMD Long-Range Surveillance and Tracking destroyers to Engagement destroyers. The Sea-Based X-Band radar will arrive on station in Alaska, the first Forward Based X-Band-Transportable (FBX-T) radar will be deployed to Japan and an upgraded early warning radar will begin operation in Fylingdales, England in 2006.

The proposed FY 2007 budget submission will continue to expand our fielded capability. Figure 1 lists the capability that was fielded at the end of 2005.

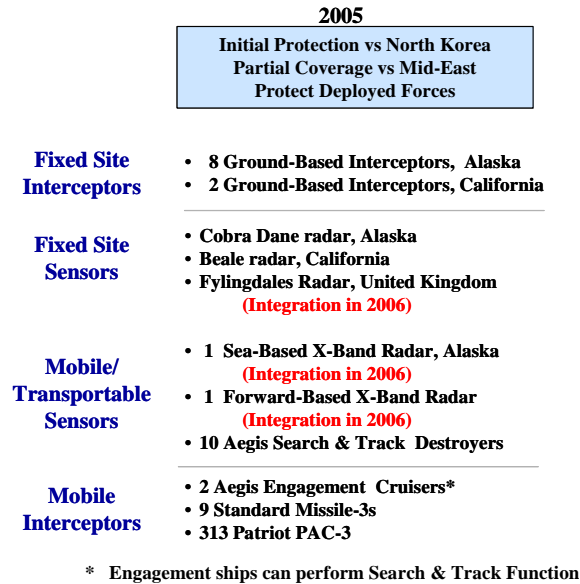


Figure 1.

Warfighter Support. The Missile Defense Agency is developing and delivering a ballistic missile defense capability to the warfighters at USPACOM, USSTRATCOM, and USNORTHCOM. The Army National Guard’s 100th Missile Defense Brigade, Air Force’s Space Warfare Center and the Navy crews manning ships in the Pacific Fleet are on station operating the systems that have been fielded. This fielded BMD System will undergo additional operationally realistic testing, but must also be sustained in order to support Combatant Commanders. MDA is fully funding Contractor Logistics Support in this budget submission to ensure system developers have financial resources to fully support fielded components after delivery.

MDA works collaboratively with the Combatant Commanders and the Military Services through a Warfighter Involvement Process (WIP), and various other venues such as exercises, war games, seminars, and other events. The WIP is structured to generate opportunities to collaborate with the warfighters in defining, advocating and prioritizing requirements for additional Ballistic Missile Defense System capabilities.

An effective training program is critical to the operational readiness, combat effectiveness, and overall performance of the BMDS. Using Joint Chiefs of Staff Training Guidance, we developed doctrine to allow for integrated, effective, and timely training in coordination with the U.S. Strategic Command. Our Joint Warfighter Directorate and C2BMC element are, therefore, working hand-in-hand with warfighters in the development of the Concurrent Test and Operations – Distributed Multi-Echelon Training System (CTO-DMETS). This jointly-created training program is crucial to prepare everyone assigned to the BMDS elements, supporting headquarters, and command authorities for the challenges they will face as they operate the System.

Improving the BMDS and Achieving Integration. MDA is developing and fielding an *integrated, layered* BMDS to defend against threats of *all ranges*, in *all phases* of flight. The program of work defined in this budget submission is a balance of fielding and development efforts to address the challenges and uncertainties of a real and growing threat, including:

- Keeping pace with current rogue nation threat missile inventories.
- Keeping pace with increasing threat complexity.
- Countering attacks designed to circumvent our current system.
- Maintaining a program that can address emerging threats.

We are fielding capability incrementally over the FYDP. After achieving our initial fielding in Block 2004, we will continue to add Ground-Based Interceptors (GBIs) in Alaska and, potentially, in Europe to meet the long-term threat; we will deploy Standard Missile-3 interceptors on an increasing number of Aegis BMD cruisers and destroyers; we will continue to field C2BMC capabilities at our COCOMs, enhancing situational awareness and command and control, adding sensor management, and completing the initial fielding of a Global Integrated Fire Control (GIFC) capability; and we will add the Terminal High Altitude Area Defense (THAAD) capability beginning in 2009 to meet the short and mid range threats. These interceptors, along with additional radars, will help us keep pace with the size of the rogue nation threat. The radars we are fielding will also allow us to address the complexity of the threat by improving our capability to discriminate warheads from decoys and other countermeasures. Finally, we are also beginning to field the Space Tracking and Surveillance System (STSS), which will improve our capability against all threats.

A truly global and integrated BMDS relies on a network-centric capability to share information and rapidly react to ballistic missile defense threats in any theater throughout the world. Global C2BMC is the linchpin for an integrated layered BMDS. MDA's C2BMC program focuses on five major products critical to BMDS operation: Global Integrated Fire Control (GIFC), Situational Awareness, BMD Planner, BMDS Network, and Cyber-Warfare Command and Control. Each of these products is described below:

- **Global Integrated Fire Control (GIFC).** We are developing a global, distributed, real-time, integrated fire control system – it will receive sensor information from land, sea, air, and space, and commits land-, sea-, air-, and potentially space-based weapons to fire at identified targets. The GIFC will be flexible, supporting any command structure

desired by the warfighters and providing: trusted, system-level track for interceptor engagements; automated and manual management of BMDS radars for sensor optimization; automated and manual weapon-target pairing for magazine optimization; kill assessment on interceptor engagements; and cyber-warfare command and control of the BMDS Network.

In Block 2006, we will field the initial GIFC to the USPACOM Air Operations Center (AOC) at Hickam AFB in Hawaii to provide optimized, layered, integrated BMD to the USPACOM theaters and region to include the defense of Hawaii. The initial GIFC will provide a system-level track to all elements and C2 centers after the correlation and discrimination of observed tracks in the BMDS battlespace. The GIFC develops a coordinated sensor task plan after calculating the amount of energy and time needed to devote to each target. Additionally, the GIFC will provide automated and manual weapon-system assignment to optimize the weapon-target pairing based on engaging the highest priority targets, balancing the depletion of inventory, and minimizing inventory wastage. In Block 2008 and Block 2010, we will increase the GIFC capabilities, incorporating refined discrimination and correlation, superior weapon-target pairing, and target-object map production. The C2BMC program is developing the GIFC to accept algorithm enhancements and upgrades rapidly and readily as we anticipate many future enhancements to the BMDS. In Block 2008 and Block 2010, we will expand the fielding of GIFC, completing the USPACOM theater activities, and adding EUCOM and USCENCOM regional and theater activities.

