Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	3,711,708	4,501,459	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882
0708 Ground-Based Midcourse Defense (GMD) Block 2004 Test Bed/Initial Defensive Capability (IDC)	1,357,320	850,505	0	0	0	0	0	0
0808 Ground-Based Midcourse Defense (GMD) Block 2004/2006 Development	1,587,103	2,468,118	2,224,349	2,232,055	330,912	233,703	0	0
0908 Ground-Based Midcourse Defense (GMD) Block 2008 Development	0	0	73,682	281,000	1,425,476	1,176,220	338,466	213,500
0008 Ground-Based Midcourse Defense (GMD) Block 2010	0	0	0	188,885	717,000	654,831	1,557,354	1,349,209
0709 AEGIS Ballistic Missile Defense Block 2004	605,993	942,975	101,177	15,000	0	0	0	0
0809 AEGIS Ballistic Missile Defense Block 2006	24,418	121,494	574,766	546,817	69,000	15,000	0	0
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	135,158	354,233	636,729	546,069	205,208	44,039
0009 AEGIS Ballistic Missile Defense Block 2010	0	0	0	0	20,000	185,000	576,260	644,000
0402 Japanese Cooperative Program	51,775	71,283	24,800	52,791	112,500	131,500	129,500	100,000
0515 Multiple Kill Vehicles	0	0	82,000	219,645	272,900	306,500	308,200	113,500
0602 Program-Wide Support	85,099	47,084	50,264	55,565	66,331	66,690	68,634	81,634
Amount Included in PE 0904903D	0	0	0	0	-1,238,075	-983,950	-745,721	-551,163
Total PE Cost Reflected in R-1	3,711,708	4,501,459	3,266,196	3,945,991	2,412,773	2,331,563	2,437,901	1,994,719

Note:
Project 0515 was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

A. Mission Description and Budget Item Justification

The Administration and the Congress have committed to deploying a ballistic missile defense system as soon as technologically possible. In response to Presidential direction, MDA fielded an initial defensive capability in 2004 to address known threats. We began with the most mature components - a small number of sensors and interceptors and a fire control system - forming the foundation of an integrated and layered ballistic missile defense system (BMDS). The fielded system is limited, intended to support comprehensive development and testing while providing defense of the United States against attack by a limited number of ballistic missiles. Our objective remains a single integrated layered system with diverse basing options.

We have balanced fielding decisions with a comprehensive development program to deliver the maximum operational capability within the resources provided. The FY 2006 biennial budget submission, to include the FYDP years, emphasizes full integration of BMDS elements and components - that is, making the system work better as a single system - as well as continued development of capabilities that will close performance gaps in our current configuration. This program is balanced and funded to meet a broad spectrum of potential threats: 1) the size of the rogue nation threat; 2) the complexity of the rogue nation threat; 3) aggressive tactics to circumvent our current posture; and 4) the emergence of new threats. The Administration is committed to defending the American people against new threats of the 21st century and has called out deployment of effective missile defenses as an essential element of that effort.

In the course of the past year, MDA has reviewed its overall approach to developing and fielding a BMDS - an integrated, layered defense against threats of all ranges, in all phases of flight. This approach is critical to achieving the highest performance defense and ensuring the defense is not vulnerable to any particular threat. The midcourse phase of flight offers, for the time being, the most significant leverage to engage the threat. From a time perspective, the midcourse phase is comparatively long thereby allowing defenses extended sensor viewing time and multiple engagement

opportunities. The Midcourse PE is the nation's first line of defense - that is, it is largely in this PE that the initial defensive capability is being fielded, and it is in this PE that MDA will address one of its primary concerns about the future, keeping pace with the rogue nation threat. MDA is also doing as much as possible to address threat complexity in this PE.

MDA identifies BMDS capabilities, architectures and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs). These ESGs describe a combination of weapons, sensors and Command and Control/Battle Management Communications (C2BMC) capabilities 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 the target. Through ESGs, the MDA Systems Engineer identifies the necessary interfaces required to deliver a usable configuration of the BMDS. ESGs are also useful in helping the operator plan and train for operation of that capability, and they provide a means to track and test future improvements to the system.

The primary elements of the Midcourse PE are the Ground Based Missile Defense element and the Aegis Ballistic Missile Defense element. Over the course of time covered by this budget submission, the GMD and Aegis BMD programs will field significant capability against the rogue nation threat. MDA will continue to add to, and improve, this capability. As we move forward, these two programs will combine with other efforts to address key concerns about the future, namely threat complexity and size. Efforts new to this PE that will continue to add to, and improve the BMDS capability are the Multiple Kill Vehicle program, Project 0515, (previously funded in the Advanced Technology PE) and an improved Standard Missile-3 (SM-3) variant program co-developed with Japan, funded within Project 0402.

Block 2004 includes eight BMDS Engagement Sequence Groups involving the Midcourse Defense Segment: Ground Based Interceptor (GBI) Engage on Aegis, GBI Launch on Aegis, GBI Engage on Cobra Dane, GBI Engage on UEWRs (Beale and Fylingdales), GBI Engage on Sea-Based X-Band radar, GBI Launch on Forward-Based X-Band - Transportable radar (FBX-T), and SM-3 Engage on Remote Aegis. Block 2006 incorporates the following additional BMDS ESGs: GBI Engage on UEWR (Thule), GBI Launch on DSP/SBIRS, GBI Engage on FBX-T and SM-3 Launch on FBX-T. Block 2008 incorporates two additional BMDS ESGs (Launch/Engage on EO/IR, and Launch/Engage on THAAD). Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities in interceptor surveillance testing, EKV and Sea-Based X-band (SBX) radar upgrades, and improved interceptor/booster performance enable improvements to all ESGs and increase warfighter confidence.