- **BMD Situational Awareness.** Situational Awareness is the ability to identify, process, and comprehend the critical elements of information about what is happening in the battlespace with regards to the BMD mission. Effective situational awareness depends on effective tactics, techniques, and procedures and a common, dependable, and accurate situational awareness knowledge-base. The loss of Situational Awareness increases chances for human error and decreases system performance. This usually occurs over a period of time and from a variety of sources: system failure to detect changes in the battlespace; confusing human-machine interface; failure to address unbounded conditions in the battlespace; unresolved discrepancies in sensor information; and ambiguity about displayed information. Our situational awareness tools will help to mitigate these occurrences.
- **BMD Planner.** To achieve effective and efficient Global Integrated Fire Control, the joint warfighters must develop rules that guide the operations of the BMDS. To develop these rules, the joint warfighters require a planning and analysis tool that incorporates metrics based on feasibility, suitability, acceptability, and uniqueness. The C2BMC program considers the fundamental elements of battle plan analysis as it applies to BMD, and in Block 2006 we will develop tools to evaluate courses of action (COA) rapidly. In Block 2008 and 2010, we will develop algorithms designed to provide the commander an expanded selection of alternatives when planning a battle. The objective is to enable a commander to evaluate mission objectives and battlefield intelligence, to improve the association of computer-generated COAs with reality and to allow the retention of battlefield initiative through a reduction in planning time requirements.

- **BMDS Network.** The C2BMC program is initiating, in Block 2006, the development of a service-oriented architecture (SOA) for the BMDS network. SOA is an architectural style for building software applications that use services available in a network such as the web. It promotes loose coupling between software components so that they can be reused. In the case of the BMDS, elements and components are the services and the SOA allows the introduction of new services while maintaining legacy services without the need to rebuild the network from the bottom up. This will replace the current point-to-point network used for the Initial Defense Capability. By the end of Block 2010, the BMDS Network will feature a completely functional SOA that features application-independence among the BMDS elements. That is, any element can modify its software at any time and remain a fully-functional element of the BMDS. Finally, we will work with Defense Information System Agency (DISA) and industry to develop and implement high-speed, high-bandwidth communications that can transport the BMDS data throughout the globe. The data transport mechanisms must provide rapid, secure, and accurate data transport throughout the BMDS Network.
- **Cyber-Warfare Command and Control.** Information processing—whether by computers or by humans— is becoming a “center of gravity” in future warfare. Nation-states reconnoiter and probe to identify exploitable digital network weaknesses among potential adversaries. In Block 2006, the C2BMC program is developing a cyber-warfare command and control (C2) prototype capability that will allow warfighters to monitor the BMD cyber-space to detect and isolate potential adversary intrusions into the BMDS Network. The prototype will depend on firewall technology and other current mechanisms to provide information security, and will operate during peacetime and during BMD execution activities. In Block 2008 and 2010, we will continue our collaboration with other agencies to prevent unauthorized intrusions into the BMDS Network.

An integrated, layered system achieves maximum effectiveness and limits the vulnerability of the overall system. In last year’s budget submission, we introduced the concept of the Engagement Sequence Group (ESG) as a tool to achieve BMDS integration. An ESG identifies the combination of weapons and sensors that must work together to detect, track and intercept an enemy missile – the complete kill chain from the time the threat missile is first detected through the intercept of this missile – and thereby defines how BMDS components are integrated. This integration dramatically expands the detection and engagement zones beyond what could be achieved by a single element. Figure 2 is a conceptual diagram of an engagement sequence.

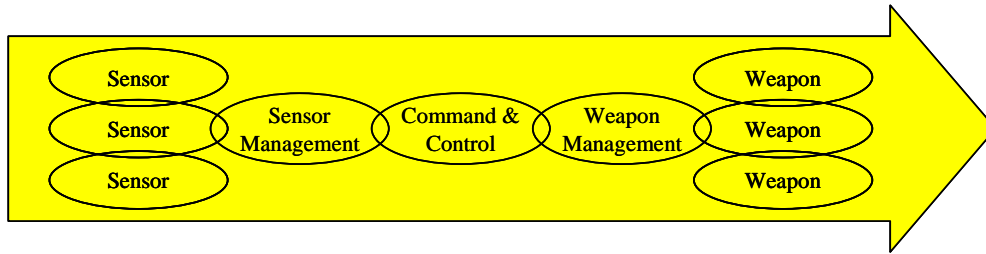


Figure 2. Components of an Engagement Sequence

“Ground-Based Interceptor Engage on Cobra Dane Radar” (“GBI Engage on Cobra Dane”) describes a GBI launched and targeted based on track data from the Cobra Dane upgraded early warning radar and “Ground-Based Interceptor Engage on Aegis BMD (AN/SPY-1) Long-Range Surveillance and Tracking Radar” (“GBI Engage on Aegis”) describes the scenario where an interceptor is launched and targeted based on track data from the Aegis radar. Both of these are engagement sequence capabilities included in the initially fielded BMDS. “GBI Engage on Cobra Dane” occurs entirely within the Ground-Based Midcourse element. “GBI Engage on Aegis” crosses element boundaries from the Aegis BMD element to the Ground-Based Midcourse element. As the BMDS evolves, engagement sequences will increase both in number and in complexity. A fully integrated system allows for multiple kill chains via our global C2BMC vice a single kill chain. Integration is a critical system-level activity because there are *multiple* contractors developing *multiple* components that must operate as a *single, integrated BMDS*.

We also have a robust development effort to address challenges and uncertainties in the future. Two of our largest development efforts are the Airborne Laser (ABL) and the Kinetic Energy Interceptor. ABL is our primary boost phase development program, a capability that will introduce a new layer to the BMDS -- destroying a missile in its boost phase, before it can deploy warheads and/or countermeasures. The Kinetic Energy Interceptor is a strategically deployable, multi-use, mobile interceptor being designed to intercept threat missiles in the boost/ascent and midcourse phases of flight. The most stressing scenario requires the interceptor be capable of very high acceleration - to get to the target while the threat missile is still in the boost phase of flight. The interceptor has long range and transportability – attributes that are beneficial for engaging longer range ballistic missiles in all phases of the flight trajectory. The Kinetic Energy Interceptor will contribute to our ability to address the growing rogue threat, as well as asymmetric and emerging threats. We are also funding the Multiple Kill Vehicle (MKV) development effort focused on using miniaturization technology to develop an interceptor capable of engaging more than one potential target with multiple kill vehicles. MKV will help address the midcourse countermeasure challenge by destroying multiple credible threat objects in a single engagement. We continue to pursue other programs involving innovative discrimination techniques to improve our ability to discern warheads from countermeasures.

Robust Testing. The BMDS is comprised of ground-, sea-, air- and space-based components. MDA develops and incrementally fields the BMDS to provide the Warfighter with a useful capability as soon as practical while recognizing the need to further test and improve the system as technologies are matured and the operators become more familiar with system operation and capabilities. Our testing program follows a similar spiral approach. We assess capabilities and performance based on developmental and operational test objectives. This incremental approach

enables MDA, Operational Test Authorities (OTA), the Director, Operational Test & Evaluation (DOT&E), and Combatant Commanders to characterize the effectiveness and suitability of the system at every stage in its development and fielding. Continuous testing of the BMD System as a whole provides the basis to make sound decisions on the program.

To continue the implementation of this approach, MDA, in coordination with the OTAs and DOT&E, is revising the Integrated Master Test Plan (IMTP). The Integrated Master Test Plan establishes the framework for BMDS ground and flight testing in a particular Block. It is an overarching document that describes the BMDS test environment, supporting test organizations, developmental and operational test programs and management of MDA test resources. It is the basis for detailed BMDS test planning and execution within a given Block. The IMTP also defines the characterization objectives by which the OTAs will assess each system test. In turn, DOT&E will use these assessments as the primary technical basis for its report to Congress. The criteria for OTA characterization are system performance, supportability, survivability, interoperability, and capability to perform alert transition.

The Director of the Responsible Test Organization (RTO) plans, programs, budgets, executes and manages the BMDS test and assessment program. The RTO's principal agent for implementing the IMTP is the Director of the Combined Test Force (CTF). The CTF consolidates the personnel, processes, and fiscal resources across MDA, including the Elements into a single, cohesive team to execute the BMDS test program. Data and information from the MDA test program support characterization and assessment of the BMDS. Colocated within the CTF at multiple MDA locations is the OTA Liaison Group (OLG), which includes representatives from the Army Test & Evaluation Command, the Air Force Operational Test & Evaluation Center, the Navy Operational Test & Evaluation Force, and the Joint Interoperability Test Command. Although the Liaison Group is located at MDA, OLG members report directly to their respective OTAs. This relationship within the RTO maintains the representatives' independence, yet provides the environment for continuous two-way communication channels to facilitate interaction and cooperation. The OLG is the primary conduit for the OTAs to insert operational test objectives into the BMD System test planning process. The OLG participates in all BMDS test planning and analysis functions in which the OTAs have a vested interest. In addition, MDA's interaction and coordination with the missile defense user community (USSTRATCOM, USNORTHCOM, and JTAMDO) provides Warfighter input to test planning and execution. MDA's concurrent testing and operation approach provides for close coordination of development and support activities (e.g. testing, maintenance, training, and upgrades) for operational BMDS elements, while also maintaining readiness to execute missile defense operations. USSTRATCOM approves the use of any component of the BMDS operational system under its control through the Asset Management process. This includes using operational crews for testing and upgrade. The CTF Test Managers coordinate with USSTRATCOM/USNORTHCOM through the Asset Management process to ensure planned test events requiring use of operational assets impose minimum impact to the operational capability of the BMD system.

We continue to develop and refine our plan to fully implement a "top-down" integrated system-wide test program. The BMDS test program "top-down" process is based upon criteria established by the MDA System Engineer to include functionality and capability defined in the

form of engagement sequence groups, system test objectives, and overall system design. MDA uses these criteria to create an integrated system-level test approach, bringing together the contributions of the various BMDS elements into combined test events. MDA continues to place an increased emphasis on testing in anticipated operational conditions to the maximum extent practical, along with the emphasis on ensuring quality control and discipline by establishing and following proper procedures.

The MDA strategy for test, verification, and assessment focuses on functionality and capability. MDA's Test and Evaluation program includes formal hardware and software testing as part of the Element development and manufacturing activity, simulation and live check-out at the component level, and simulation and exercise of the communications infrastructure and messaging functions within and between the components. The MDA evaluates the BMDS based on demonstrated performance and associated statistical analysis using modeling and simulation along with ground and flight testing. Modeling and simulation (M&S) provides data to plan tests, support test rehearsal, provide performance prediction, perform post-flight assessment, and explore scenarios where flight testing is either impractical or impossible. M&S provides insight into test design, potential range and operational constraints, test execution rehearsal, expansion of the demonstrated performance envelope to additional threat representations, and efficient replication of actual flight tests. M&S tools used for performance verification are anchored in ground and flight test results and undergo formal verification, validation, and accreditation to provide confidence in the analytic results.

System Ground Tests provide data for BMDS performance prediction, performance assessment/verification, risk-reduction testing for flight tests, modeling and simulation anchoring, and exploration of scenarios where flight testing is either impractical or impossible. Ground testing allows examination of mature designs, identification and efficient correction of performance anomalies, and simulation of a wide spectrum of environmental conditions. System Ground Test tools include Integrated Missile Defense Wargames and Missile Defense Hardware-in-the-Loop test exercises.

Flight testing provides data to further characterize the BMDS, anchor M&S tools, and demonstrate BMDS operational capability. While flight tests are conducted in realistic operational environments, each test examines a single scenario and has environmental and safety constraints.

FY06 Flight Test Plan. The highlights of the FY06 test plan include four more GMD flight tests. The first will be a radar characterization test of the Beal Upgraded Early Warning Radar. The second test is a radar and target synchronization test. The third is a radar characterization test of the SBX Radar using only a target. The fourth test will be a kill vehicle endgame certification test with a planned intercept as a secondary objective. The Aegis BMD program will conduct two additional flight tests. The first will be a joint flight test with Japan, and the second will be an intercept against a medium range target with the tactical Aegis BMD configuration. MDA will also conduct four additional flight tests of the THAAD weapon system. The first will be against a simulated target. The second and third will be intercept tests, one of which will be against a separating target. The last will be an interceptor control test without a target. Testing C2BMC functions will be a major objective of all flight tests and

operators will be involved in each test. Finally, we will conduct a flight test involving C2BMC and the PATRIOT weapon system.

MDA has planned one critical measurements and countermeasures (CMCM) flight test to collect phenomenology data. MDA will participate in at least two Air Force Glory Trip (GT) flight tests, a Japanese Cooperative Target test, and three Israeli Arrow System Tests (AST). To support this flight test program, we also plan to conduct ground tests and participate in COCOM sponsored events to demonstrate interoperability, evaluate performance, and develop doctrine, tactics, techniques and procedures (TTP).

FY07 Flight Test Plan. The highlights of the FY07 test plan include three GMD intercept tests. MDA will conduct two system flight tests employing Aegis BMD to demonstrate Aegis BMD's ability to successfully engage a target under operational conditions. MDA will conduct one system level flight test of the THAAD weapon system while THAAD completes four developmental tests. This system test will be an actual intercept mission that will assess THAAD's ability to communicate and exchange data with the AEGIS BMD weapon system and THAAD's ability to provide hit assessment reporting to C2BMC. Lastly, we will conduct a flight test to demonstrate PATRIOT's ability to receive engagement coordination direction from C2BMC.