The BMDS Test Bed will incorporate capabilities to evaluate (1) countermeasures, (2) multiple target and interceptor launch sites, (3) flexible engagement scenarios, (4) enhanced test infrastructure, and (5) a wide range of sea and land-based radar sensors. The flow down of Ballistic Missile Defense System (BMDS) capability specifications resulting from Missile Defense National Team efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program Operations Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

Consistent with the MDA block management framework, the Ground-based Midcourse Element of the BMDS consists of Blocks 2004, 2006, 2008, and 2010:

- Block 2004 represents the early development and fielding of the IDC including ground-based interceptors, an upgraded Cobra Dane radar, upgraded Early Warning Radars, a Sea-Based X-Band (SBX) radar, In-Flight Interceptor Communications System (IFICS) data terminals (IDT), Fire Control and Communication Nodes, and communications networks including fiber and satellite communications systems.
- Block 2006 includes continued development and fielding of ground-based capabilities, integrated testing of the multi-layered BMDS components and addressing the concept of a rotating pool of interceptors to ensure latest capabilities are fielded. The fielding of additional ground-based interceptors, UEWRs, and IDTs in Block 2006 broadens the area of coverage of the initial BMDS. Additionally, efforts include the development of enhanced capabilities to detect, track, intercept, and defeat ballistic missile threats.
- Block 2008 (covered under Project 0908) includes continued development and fielding of ground-based capabilities, integrated testing of the multi-layered BMDS components and continued development of enhanced ground-based interceptor capabilities, countermeasures mitigation, multi-sensor fusion, and additional GFC capabilities.
- The Block 2010 (covered under Project 0008) further supports the continuing development, testing, and fielding of new and evolving BMDS technologies.

The Aegis Ballistic Missile Defense (Aegis BMD) element of the BMDS builds upon the existing Aegis Weapons System (AWS) and the Standard Missile (SM) infrastructure deployed in Aegis cruisers and destroyers. U.S. Navy Surface Combatants will have the capability to detect, track, intercept, and destroy Short Range Ballistic Missiles (SRBMs) to Intermediate Range Ballistic Missiles (IRBMs) in the terminal and midcourse phases of the battlespace while forward deployed or on Fleet Missile Defense Patrol in defense of the nation, deployed U.S. forces, friends, and allies. The

extent of Aegis BMD capability against short range missiles in the terminal phase is being explored. System development and testing is integrated with the BMDS Test Bed and architecture fully supporting the Missile Defense Agency's (MDA) capability based acquisition approach for BMD. Each technological advance in Aegis BMD will be evaluated by the Government and industry team for upgrades to the BMDS Test Bed/architecture in accordance with annual MDA decision reviews.

Aegis BMD Element objectives include the following: 1) Provide BMD from configured Aegis cruisers and destroyers against short through intermediate range ballistic missiles using capability based spiral development. 2) Demonstrate through live fire testing (using SM-3 guided missiles controlled by the Aegis BMD modified AWS) each hit-to-kill capability improvement against more challenging ballistic missile targets. 3) Integrate the forward sensor capabilities of the Aegis AN/SPY-1 Radar into the BMDS. 4) Demonstrate forward sensor capabilities in Ground-based Midcourse Defense (GMD) Integrated Flight Tests (IFTs). 5) Modify existing Aegis cruisers and destroyers and provide SM-3 missiles. 6) Develop and demonstrate enhanced discrimination capabilities. 7) Conduct a Short Range Ballistic Missile (SRBM) low exoatmospheric experiment to test the ability to expand the Aegis BMD element engagement volume to lower engagement altitudes. 8) Continue the U.S./Japan Cooperative Research. 9) Expand the Aegis based defense of ballistic missiles by integrating and testing the BMDS interceptor being developed by the Missile Defense Agency (MDA). 10) Initiate US/Japan Cooperative Development of the 21`` SM-3 Full Caliber Round. These objectives are funded across Blocks 2004, 2006, 2008, and 2010:

- Block 2004 effort provides a surveillance component to BMDS initial defensive operations and provides the capability to engage ballistic missiles from both Aegis cruisers and Aegis destroyers.
- Block 2006 focuses on development of improved prototype radar discrimination and increased Aegis Weapon System - BMDS integration.
- Block 2008 - focuses on development of a fully integrated Aegis Weapon System.
- Block 2010 - integrates with the Navy developed Aegis Open Architecture System.

The Japan Cooperative Program has two components: Japan Cooperative Research - continues cooperative research in Ballistic Missile Defense with the Japan Defense Agency (JDA); Japan Cooperative Development - continues cooperative research with Japan to develop the 21`` SM-3 Full Caliber Round (FCR).

The Multiple Kill Vehicles (MKV) program is the Missile Defense Agency's transformational weapon system development program to deal with midcourse discrimination, specifically: target selection amid uncertainty and countermeasures. The MKV payload is anticipated to be ready for initial fielding in the 2012-2014 time frame and will go through a rigorous development and test program. The MKV system consists of a Carrier Vehicle loaded with a complement of small intercepting kill vehicles, each about the size of a loaf of bread. The exact number of kill vehicles carried is restricted information, but can be substantially greater than 10 when MKV is launched by a Ground-Based Midcourse Interceptor. Work to adapt the MKV payload to smaller, more mobile boosters such as kinetic energy interceptors has also begun. MKV has the ability to destroy large numbers of targets using a single engaging interceptor missile. This reduces the burden on sensors and algorithms, which no longer need to be programmed to select one, best target. This dramatically alters the statistical probability of kill in favor of the defender and provides for early, decisive engagement of an adversary complex.

Program-Wide Support provides funding for common support functions across the entire program such as strategic planning, program integration, cost estimating, contracting, financial management to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions as well as support contractors providing government staff augmentation in these areas. Applies to costs at the MDA HQ as well as its Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities. Other costs include physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses at the various MDA Executing Agent locations, which at the MDA HQ are generally funded from the Management Headquarters Program Element (0901598C). Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

B. Program Change Summary	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005 PB)	3,724,066	4,384,775	3,067,800	3,087,147
Current President's Budget (FY 2006 PB)	3,711,708	4,501,459	3,266,196	3,945,991
Total Adjustments	-12,358	116,684	198,396	858,844
Congressional Specific Program Adjustments	0	245,700	0	0
Congressional Undistributed Adjustments	0	-129,016	0	0
Reprogrammings	17,048	0	0	0
SBIR/STTR Transfer	-29,406	0	0	0
Adjustments to Budget Years	0	0	198,396	858,844