We will participate in at least two Air Force Glory Trip (GT) flight tests and one Israeli Arrow System Tests. To support this flight test program, we also plan to conduct ground tests and participate in COCOM sponsored events to demonstrate interoperability, evaluate performance, and develop doctrine and TTPs.

International Participation. Ballistic missile defense is – and must be – global. The missile threat is worldwide, and missile defense is a central aspect of U.S. counterproliferation efforts. The global nature of the threat requires that we work closely with our allies to develop and field missile defenses that will discourage our adversaries from acting aggressively and, if necessary, defend our collective interests from ballistic missile attack.

International participation remains an essential part of our program. The Government of Japan is a major international partner and has announced plans to deploy a multi-layered missile defense capability. Their plans include upgrading their Patriot battalions to a PAC-3 capability and four Aegis destroyers to a BMD capability, including the purchase of Standard Missile-3 interceptors. Additionally, we will field a Forward Based X-Band Radar and associated C2BMC network and communications in Japan to contribute both to the defense of the U.S. as well as Japan. This effort will foster opportunities for data sharing among our governments and is a model for our way ahead with other nations. Other cooperative efforts include the joint development of an improved Standard Missile-3 interceptor that is capable of defeating long-range ballistic missiles. This program in particular has been designed in keeping with the President's direction to structure programs to promote international cooperation. Efforts to explore participation of Japanese industry in ABL development also continue.

Of course, we continue to work closely with the United Kingdom (UK). In 2005, we provided C2BMC situational awareness capability and displays to the UK. In 2006, we will

finish work on the Fylingdales Upgraded Early Warning Radar in the UK. We will begin work, after having reached an accord with the Kingdom of Denmark, on upgrading the Early Warning Radar in Thule, Greenland. These radars are key components for defeating long-range ballistic missile threats emerging from the Middle East and Northeast Asia.

We are also working closely with the UK Missile Defence Centre (established by the United Kingdom Ministry of Defence) to explore and facilitate future cooperation. The North Atlantic Treaty Organization (NATO) continues to examine its missile defense needs. In the past year, NATO initiated a study focused on developing a requirement for missile defense of NATO territory, the results of which will complement an earlier study examining defense of NATO deployed forces. In FY06, we will provide hardware and operational C2BMC capabilities in an international exercise – Joint Project Optic Windmill. Israel remains a strong partner in missile defense. Australia has announced its support for the BMDS and signed a BMD Framework Memorandum of Understanding to work cooperatively with the United States on sensors.

Finally, the FY07 budget submission includes funding to begin exploring potential locations for both a GBI and a radar/C2BMC site overseas. Such a capability would contribute to our primary mission to protect the United States, while having the additional benefit of defending our allies, friends and deployed forces.

III. SIGNIFICANT CHANGES FROM FY06 BUDGET SUBMISSION.

The following is a summary of the significant program changes reflected in this year's budget compared to the FY06 submission.

Fielding. The fielding program described in this submission has been revised compared to the one shown in our FY06 submission. The Agency worked within its fiscal controls across the FYDP to weigh alternatives and balance the approaches to a layered defense. Adjustments were made to the fielding program outlined in PB06. We adjusted the number of Ground Based Interceptors based on recommendations from our Mission Readiness Task Force (MRTF). We reduced the number of SM-3 Sea Based Interceptors to invest in development upgrades that pace the near-term threat. These technical issues resulted in the overall decrease in the number of fielded interceptors in the FYDP.

Development. We have made several key adjustments to our development efforts while also attempting to realize efficiencies through overhead and infrastructure reductions.

- **Airborne Laser.** We have chosen to defer the trade studies and initial engineering efforts associated with the second Airborne Laser aircraft until after the lethal shootdown in 2008 to allow for a design turn on the aircraft. During the period leading up to lethal shootdown, the program manager will capture additional knowledge that will assist in future design alternatives for the second ABL; in addition, this realignment has added flexibility to the overall BMD program by making resources available for other efforts and allowing us to avoid premature termination of promising technologies. Deferral of these trade studies will result in a two-year delay in the purchase of the second aircraft.

Despite this change, the ABL program remains our primary boost phase intercept effort and made significant progress during CY2005.

2007	
Full Protection Against Mid-East Expand Coverage to Allies & Friends Expand Coverage of Deployed Forces	
Fixed Site Interceptors	<ul style="list-style-type: none"> • Up to 20 Ground-Based Interceptors, Alaska • 2 Ground-Based Interceptors, California
Fixed Site Sensors	<ul style="list-style-type: none"> • Cobra Dane radar, Alaska • Beale radar, California • Fylingdales Radar, United Kingdom • Thule radar, Greenland
Mobile/Transportable Sensors	<ul style="list-style-type: none"> • 1 Sea-Based X-Band Radar, Alaska • 2 Forward-Based X-Band Radar • 7 Aegis Search & Track Destroyers
Mobile Interceptors	<ul style="list-style-type: none"> • 3 Aegis Engagement Cruisers* • 7 Aegis Engagement Destroyers* • 24 Standard Missile-3s • 534 Patriot PAC-3

* Engagement ships can perform Search & Track Function

Figure 3.

- **Kinetic Energy Interceptor.** We have chosen to adjust further the development of the Kinetic Energy Interceptor program in order to focus resources on current Ground Based Midcourse and Aegis BMD efforts, particularly as they relate to mission assurance and quality. We have maintained the schedule for the key knowledge points in the program, including the first booster flight test in 2008, but the overall result of rebalancing these resources is to delay the fielding of the first KEI fire unit from Block 2012 to Block 2014. We also moved two efforts from the BMDS Interceptors (KEI) PE: the Near Field Infrared Experiment now resides in the Ballistic Missile Defense Technology Program Element, and the Space Test Bed now resides in the BMD System Space Program PE. Both efforts will be managed by the MDA Space Center of Excellence.
- **Multiple Kill Vehicles.** We have restructured the Multiple Kill Vehicles program to introduce an improved Liquid Divert and Attitude Control System and integrate a 2-Color Seeker into the effort. We will also introduce knowledge points to ensure the program in on the same knowledge-based acquisition process as our other development efforts.
- **Nuclear Survivability.** We have initiated nuclear survivability efforts throughout the BMDS to enhance the ability of the system to operate in this environment.

IV. BLOCK HIGHLIGHTS

A Block is a biennial increment of the BMDS that provides an integrated set of capabilities that has been tested as part of the BMDS and assessed for its military utility. Once

assessed, elements and components are available for fielding, as directed. This may occur at any time during the Block.

Block 2004. This funding is detailed in Table 1.