Increased funding in FY06 and FY07 due to new investments in the Multiple Kill Vehicles (MKV) Program (Project 0515) as an outgrowth of earlier technology efforts funded from Program Element 0603175C (Project 0502); 21" SM-3 Japanese Cooperative Development effort (Project 0402); and additional investments in GMD Projects 0808, 0908, and 0008 to provide additional interceptors and an upgraded Early Warning Radars (EWR) at Otis AFB, MA.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0708 Ground-Based Midcourse Defense (GMD) Block 2004 Test Bed/Initial Defensive Capability (IDC)	1,357,320	850,505	0	0	0	0	0	0
RDT&E Articles Qty	45	45	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense System (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. In late 2004 the United States fielded a limited capability to defeat a ballistic missile threat. Continuing through the Future Years Defense Plan (FYDP), the breadth and depth of this initial capability will be expanded by adding and networking forward-deployed sensors, interceptors at sea and on land, and layers of increasingly capable weapons and sensors. Today's MDA activities are focused on six objectives: 1) complete development, fielding, and transition to alert of Block 2004; 2) provide warfighter support and sustainment for BMDS; 3) develop a totally integrated BMDS for Block 2006 and beyond; 4) improve the BMD system through incremental improvements and Block upgrades over time; 5) conduct an increasingly robust integrated test program concurrent with operations; and 6) build an international foundation for missile defense.

The Ground-Based Midcourse (GMD) segment of the BMDS is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The elements being developed and fielded of the Midcourse segment will comprise most of the critical components in meeting the MDA goals in the near-term.

GMD system capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the GMD system within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the GMD GBI against a target. Consistent with the BMDS block development strategy, additional ESGs are incorporated into blocks as sensor systems become available. Block 2004 includes seven BMDS Initial Defensive Capability (IDC) ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs (Beale and Fylingdales), Engage on Sea-Based X-Band radar, and Launch on Forward-Based X-Band radar (FBX)). Block 2006 incorporates at least three additional BMDS IDC ESGs (Engage on UEWR (Thule), Launch on DSP/SBIRS, and Engage on Forward-Based X-Band radar (FBX)). Block 2008 incorporates two additional BMDS IDC ESGs (Launch/Engage on EO/IR, and Launch/Engage on THAAD). Block 2010 will add increased capability for existing GMD BMDS ESGs through incorporation of advanced sensor discrimination, improved hit-to-kill and more flexible fire control strategies within GMD fire control and C2BMC. ESGs are embedded into GMD Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities including GBI surveillance testing, EKV and GMD fire control upgrades, and improved GBIs enable improvements to all ESGs and increase warfighter confidence.

The GMD Block 2004 effort provides for the fielding of the IDC directed by the President in December 2002. The IDC initiative provides missile fields and infrastructure, ground based interceptors, In-Flight Interceptor Communication System (IFICS) Data Terminals (IDT), communication networks, and sensors. The GMD system employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. Block 2004 will deliver and field the initial infrastructure, field the initial increment of interceptors, and provide for initial sustainment infrastructure for the IDC.

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The Block 2004 is being completed in two phases. The first phase, the initial BMDS Test Bed with a limited defensive capability, was completed on September 30, 2004. The second phase provides an enhanced capability and additional assets that can also be utilized for the BMDS Test Bed. It is to be completed in December 2005. The IDC consists of:

- Missile Fields and Infrastructure. The IDC consists of two (2) missiles fields at Fort Greely, AK and operational silos at Vandenberg AFB, CA. The BMDS Test Bed provides for the construction of the first missile field with operating infrastructure at Fort Greely, which is to be completed in 2004. Six (6) common silos, launch site components, and command launch equipment will be fielded in the first missile field. The IDC initiative provides for the construction of the second missile field at Fort Greely, which is to be completed in 2005. Ten (10) common silos, launch site components, and command launch equipment will be fielded in the second missile field. Additionally, IDC provides for the modification of four (4) common silos, launch site components, and command launch equipment at Vandenberg AFB in 2004.
- Ground Based Interceptors (GBI). The IDC consists of up to 20 GBI. A GBI consists of a booster and exoatmospheric kill vehicle (EKV). The BMDS Test Bed provides up to ten (10) boosters and five (5) EKVs to field an initial five (5) GBIs at Fort Greely in 2004. The IDC initiative provides an additional ten (10) boosters and fifteen (15) EKVs to field up to four (4) GBIs at Vandenberg AFB, CA, in 2004, and up to eleven (11) additional GBIs at Fort Greely in 2005.
- IDTs. The IDC consists of five (5) IDTs at multiple sites. The BMDS Test Bed provides an IDT at Fort Greely, Shemya (AK), and VAFB in 2004 and an onboard IDT on the Sea-Based X-Band Radar to be fielded in 2005. The IDC initiative provides for an IDT at a NE Tier location in 2008. An additional IDT is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.
- GMD Communications Network (GCN). The GCN consists of fiber optic land lines interconnected to satellite communications, both DSCS and MILSTAR. The CONUS Net connects Fort Greely and VAFB to the Joint National Integration Center (JNIC) at Shriever AFB as well as Hardware-in-the-Loop facilities in Huntsville. The BMDS Test Bed provides two (2) GMD Fire Control and Communications (GFC/C) Nodes located at Fort Greely and Shriever AFB. The IDC initiative provides a Communications Node Equipment (CNE) extension at a NE CONUS location. The Shriever AFB and GCN are also connected to the Cheyenne Mountain Operations Center (CMOC) through remote workstations. The BMDS Test Bed provides satellite communications systems consisting of DSCS terminals at Fort Greely and Shemya and a MILSTAR terminal at Fort Greely. An additional DSCS terminal is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.
- All components are integrated into the BMDS C2BMC Element in order to provide the deliberate planning tools and crisis action tools to evolve courses of action based upon a common view of the threat, available global resources, and warning order objectives.
- Sensors. The IDC consists of radars at multiple sites. The BMDS Test Bed provides for an upgraded Cobra Dane radar on Shemya, an Upgraded Early Warning Radar at Beale AFB in 2004 and a Sea-Based X-Band radar in 2005, and communications interface to the Aegis SPY-1 radars. The IDC initiative provides for an Upgraded Early Warning Radar at Fylingdales, United Kingdom in 2005. An additional prototype X-band radar, Ground-Based Radar Prototype (GBR-P), is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the flight test program.

Block 2004 provides a robust, flexible Test Bed to support the continuing development and testing of new and evolving BMDS technologies. This concurrent operations and testing capability supports a wide range of flight and ground test scenarios, multiple basing modes, and phenomenology. This multi-part Test Bed leverages initial GMD developmental hardware and software assets to validate the IDC operational concept and to provide increased realism for BMDS testing. The BMDS Test Bed will incorporate capabilities to evaluate: countermeasures; a wide range of sea and land-based radar sensors; more realistic test and evaluation through geographically dispersed assets and an operationally representative environment to check out component hardware and software integration, multiple target and interceptor test launch sites, flexible engagement scenarios, full spectrum of testing to demonstrate system performance including distributed, integrated ground testing; enhanced test infrastructure; and validation of construction, transportation, site activation, and logistics concepts supporting future fielding options.

The flow down of Ballistic Missile Defense System (BMDS) capability specifications resulting from Systems Engineering efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program-Wide Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
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B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Ground-Based Interceptor (GBI)	233,706	10,273	0	0
RDT&E Articles (Quantity)	27	0	0	0

The Ground-Based Interceptor consists of an Exoatmospheric Kill Vehicle (EKV) and a Boost Vehicle.

FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of five (5) EKVs, ten (10) dual booster strategy boost vehicles, (6) six common silos and (6) six sets of associated command launch support equipment was initiated in FY 2002 for delivery in FY 2004.

- Completed acquisition of five (5) interceptors for Fort Greely.
- Completed acquisition of six (6) common silos, launch site components for Fort Greely.
- Completed acquisition of command launch equipment and other support equipment for Fort Greely.
- Completed assembly, integration, and installation in silos of 5 Ground-Based Interceptors at Fort Greely.
- Initiated silo/interceptor/launch systems ground testing, system level simulation, and verification, validation, and accreditation activities.
- Continued to incorporate the products of the Dual Booster Strategy.

FY 2005 Planned Accomplishments:

- Continues silo/interceptor/launch systems ground testing, system level simulation, and verification, validation, and accreditation activities.
- Continues to incorporate the products of the Dual Booster Strategy.

	FY 2004	FY 2005	FY 2006	FY 2007
Cobra Dane Upgrade	34,812	0	0	0
RDT&E Articles (Quantity)	0	1	0	0

Cobra Dane is an existing radar at Shemya, AK used to detect and track ballistic missile launches. This project upgrades both hardware and software to improve overall performance, execute BMDS tasking and connect to the BMDS.

FY 2004 Accomplishments:

- Completed follow-on software upgrade build.
- Completed installation and initial checkout.

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FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of hardware and software upgrades to the Cobra Dane Radar was initiated in FY 2002 for delivery in FY 2005.

- Completes final checkout (Initial COBRA DANE upgrade complete).

	FY 2004	FY 2005	FY 2006	FY 2007
GMD Fire Control & Communications	45,763	7,239	0	0
RDT&E Articles (Quantity)	8	1	0	0

The GMD Fire Control and Communications (GFC/C) component enables integrated control and operation of the GMD Element within the BMDS. The communications component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communications System (IFICS). The GCN includes fiber optic land lines connected to satellite communications, both DSCS and Milstar. The DSCS terminals will be acquired and installed at Fort Greely and Shemya. Based on congressional directions, completion of the installation of the two DSCS terminals at Shemya has been accelerated into FY04 as a risk reduction effort for the IDC. The GCN also consists of an existing DSCS terminal at RTS supporting flight test requirements. A Milstar terminal will be installed at Fort Greely.

FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of IFICS Data Terminals (IDT), one (1) for Shemya and one (1) for Greely, was initiated in FY 2002 for delivery in FY 2004. Acquisition of a third IFICS Data Terminal (IDT) was initiated for Vandenberg AFB in FY 2003 for delivery in FY 2004. An additional IDT is acquired for the SBX and is included in that accomplishment narrative. Acquisition of GMD Fire Control and Communications Nodes for Fort Greely and Shriever AFB with remote operator workstations at Cheyenne Mountain Operations Center (CMOC) was initiated in FY 2002 for delivery in FY 2004. Acquisition of an External System Interface (initially for the Aegis SPY-1 radar) was initiated in FY 2003 for delivery in FY 2004. Acquisition of two DSCS terminals for Shemya and one (1) for Fort Greely, was initiated in FY 2003 for delivery in FY 2004.

- Completed installation and checkout at Fort Greely.
- Completed acquisition of IDTs for Shemya and Fort Greely. - Completed initial IDT installation and checkout, Shemya and Fort Greely.
- Completed acquisition of relocatable IDT at VAFB.
- Completed External System Interface (ESI) acquisition, installation, and checkout for AEGIS.
- Completed acquisition of GCN communication equipment and network for CONUS Ring.
- Completed acquisition of GMD Fire Control and Communications Remote Work Stations.
- Completed acquisition of GMD Fire Control and Communications Node equipment.
- Acquired and completed the installation of the two DSCS terminals at Shemya (per congressional direction) and one terminal at Fort Greely.
- Continued installation of a Milstar terminal at Fort Greely.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of a Milstar terminal for Fort Greely, was initiated in FY 2003 for delivery in FY 2005.

- Completes installation of a Milstar terminal at Fort Greely.

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	FY 2004	FY 2005	FY 2006	FY 2007
Element Engineering and Integration	29,786	10,624	0	0
RDT&E Articles (Quantity)	0	0	0	0

GMD Element Engineering provides engineering and analysis support for building and integration of the components of the 2004 Test Bed. Defines element-level capabilities, test requirements and objectives, and develops element-level assessments. Provides engineering, integration, and operations planning supporting the Initial Defensive Capability. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to support and complement the BMDS Systems Engineering capability by providing detailed insight and analysis into component technical and design-specific issues.