Block 2004 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
C2BMC Block 2004	152	66	54					54
Hercules Block 2004								
Joint Warfighter Support Block 2004	34							
Test & Evaluation Block 2004	144							
Targets & CM Block 2004	248							
THAAD Block 2004	584							
GMD Block 2004 Test Bed / IDC	823							
Aegis BMD Block 2004	901	145	28	20				48
ABL Block 2004	448							
Total	3,334	211	82	20	-	-	-	102

Numbers may not add exactly due to rounding.

Table 1. Funding for Block 2004

Block 2006. Our program of work for Block 2006 focuses on fielding additional capability, integrating the capability to achieve maximum effectiveness and continued development of follow-on systems. Funding for Block 2006 is detailed in Table 2. Major initiatives in Block 2006 are:

Fielding: Expansion of the Block 2004 initial fielding, to include:

- Additional Ground-Based Interceptors at Fort Greely, Alaska;
- Additional sea-based interceptors and Aegis BMD ships;
- Upgraded Early Warning Radar at Fylingdales, UK;
- A Forward Based X-Band Radar in Japan;
- A Sea-Based X-Band Radar in Alaska;
- Initial Global Integrated Fire Control at the Pacific Air Operations Center integrating Aegis BMD, FBX-T and GMD assets;
- Additional C2BMC planning and situation awareness capabilities at COCOM Headquarters to improve/streamline executive decision-making.

Development

- Completion of the Space Tracking and Surveillance System ground segment, and the launch of two satellites. Demonstrate capability to acquire, track, discriminate and report ballistic missile and intercept events; to perform acquisition-to-track handover and track handover within a satellite constellation; and to transfer command, mission and health and status data from ground segment to satellites and between satellites. Explore approaches for closing fire control loop for the BMDS.
- Continue integration, ground and flight test activities supporting ABL’s low-power beam control/fire control and Ballistic Missile Command, Control, Communications, Computers and Intelligence (BMC4I) systems. By the end of Block 2006, low power system integration will be complete and the installation of the high-energy laser (HEL) will have begun.

Block 2006 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
C2BMC Block 2006	27	136	177	103	57			336
Hercules Block 2006	23	20						
Joint Warfighter Support Block 2006		27	77	1				78
Test & Evaluation Block 2006	9	134	129					129
Targets & CM Block 2006	25	224	159					159
THAAD Block 2006	162							
GMD Block 2004 / 2006	2,450	2,334	2,354	468	510			3,332
Aegis BMD Block 2006	122	456	483	88	76	48	4	698
ABL Block 2006		455	595					595
BMDS Radars Block 2006	276	235	223	85	103			410
STSS Block 2006	248	228	248	74	92	89	41	544
Total	3,340	4,248	4,444	818	838	137	45	6,281
Defense-Wide Resources				(430)	(204)			(634)
MDA Total Less Defense-Wide Resources	3,340	4,248	4,444	388	633	137	45	5,647

Numbers may not add exactly due to rounding.

Table 2. Funding for Block 2006

The following table provides an estimate of the current facilitized production rate capacity for capabilities being fielded in Block 2006.

	Facilitized Capacity
Ground Based Interceptors (GBI)	One per month
Standard Missile 3 (SM-3)	Two per month
THAAD Radar	Two per year
FBX-T Radar	Two per year

Table 3. Block 2006 Production Rate Capacity

Block 2008. Block 2008 expands our ability to protect the United States, deployed forces, allies and friends. In particular, it increases our capability against medium and intermediate range ballistic missiles. It also continues our development efforts to ensure we are prepared to address future challenges. Funding for Block 2008 is detailed in Table 4. The most significant Block 2008 efforts include:

Fielding: Expansion of fielded capabilities with:

- Additional Ground-Based Interceptors at Fort Greely, Alaska;
- Additional sea-based interceptors;
- First Terminal High Altitude Area Defense fire unit;
- Upgraded Early Warning Radar at Thule, Greenland;
- Two FBX-T Radars and one Adjunct X-Band Dish Radars;
- C2BMC capability in European Command (EUCOM);
- Fully deployed Global Integrated Fire Control and COCOM planning and situational awareness incorporating newly fielded sensors and weapons systems.

Development

- Upgrades and improvements to GMD including enhanced SBX capabilities, additional GFC capabilities, countermeasures mitigation and multi-sensor fusion. Additionally, we

will upgrade EKV software to enhance performance and the EKV processor and avionics to improve reliability, memory and throughput capabilities.

- For Aegis BMD, we will develop a new signal processor for the Aegis BMD Weapon System, and upgrade the seeker and divert and attitude control system (DACs) on the Standard Missile.
- Continued ground and flight testing of the first ABL aircraft, to include the first in-flight lethal demonstration of the weapon system against a boosting ballistic missile (currently scheduled for late CY2008). In addition, the program will conduct trade studies and establish the capabilities baseline for a second ABL aircraft.
- Upgrades to STSS ground segment hardware and software and upgrades to the STSS spacecraft software. Upgrades will be based on data gathered from satellites launched in Block 2006.

Block 2008 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
C2BMC Block 2008	6	6	34	159	180	107	64	543
Hercules Block 2008	59	38						
Joint Warfighter Support Block 2008				63	62			125
Test & Evaluation Block 2008			45	128	132		4	309
Targets & CM Block 2008		4	21	174	151			345
THAAD Block 2008	0	991	942	694	474	21		2,132
GMD Block 2008		73	355	1,395	1,187	501	341	3,778
Aegis BMD Block 2008		266	418	681	558	92	51	1,799
ABL Block 2008			3	543	417			963
BMDs Radars Block 2008		39	276	471	404	185	161	1,497
STSS Block 2008			35	29	24	14	14	116
Total	65	1,416	2,129	4,336	3,589	920	634	11,609
Defense-Wide Resources				(803)	(702)	(719)	(209)	(2,432)
MDA Total Less Defense-Wide Resources	65	1,416	2,129	3,533	2,888	201	425	9,177

Numbers may not add exactly due to rounding.

Table 4. Funding for Block 2008

The following table provides an estimate of the current facilitated production rate capacity for capabilities being fielded in Block 2008.

	Facilitized Capacity
Ground Based Interceptors (GBI)	One per month
Standard Missile 3 (SM-3)	Two per month

THAAD Interceptors	Three per month
THAAD Radar	Two per year
FBX-T Radar	Two per year

Table 5. Block 2008 Production Rate Capacity

Block 2010. Fielding and development efforts will continue in Block 2010. Funding for Block 2010 is detailed in Table 6. Significant Block 2010 efforts include:

Fielding

- Expanded capability with additional sea-based interceptors and an additional THAAD fire unit, additional Ground-Based Interceptors, a potential third site for fielding of these GBIs, a second Adjunct X-Band Dish radar as well as network and user C2BMC enhancements to integrate these new assets. Funding for the Block 2010 GBIs and the potential third site starts in FY07.