FY 2004 Accomplishments:

- Conducted sub-system checkout (SSCO) assessments for Shemya (Cobra Dane), Boulder, Buckley, Vandenberg Air Force Base (VAFB), ESI (Aegis Weapon System Radar), Beale UEWR, Fort Greely Interceptor site, and Test IDT capability.
- Conducted Test Bed systems integration and checkouts (SICO).
- Completed acquisition and installation of Embedded Test Node hardware.

FY 2005 Planned Accomplishments:

- Completes system integration test and checkout.

	FY 2004	FY 2005	FY 2006	FY 2007
Element Test & Evaluation (T&E)	14,636	3,078	0	0
RDT&E Articles (Quantity)	0	0	0	0

GMD Test and Evaluation provides critical risk reduction and measurement of system performance for all GMD element components. It utilizes a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance. The GMD Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, and minimizes the duplication of test resources and the time required to execute required testing.

FY 2004 Accomplishments:

- Supported SSCO assessments for Shemya (Cobra Dane), Boulder, Buckley, Vandenberg Air Force Base (VAFB), ESI (Aegis Weapon System Radar), Beale UEWR, Fort Greely interceptor site, and Test Bed IDT capability.
- Conducted Test Bed Integrated Ground Test.
- Supported systems check-outs (SCO) and test readiness reviews.
- Completed acquisition of Mission Control Centers (flight and ground).

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2005 Planned Accomplishments:

- Completes Systems Test Readiness Review documentation.

	FY 2004	FY 2005	FY 2006	FY 2007
RDT&E Test Bed Construction	38,135	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data. Missile Defense System Test Bed Facilities, Phase III (Project Number MDA-504) and Missile Defense System Test Bed - Extended Test Range Facilities Phase III (Project Number DMA-506). Project Number MDA 506 was initially authorized in FY 2002 as the Missile Defense System Test Bed - Kodiak Facilities. The BMDS test range program has evolved to include other locations and this project title has been changed to Missile Defense System Test Bed - Extended Test Range Facilities to reflect this development. The 1391s have been updated to reflect the latest construction costs. RDT&E funding initially allocated to planning and design efforts have been redistributed to the construction efforts.

FY 2004 Accomplishments:

- Completed equipment installation for missile field, IDT, and DSCS at Fort Greely.
- Completed construction on site access and interior site roads and drainage system.
- Completed construction on facilities (IDT, COBRA DANE, DSCS, and Test Support Facilities) at Eareckson Air Station (Shemya).

	FY 2004	FY 2005	FY 2006	FY 2007
Community Impacts	6,585	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

FY 2004 Accomplishments:

- Completed community impact mitigation efforts including education programs, and social service grants.

	FY 2004	FY 2005	FY 2006	FY 2007
Sea-Based X-Band Radar (SBX)	370,014	168,465	0	0
RDT&E Articles (Quantity)	0	2	0	0

The SBX development was initiated in FY 2002. This acquisition is necessary to ensure that a XBR is ready to be integrated into the Ballistic Missile Defense System Test Bed in the fourth quarter of FY 2005. The SBX provides high-resolution tracking and discrimination data to the GMD fire control, thereby significantly enhancing BMDS performance. The Sea-Based X-Band Radar (SBX) is a Midcourse Defense sensor that will support the IDC and Integrated Flight Tests and will provide the capability of exercising all GMD sensor functions (sensor task plan, acquisition, track, discrimination, in-flight target update, target object map and kill assessment). The SBX will include an IFICS Data Terminal and GCN. The SBX will be a relocatable, phased-array (65% populated)

radar. The ability of the SBX to be relocated enables full use of extended test range capabilities for all land and air target launches, provides more realistic siting, and facilitates operationally realistic testing. The SBX Payloads (XBR, IDT, GCN) will be mounted on a modified, sea-going, semi-submersible platform similar to the oil drilling platforms currently in use worldwide.

FY 2004 Accomplishments:

- Completed fabrication of main radar structure.
- Completed installation of radar structure.
- Completed acquisition and initiated installation of radar electronic components.
- Completed fabrication of operations and support structures and facilities for platform.
- Continued acquisition of operations and support equipment for platform.
- Initiated installation of radar electronic components.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of one (1) Sea-Based X-Band Radar (SBX) was initiated in FY 2002 for delivery in FY 2005. Acquisition of one (1) IFICS Data Terminal (IDT), fixed to the SBX platform, was initiated in FY 2002 for delivery in FY 2005.

- Completes installation of radar electronic components.
- Completes installation of IDT and GCN components.
- Completes acquisition and installation of operations and support equipment for platform.
- Completes integration and checkout of Sea-based X-band Radar.

	FY 2004	FY 2005	FY 2006	FY 2007
Site Activation	30,509	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

This effort provides a broad range of site design and layout, facility requirements, and environmental management activities. Per congressional direction, additional funding has been provided for physical security upgrades, network defense, information assurance, and organizational security at Fort Greely.

FY 2004 Accomplishments:

- Completed development and verification of site layout and facility requirements definition for the IDC (including Test Bed) infrastructure.
- Continued Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Completed facility acceptance and equipment installation coordination.
- Initiated and completed security upgrades at Fort Greely.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007
Beale Early Warning Radar Upgrade	30,988	19,597	0	0
RDT&E Articles (Quantity)	1	0	0	0

The Beale Early Warning Radar (EWR) is an existing large, fixed, phased-array surveillance radar used to detect, track, and count individual targets early in their trajectory. The planned Beale upgrades provide the capability of not only detecting, but also providing precise tracking early enough to significantly expand the battlespace for the ground-based interceptors. The Beale upgrades include both hardware and software enhancements to improve overall performance, execute BMDS functionally and, connect to the BMDS.

FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of various upgrades to the Beale EWR was initiated in FY 2002 for delivery in FY 2004.

- Continued Flight and Ground Test support.
- Continued development and fielding of UEWR Software Builds.
- Completed Beale Integration and Test.
- Completed Beale Sub-system Checkout.
- Completed delivery of Beale Upgrade initial capability.
- Initiated ITWAA integration and certification.