Development

- GMD efforts in Block 2010 include the development of advanced payloads that can address increasingly sophisticated threats.
- The Aegis BMD Block 2010 program will integrate Aegis BMD with the Navy-developed Open Architecture system. This effort will transition Aegis BMD from older, mil-standard computers to newer, commercial-off-the-shelf (COTS) computing plants.
- The ABL Block 2010 effort continues the spiral development of the ABL for future integration of its capabilities into the BMDS. The two key components of this spiral activity are the 1st ABL Weapon System test bed and the 2nd ABL Weapon System. The block effort provides a flying asset for advancing capability of future ABL aircraft through technology and operations improvement. The ABL Block 2010 effort includes evaluations of the 1st ABL against a broader spectrum of threats as an integrated part of the overall BMDS, and also provides for enhancement of BMDS integration. In addition, during ABL Block 2010, the purchase of the 2nd ABL green aircraft will be initiated. The 2nd ABL effort focuses on developing and producing an ABL that will demonstrate a capability that is operationally significant with a baseline that is robust, reliable, and reproducible in order to support an eventual production decision.

Block 2010 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
C2BMC Block 2010				1	35	161	206	405
Hercules Block 2010		6						
Joint Warfighter Support Block 2010						62	65	127
Test & Evaluation Block 2010				35	40	119	110	304
Targets & CM Block 2010		1	3	5	42	191	163	404
THAAD Block 2010				114	119	642	386	1,262
GMD Block 2010			119	706	670	1,575	1,310	4,380
Aegis BMD Block 2010			29	53	172	472	341	1,067
ABL Block 2010						416	648	1,064
BMDs Radars Block 2010			7	19	124	129	48	327
STSS Block 2010	43							
BMDs Interceptor Block 2010								
EO/IR Block 2010	2							
Total	45	7	157	934	1,201	3,769	3,278	9,339
Defense-Wide Resources				(685)	(762)	(975)	(1,343)	(3,765)
MDA Total Less Defense-Wide Resources	45	7	157	248	439	2,794	1,935	5,574

Numbers may not add exactly due to rounding.

Table 6. Funding for Block 2010

Block 2012. We have a considerable investment in Block 2012 capability in this budget submission comprised primarily of our Space Tracking and Surveillance System (STSS) program. Funding for Block 2012 is in Table 7. The STSS launch schedule will depend on the final satellite configuration which will await the test results from the initial Block 2006 two-satellite constellation; however, the first satellite of the final configuration is projected to be launched early in Block 2012. We are planning to initiate the acquisition of the Block 2012 STSS constellation after the delivery of the Block 2006 payloads. The Aegis BMD Block 2012 program will integrate the Aegis BMD Weapon System improvements and the SM-3 Block IIA missile, i.e., the 21-inch Full Caliber Round (FCR) missile, which will provide the capability to engage longer-range threats, including ICBMs.

Block 2012 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
Test & Evaluation Block 2012						56	76	132
Targets & CM 2012						6	39	45
Aegis Block 2012			16	21	40	158	168	402
STSS Block 2012			97	309	635	837	817	2,695
BMDs Interceptor Block 2012	257							
Total	257	-	113	330	675	1,057	1,099	3,274
Defense-Wide Resources				(33)	(285)	(300)	(190)	(807)
MDA Total Less Defense-Wide Resources	257	-	113	298	390	757	909	2,467

Numbers may not add exactly due to rounding.

Table 7. Funding for Block 2012

Block 2014. Block 2014 consists of the Kinetic Energy Interceptor program, delayed from Block 2012. The Kinetic Energy Interceptor program will continue to focus on critical technology demonstrations and the development of an initial land-based capability. During FY07, the program will continue to focus on static booster firings in preparation for a booster flight test in FY08. A sea-based capability could follow sometime thereafter depending on funding levels in the program. Funding for Block 2014 is detailed in Table 8.

Block 2014 Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
BMDS Interceptor Block 2014		202	386	400	852	1,149	1,651	4,438
Total	-	202	386	400	852	1,149	1,651	4,438
Defense-Wide Resources								
MDA Total Less Defense-Wide Resources	-	202	386	400	852	1,149	1,651	4,438

Numbers may not add exactly due to rounding.

Table 8. Funding for Block 2014

Mission Area Investments. There is a significant amount of non-Block funding in our FYDP, which we refer to as Mission Area Investment. These efforts allow us to implement the BMDS across Blocks, expand capabilities in future Blocks, and develop capabilities not yet foreseen as part of a current or future Block. Mission Area Investments include: System Engineering and Integration, Test and Targets, International Programs, Advanced Concept Development (Advanced Systems), and other investment areas identified in Table 9 below.

Mission Area Investments Funding FY05-11 (\$M Then-Year)								
Project	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FYDP FY 07-11
System Engineering	159	121	138	143	144	151	165	741
C2BMC								
BMD Test & Targets	442	417	439	461	475	472	481	2,327
International Programs	220	167	121	152	202	272	306	1,053
Multiple Kill Vehicle		49	162	279	357	412	505	1,714
Special Programs	167	275	375	715	630	725	695	3,140
Advanced Systems	222	145	250	274	406	431	479	1,838
SBIR/STTR	139							
Producibility & Manufacturing Technology	37	33	37	40	43	44	45	210
Safety, Quality & Mission Assurance	15	18	26	32	41	40	41	179
BMD Information Management Systems	61	112	123	125	127	135	138	649
Intelligence & Security	28	19	24	27	29	39	47	166
Program-Wide Support	197	133	209	272	235	290	192	1,197
Headquarters Management	122	114	103	93	92	75	75	438
BRAC		8		85	19	3		107
Total	1,809	1,611	2,007	2,697	2,800	3,089	3,166	13,760

Numbers may not add exactly due to rounding.

Table 9. Funding for Mission Area Investments

V. BALLISTIC MISSILE DEFENSE MANAGEMENT

A key aspect to supporting MDA re-engineering efforts will be to develop the necessary management disciplines and techniques to strengthen our ability to manage, account for and invest in resources across the entire spectrum of the BMDS. This will entail a multi-disciplinary approach across several functional areas and disciplines summarized below to include: re-engineering, financial management and accounting, knowledge-based decision-making, business case analysis, and insight.