FY 2005 Planned Accomplishments:

- Continues Flight and Ground Test support.
- Continues development and fielding of UEWR Software Builds.
- Completes ITWAA integration and certification

	FY 2004	FY 2005	FY 2006	FY 2007
Initial Defensive Capability (Ground-Based Interceptors (GBI))	340,663	454,416	0	0
RDT&E Articles (Quantity)	9	40	0	0

The Ground-Based Interceptor consists of an Exoatmospheric Kill Vehicle (EKV) and a Booster Vehicle. These Interceptors represent an enhancement to the basic Block 2004 of five (5) Ground Based Interceptor (GBI) Test Bed capability by adding: Eleven (11) GBIs at Fort Greely and up to four (4) GBIs at Vandenberg AFB (VAFB). This effort will provide the United States with a fielded Initial Defensive Capability (IDC) against ballistic missile threats. Note: Two (2) operational GBI's will be used for testing purposes.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Accomplishments:

RDT&E Articles: Acquisition of 5 EKVs is initiated in FY 2004 for delivery in FY 2004. Refurbishment of 2 silos with 2 sets of command launch equipment at VAFB was initiated in FY 2002 for delivery in FY 2004.

- Acquired and installed five EKVs (4 EKVs for VAFB and 1 for Fort Greely; boosters previously acquired).
- Initiated acquisition of up to ten (10) EKVs for Fort Greely.
- Initiated acquisition of up to ten (10) Boosters for Fort Greely.
- Initiated acquisition of additional common silos for Fort Greely.
- Completed refurbishment of two (2) silos at VAFB.

FY 2005 Planned Accomplishments:

RDT&E Articles: Acquisition of up to 10 EKVs and up to 10 Boosters is initiated in FY 2004 for delivery in FY 2005. Acquisition of 10 silos and 10 sets of command launch equipment was initiated in FY 2004 for delivery in FY 2005. Completes acquisition and installation of up to 10 Boosters for Fort Greely.

- Completes acquisition and installation of up to 10 EKVs for Fort Greely.
- Completes acquisition and installation of common silos for Fort Greely.
-

	FY 2004	FY 2005	FY 2006	FY 2007
Initial Defensive Capability (UEWR & IDT)	65,286	42,216	0	0
RDT&E Articles (Quantity)	0	1	0	0

The Fylingdales UEWR provides GMD fire control access and increased early warning capability for potential threat objects launched from north and east of CONUS. Processor upgrades, along with the associated GMD Communications Network (GCN) connectivity, are planned for full implementation of the Fylingdales UEWR by FY 2005. The IDT provides the capability for midcourse communications with eastbound interceptors from existing Test Bed assets. The IDT shall be located in accordance with a siting analysis to provide favorable communications with launched interceptors. The NE Tier IDT is deferred from FY05 to FY08 to fund critical IDC GBI requirements.

FY 2004 Accomplishments:

- Initiated acquisition of UEWR hardware.
- Initiated installation of UEWR hardware.
- Began installation of UEWR software.
- Initiated IT/WAA integration and certification for the UEWR.

FY 2005 Planned Accomplishments:

- Completes acquisition of UEWR hardware.
- Completes installation of UEWR hardware.

- Completes installation of UEWR software.
- Completes Integrated Tactical Warning and Attack Assessment and certification for the UEWR.
- Initiates acquisition of IDT.

	FY 2004	FY 2005	FY 2006	FY 2007
Initial Defensive Capability (RDT&E Construction)	116,437	134,597	0	0
RDT&E Articles (Quantity)	0	0	0	0

This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data. The 1391s have been updated to reflect the latest construction costs for the Initial Defensive Capability.

FY 2004 Accomplishments:

- Initiated construction of 10 common silos and supporting facilities at Fort Greely.
- Initiated and completed site facility designs for IDT [NE Tier, CONUS] and UEWR [Fylingdales, UK].
- Initiated facilities construction for UEWR [Fylingdales, UK].

FY 2005 Planned Accomplishments:

- Completes construction of 10 common silos and supporting facilities at Fort Greely.
- Completes facilities construction for UEWR [Fylingdales, UK].
- Initiates facilities construction for IDT [NE Tier, CONUS]

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

GMD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks and spiral upgrades. The Department has structured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial GMD parts of the BMDS NLT DEC 2004, while continuing RDT&E work and spiral upgrades such that some number of components of GMD will remain part of the BMDS Test Bed even after being fielded as part of the initial capability. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities. The development approach has been enhanced to include (1) adding test infrastructure and improving test management to allow more operationally challenging representative flight tests and providing for increased testing against more challenging targets, and (2) increasing the fidelity of the project simulations.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Ground-Based Interceptor (GBI)										
Ground-Based Interceptor (GBI)	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	219,202	10,273	1/2Q	0	N/A	0	N/A	229,475
Cobra Dane Upgrade										
Cobra Dane Upgrade	SS/CPAF	Boeing/ AL/AK/CA	34,812	0	N/A	0	N/A	0	N/A	34,812
GMD Fire Control & Communications										
GMD Battle Management (Fire Control) & Comms	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	45,763	7,239	1/2Q	0	N/A	0	N/A	53,002
Element Engineering and Integration										
Element Engr & Integration	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	29,786	10,624	1/2Q	0	N/A	0	N/A	40,410
Element Test & Evaluation (T&E)										
Element T&E	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	14,636	3,078	1/2Q	0	N/A	0	N/A	17,714
Sea-Based X-Band Radar (SBX)										
Sea-Based X-Band Radar (SBX)	SS/CPAF	Boeing/ AL/AK/TX	370,014	168,465	1/2Q	0	N/A	0	N/A	538,479
Beale Early Warning Radar Upgrade										
Beale UEWR	SS/CPAF	Boeing/ AL/CA	30,988	19,597	1/2Q	0	N/A	0	N/A	50,585

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Initial Defensive Capability (Ground-Based Interceptors (GBI))										
IDC (GBI)	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	340,663	454,416	1/2Q	0	N/A	0	N/A	795,079
Initial Defensive Capability (UEWR & IDT)										
IDC (UEWR & IDT)	SS/CPAF	Boeing/ AL/AK/CA	65,286	42,216	1/2Q	0	N/A	0	N/A	107,502
Subtotal Product Development			1,151,150	715,908		0		0		1,867,058

Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
RDT&E Test Bed Construction										
Construction	MIPR	COE/ AK	38,135	0	N/A	0	N/A	0	N/A	38,135
Community Impacts										
Community Impacts	C/CPAF	Various/ AK	6,585	0	N/A	0	N/A	0	N/A	6,585
Site Activation										
Site Activation	SS/CPFF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	30,509	0	N/A	0	N/A	0	N/A	30,509
Initial Defensive Capability (RDT&E Construction)										
Construction	MIPR	COE/AK/CA	116,437	134,597	1/2Q	0	N/A	0	N/A	251,034
Subtotal Support Costs			191,666	134,597		0		0		326,263

Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			1,342,816	850,505		0		0		2,193,321

Remarks

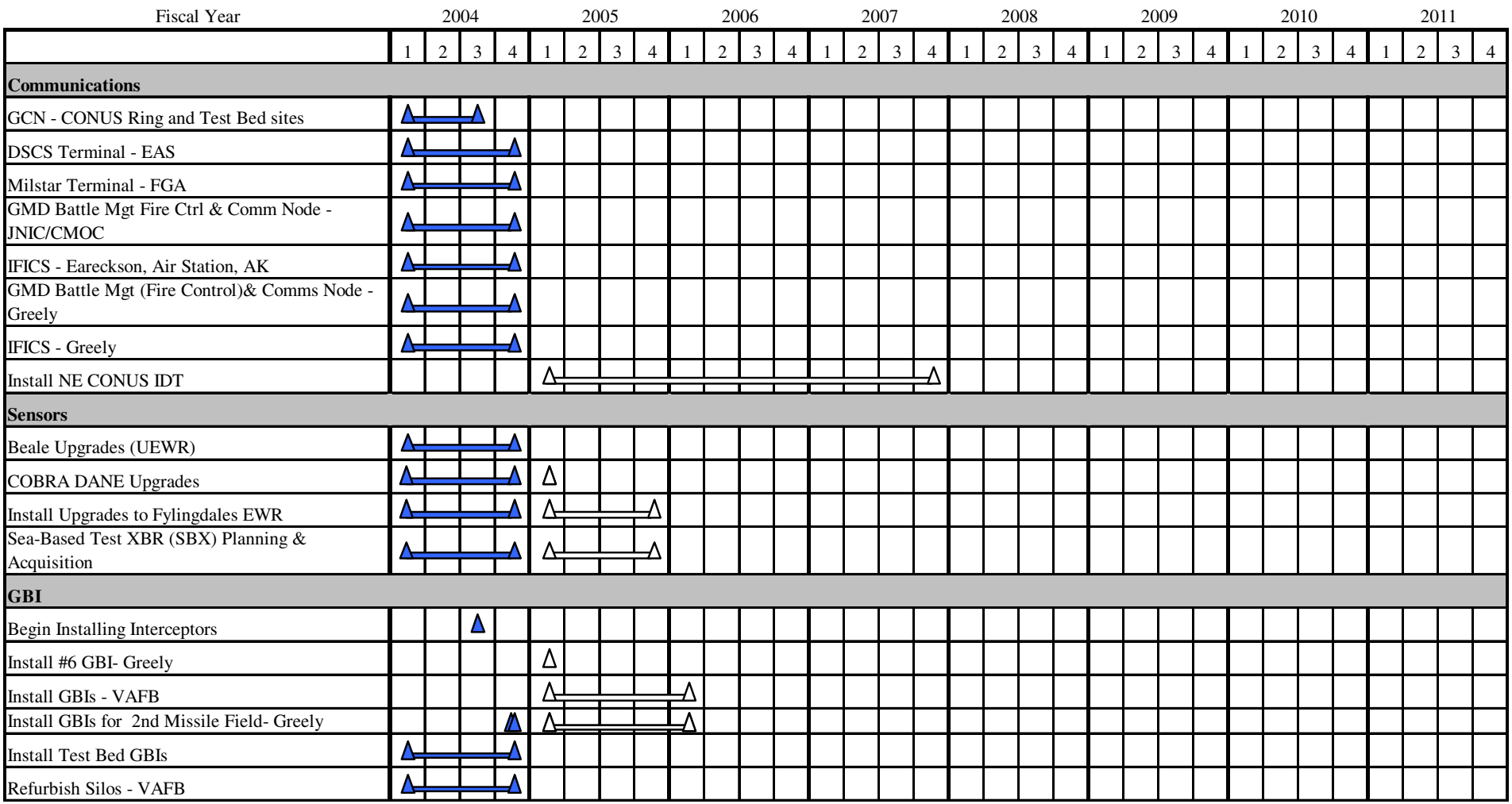
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2005

APPROPRIATION/BUDGET ACTIVITY
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)

R-1 NOMENCLATURE
0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Test Bed																																
GBI Components I&CO			▲																													
Completion of Initial Test Bed Capability				▲																												
Initiate Test Bed Testing			▲																													
Milestones																																
Limited Defensive Operations(LDO)				▲																												

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Communications								
GCN - CONUS Ring and Test Bed sites	1Q-3Q							
DSCS Terminal - EAS	1Q-4Q							
Milstar Terminal - FGA	1Q-4Q							
GMD Battle Mgt Fire Ctrl & Comm Node - JNIC/CMOC	1Q-4Q							
IFICS - Eareckson, Air Station, AK	1Q-4Q							
GMD Battle Mgt (Fire Control)& Comms Node - Greely	1Q-4Q							
IFICS - Greely	1Q-4Q							
Install NE CONUS IDT		1Q-4Q	1Q-4Q	1Q-4Q				
Sensors								
Beale Upgrades (UEWR)	1Q-4Q							
COBRA DANE Upgrades	1Q-4Q	1Q						
Install Upgrades to Fylingdales EWR	1Q-4Q	1Q-4Q						
Sea-Based Test XBR (SBX) Planning & Acquisition	1Q-4Q	1Q-4Q						
GBI								
Begin Installing Interceptors	1Q,3Q							
Install #6 GBI- Greely		1Q						
Install GBIs - VAFB		1Q-4Q	1Q					
Install GBIs for 2nd Missile Field- Greely	4Q	1Q-4Q	1Q					
Install Test Bed GBIs	1Q-4Q							
Refurbish Silos - VAFB	1Q-4Q							
Test Bed								
GBI Components I&CO	3Q							
Completion of Initial Test Bed Capability	4Q							
Initiate Test Bed Testing	3Q							
Milestones								
Limited Defensive Operations(LDO)	4Q							

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0808 Ground-Based Midcourse Defense (GMD) Block 2004/2006 Development	1,587,103	2,468,118	2,224,349	2,232,055	330,912	233,703	0	0
RDT&E Articles Qty	16	10	46	21	24	0	0	0

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the BMDS is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The elements being developed and fielded for the Midcourse segment will comprise most of the critical components in meeting the MDA goals in the near-term.