MDA Re-engineering. We are chartered to develop and field a single, layered, integrated BMDS as a single acquisition effort. When the Agency was formed, the Department provided the necessary authorities to bring together separate missile defense efforts into a single effort. The transition to managing all these efforts as a single effort has been deliberate – primarily to avoid perturbing on-going activity any more than necessary. We placed our emphasis on integrating various aspects of the program to achieve better performance while

maintaining our schedule. We also made decisions based on benefits to the entire system. Our organization, however, remained element-centric as opposed to system-centric. Over the past year we have developed a “re-engineered” organization to fully implement the transition to a single system. A key part of this approach is recognition of the Director, MDA as the BMDS Program Manager and his need to balance capability across components of the BMDS, not only within each element. To facilitate this, we will focus on commonality and efficiencies in everything from interceptor and sensor components to flight testing and modeling and simulation efforts. This will drive us toward a system that maximizes performance across the battlespace while minimizing cost and unwanted redundancy.

Financial Management and Accounting. We support and are participating in several Department-level financial management initiatives and programs: the Financial Improvement and Audit Readiness (FIAR) Plan; the Business Management Modernization Program (BMMP); and the Defense Agencies Initiative (DAI). The FIAR is the overarching plan to improve financial management in the Department. We have a Financial Improvement Plan (FIP) that we use to manage internal Agency financial improvements and provide information to the Department for inclusion in the FIAR. Additionally, the new internal control reporting requirements over financial management contained in Office of Management and Budget Circular A-123, Management’s Responsibility for Internal Control, are being addressed and incorporated into the Financial Improvement Plan and the FIAR as part of the FIAR initiative. At the same time, we are developing timely, reliable, and comprehensive financial information to assist in making key resource and investment decisions. Under our re-engineering concept we will ensure that one person who is part of top management has overall responsibility for establishing and implementing effective financial management policies, financial management internal controls, and financial management systems. Also, financial management is one of five BMMP Core Business Missions (CBMs) and we are working actively to execute the goals and objectives of the CBM.

Knowledge-based Decision Making. We are executing a capability-based acquisition strategy to develop and field this BMD Program in accordance with Secretary of Defense direction. We cannot predict with certainty what nation(s) or non-state actor will pose threats to U.S. interests or those of our allies and friends. Capability-based acquisition allows us to exploit capability opportunities sooner, focusing on adding capabilities with demonstrated military utility rather than delaying to achieve a military requirement that may have been defined years earlier. The spiral development of our Block construct allows us to plan for these incremental improvements in capability and focus on integration activities. We use knowledge-based decision making as an implementation mechanism for capability-based acquisition. Knowledge-based decision making allows for incremental financial commitment to a development effort based on achieving planned knowledge points. Pre-planned knowledge points allow us to manage risk by making sure we are getting what we wanted out of our development efforts. Each added commitment of funding hinges on knowledge gained from a demonstrated event and we maintain flexibility to make adjustments when planned knowledge points are not achieved.

The benefit of this approach, which we call knowledge-based funding, is our ability to pursue multiple promising programs, assess progress towards achieving our development goals, and retain flexibility to make decisions to truncate, stop or accelerate any one program.

Knowledge-based funding allows us to use our budgetary resources in the most efficient and responsible manner.

Business Case Analysis. In order to achieve more effective resource decision making we are establishing a delineated link between resource allocation, performance management and strategic planning as part of our overall business case analysis (BCA). This will be simple enough to be implemented quickly and to identify potential trade-offs necessary to provide incentives for cost reduction and capability comparisons. Our objective is to achieve the best approach to field integrated defense capabilities in support of joint objectives and to facilitate the delivery of capabilities to the warfighter in a timely, efficient, and cost effective manner. This will bring a comprehensive approach to strategic planning based on programmatic choice, and an efficient allocation of resources to develop, acquire, and field missile defense capability. Our business case management concept is evolutionary, exploring new ways to move forward and implement meaningful programmatic change. And at the same time we are working with several other government agencies, major combatant commands, the military departments, and industry to ensure DOD-wide investment decisions support our Nation's missile defense objectives.

Department Oversight. The Department is establishing the Ballistic Missile Defense Executive Board (referred to hereafter as the Board) to recommend and oversee implementation of strategic policies and plans, program priorities, and investment options to protect our Nation and our allies from any form of ballistic missile attack. The Board will incorporate evolving requirements into a comprehensive acquisition strategy to develop and field operational missile defense capability. The Board will replace the Senior Executive Council (SEC) as the senior oversight body for missile defense activity, but it will not have the decision authority of the SEC – such authority will reside with the Under Secretary of Defense for Acquisition, Technology and Logistics (USD/AT&L), and with the Director of the Missile Defense Agency as designated by USD/AT&L.

This Board will enhance the decision-making environment by improving information flow among key stakeholders: the Missile Defense Agency (MDA), Office of the Secretary of Defense, Combatant Commanders, DoD components, the Joint Staff, and the national security and intelligence community. The Board will establish a viable means to achieve our goals within the context of technical capability and established resource levels.

This approach will be based on a continuous evaluation of successes, failures and risks throughout a programmatic timeline beginning in the current budget year and extending through the FYDP, and beyond. The Board will guide new ideas and technologies as they develop into initial capabilities, and subsequently into fully mature solutions ready for fielding and inclusion into the missile defense system. The Board will also consider the evolving priorities and requirements of the warfighting community as it formulates recommendations on the way forward.

VI. PRESIDENT'S BUDGET SUBMISSION AND ORGANIZATION

Table 10 below provides a breakdown of Program Element funding by fiscal year across the FYDP.

PE Title	PE Number	FY07	FY08	FY09	FY10	FY11	FY07-11 Totals
Ballistic Missile Defense Technology	0603175C	207	183	214	223	228	1,055
Ballistic Missile Defense Terminal Defense Segment	0603881C	1,038	904	682	754	469	3,847
Ballistic Missile Defense Midcourse Defense Segment	0603882C	2,877	2,650	2,397	2,148	1,685	11,758
Ballistic Missile Defense Boost Defense Segment	0603883C	632	577	456	457	687	2,809
Ballistic Missile Defense Sensors	0603884C	515	589	647	326	220	2,298
Ballistic Missile Defense System Interceptors	0603886C	406	425	895	1,202	1,675	4,603
Ballistic Missile Defense Test and Targets (includes MILCON)	0603888C	600	595	629	635	656	3,114
Ballistic Missile Defense Products	0603889C	507	506	510	507	513	2,542
Ballistic Missile Defense System Core	0603890C	473	501	524	555	573	2,626
Special Programs - MDA	0603891C	375	715	630	725	695	3,140
Ballistic Missile Defense Aegis	0603892C	1,032	952	980	973	799	4,736
Space Tracking & Surveillance System	0603893C	391	427	772	958	885	3,433
Multiple Kill Vehicle	0603894C	165	286	357	413	505	1,726
BMD System Space Program	0603895C		45	151	167	207	570
Management Headquarters / PRMRF	0901598C/ 0901585C	103	93	92	75	75	438
Base Realignment and Closure (BRAC)	0207998C		85	19	3		107
PE Total		9,318	9,536	9,956	10,121	9,873	48,803
Defense-Wide Resources	0904903D		(1,951)	(1,953)	(1,994)	(1,741)	(7,639)
MDA Total Less Defense-Wide Resources							41,165

Numbers may not add exactly due to rounding.

Table 10. Funding By Program Element

Table 11 provides a breakdown of Program Element funding by Block for funds included in this budget submission.

PE Title	PE Number	BMDS Funding for FYDP 07-11 (\$M Then-Year)						Mission Area Invest	PE Totals
		Capability Blocks							
		Block 2004	Block 2006	Block 2008	Block 2010	Block 2012	Block 2014		
Technology	0603175C							1,055	1,055
Terminal	0603881C		3	2,132	1,262			451	3,847
Midcourse	0603882C		3,332	3,778	4,380			267	11,758
Boost	0603883C		595	963	1,064			186	2,809
Sensors	0603884C		410	1,497	327			64	2,298
BMDS Interceptor	0603886C						4,438	165	4,603
BMD Test & Targets (includes MILCON)	0603888C		288	654	708	177		1,286	3,114
BMD Products	0603889C	54	412	669	531			876	2,542
BMD Core	0603890C							2,626	2,626
Special Programs	0603891C							3,140	3,140
BMD Aegis	0603892C	48	698	1,799	1,067	402		723	4,736
Space Tracking & Surveillance System	0603893C		544	116		2,695		79	3,433
Multiple Kill Vehicle	0603894C							1,726	1,726
BMD System Space	0603895C							570	570
Mgmt Hq/PRMRF	0901598C/ 0901585C							438	438
BRAC	0207998C							107	107
Block Total		102	6,281	11,609	9,339	3,274	4,438	13,760	48,803
Defense-Wide Resources	0904930D		(634)	(2,432)	(3,765)	(807)			(7,639)
MDA Total Less Defense-Wide Resources		102	5,647	9,177	5,574	2,467	4,438	13,760	41,165

Numbers may not add exactly due to rounding.

Table 11. Mapping Program Elements to Blocks

VII. SUMMARY

The Missile Defense Agency remains committed to the mission of developing and fielding an integrated, layered ballistic missile defense system to protect the nation, our deployed forces, allies and friends. We believe this ballistic missile defense program effectively balances capabilities across boost, midcourse and terminal segments to address evolving threats. The proposed program balances development and fielding efforts within the funds provided, preserves flexibility for alternative option paths as development efforts are proven, and provides for incremental improvements to the BMDS over time.

Significant challenges remain. We have made great progress over the last several years, but much more remains to be done. We need to test and improve the capabilities of our fielded systems to address current threats. Our adversaries continue to build and evolve capabilities that our missile defense system will have to defeat in the future.

VIII. ACRONYMS

ABL	Airborne Laser
ACD	Adversary Capabilities Document
AFB	Air Force Base
AFOTEC	Air Force Operational Test & Evaluation Center
AOR	Area of Responsibility
ATEC	Army Test & Evaluation Command
BMDS	Ballistic Missile Defense System
BOCA	BMDS On-Alert Capability Assessment
C2	Command and Control
C2BM	Command and Control, Battle Management
C2BMC	Command and Control, Battle Management and Communication
CM	Countermeasures
CM/CCM	Countermeasures / Counter-Countermeasures
CMCM	Critical Measures and Countermeasures
COCOM	Combatant Commander
CONOPS	Concept of Operations
CTF	Combined Test Force
CVAP	Capability Verification Assessment Plan
CVAR	Capability Verification Assessment Report
DMTP	Development Master Test Plan
DoD	Department of Defense
DOT&E	Director, Operational Test & Evaluation
DSP	Defense Support Program
DT	Development Test
DT/OT	Development Test/Operational Test
ECS	Element Capability Specification
EKV	Exoatmospheric Kill Vehicle
ESG	Engagement Sequence Group
FASP	Fly Along Sensor Package
FDR	Forward Deployable Radar
FFRDC	Federally Funded Research and Development Center
FM	Flight Mission
FMA	Foreign Military Assistance
FY	Fiscal Year
FYDP	Future Years Defense Program
GBI	Ground Based Interceptor
GMD	Ground-Based Midcourse Defense
HAA	High Altitude Airship
HEL	High Energy Laser
ICS	Interface Control Specification
IDC	Initial Defensive Capability

IDO	Initial Defensive Operations
IFT	Integrated Flight Test
IMDWG	Integrated Missile Defense Wargame
IMTP	Integrated Master Test Plan
IPP	Impact Point Prediction
IRBM	Intermediate Range Ballistic Missile
ISSA	Inter-Service Support Agreement
JITC	Joint Interoperability Test Command
JROC	Joint Requirements Oversight Council
KEI	Kinetic Energy Interceptor
KW	Kinetic Warhead
LADAR	Laser Radar
LPP	Launch Point Prediction
LRBM	Long-Range Ballistic Missile
LRS&T	Long Range Surveillance and Tracking
MDA	Missile Defense Agency
MDIE	Missile Defense Integration Exercise
MDSG	Missile Defense Support Group
MKV	Multiple Kill Vehicle
MRBM	Medium-Range Ballistic Missile
MUA	Military Utility Assessment
NATO	North Atlantic Treaty Organization
NFIRE	Near-Field Infrared Experiment
NSPD	National Security Presidential Directive
O&M	Operations and Maintenance
OLG	OTA Liaison Group
OMB	Office of Management and Budget
OPTEVFOR	Navy's Operational Test & Evaluation Force
OTA	Operational Test Authority
PAC	PATRIOT Advanced Capability
PAM	Planning and Allocation Matrix
PART	Program Assessment Rating Tool
PE	Program Element
PEO	Program Executive Office
PMS	Program Management Support Office
R&D	Research & Development
RDT&E	Research, Development, Test and Evaluation
REO	Responsible Engineering Organization
RTO	Responsible Test Organization
SBIRS	Space-Based Infrared System
SBX	Sea-Based X-Band Radar
SCS	System Capability Specification
SE	Systems Engineering

SEC	Senior Executive Council
SETA	Scientific, Engineering and Technical Assistance
SM	Standard Missile
SOG	Statement of Goals
SRBM	Short-Range Ballistic Missile
STSS	Space Tracking & Surveillance System
T&E	Test and Evaluation
THAAD	Terminal High Altitude Area Defense
TOG	Technical Objectives and Goals
TOO	Target of Opportunity
UARC	University Affiliated Research Centers
UCP	Unified Command Plan
UEWR	Upgraded Early Warning Radar
USNORTHCOM	United States Northern Command
USSTRATCOM	United State Strategic Command
WBS	Work Breakdown Structure