Project 0808 provides the development for the GMD hardware and software components for the BMDS. This development consists of a series of block development efforts.

GMD system capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the GMD system within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the GMD GBI against a target. Consistent with the BMDS block development strategy, additional ESGs are incorporated into blocks as sensor systems become available and after integrated testing and checkout is accomplished in the BMDS Test Bed. Block 2004 includes seven BMDS ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs (Beale and Fylingdales), Engage on Sea-Based X-Band radar, and Launch on Forward-Based X-Band radar (FBX)). Block 2006 incorporates at least three additional BMDS ESGs (Engage on UEWR (Thule), Launch on DSP/SBIRS, and Engage on Forward-Based X-Band radar (FBX)). Block 2008 incorporates additional BMDS ESGs (Launch/Engage on EO/IR and Launch/Engage on THAAD). Block 2010 will add increased capability for GMD BMDS ESGs through incorporation of advanced sensor discrimination, improved hit-to-kill and more flexible fire control strategies within GMD fire control and C2BMC. ESGs are embedded into GMD Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities including GBI surveillance testing; EKV and GMD fire control upgrades; and improved GBIs enable improvements to all ESGs and increase warfighter confidence.

The capability blocks of the GMD portion of the BMDS are defined as follows:

Block 2004 consists of the early development of the initial GMD hardware and software components of the BMDS IDC and Test Bed. This includes the development of the ground-based interceptor, specifically the booster and EKV; X-Band radar technologies, including the GBR-P; fire control and communications technologies, including the In-Flight Interceptor Communications System (IFICS) Data Terminals (IDTs); test range resources; and future fielding planning. Block 2004 included the first 20 interceptors of fielded capability.

Block 2006 (contained in Project 0808) consists of the continuing development and fielding of capabilities to detect, track, intercept, and defeat ballistic missile threats. Block 2006 includes the next increment of fielded capability with additional interceptors (up to 10), UEWRs, and IDTs. Block 2006 also includes continuing development and evolution of the wide range of software supporting the IDC and assessment, test, and evaluation of alternative GBI basing options, to include a potential European missile site.

Block 2008 (Project 0908) development efforts are currently focused on sustaining engineering and spiral upgrades to the components of the GMD segment of the BMDS and integrated flight test of GBI components. This development effort will mature key technologies in logical stages to provide an enhanced and more robust BMDS Test Bed (using operationally representative hardware and software vice developmental hardware and software), and a continuing program to develop and demonstrate a wide range of ``Hit-to-Kill`` technologies. Block 2008 also includes the next increment of fielded capability with additional interceptors (up to 10), and an upgraded IUEWR.

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Block 2010 (Project 0008) further supports the continuing development and testing of new and evolving technologies. In addition, GMD will expand the BMDS capability by beginning the planning for a third missile site starting in FY07 to be fielded in 2010/2011. Block 2010 also includes the next increment of fielded capability with additional interceptors (up to 10), and upgraded IUEWR.

The GMD Block 2004/ 2006 development program provides an integrated development and test program of more capable interceptors (both boost and kill vehicles), targets, sensors, battle management technologies, and GMD Fire Control and Communications systems and infrastructure. Specifically, the Project 0808 provides the following:

- The EKV is a "Hit-to-Kill" payload designed to acquire, discriminate, track, and intercept targets in the midcourse phase of flight. The key components and technologies of the EKV include the acquisition and tracking sensors, the on-board maneuvering system, and the on-board vehicle C3 systems. Component development is on going and is demonstrated as part of the block improvement process in the Integrated Flight Test program.
- The sensor development program is a mix of enhancements to existing radar assets and development of new radar capabilities. The program will continue the software upgrades to the Early Warning Radars at Beale and Fylingdales, and the Cobra Dane radar at Shemya. The program continues planning for potential upgrades to other Early Warning Radar (EWR) sites. The key elements of the upgrades are the software builds to improve the effectiveness of the radars. A broad range of X-Band Radar (XBR) technologies will continue in development to support the SBX. The Ground Based Radar Prototype (GBR-P) located at the Ronald Reagan Test Site (RTS), at Kwajalein, is being used as part of the Integrated Flight Test program, and serves as a demonstration platform for these evolving radar technologies.
- The GMD Fire Control and Communications component is an integrated communications network of nodes, to enable the GMD element to function as part of the BMDS. This includes:
  - Various communications links (e.g., CONUS ring, Alaska leased lines and Satellite Communications (SATCOM) to Shemya, Fort Greely, and In-Flight Interceptor Communications System (IFICS) Data Terminals (IDTs).
  - GMD Fire Control and Communications Nodes [Fort Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC)]
  - In-Flight Interceptor Communications System Data Terminals (IDTs) at various locations.
  - These FC&C development initiatives continue on these technologies and components meeting future block capability requirements. This effort will be developed as part of the BMDS overarching BMC/C2 architecture.
- One of the most significant activities supported by this project is the component and systems level testing. The integrated flight and ground tests; the component level developmental testing; modeling and simulation; and the Verification, Validation, and Accreditation testing are critical to the successful fielding of all IDC components. The GMD test program is designed to demonstrate a broad range of GMD component development efforts. These incremental capabilities include multiple launches against multiple threat targets as the block capabilities mature. These components under test include boosters, EKVs, launch infrastructure, sensors, and interfaces with other BMDS elements. Additionally, the test program will incorporate Aegis Weapon System (AWS) radars to support GMD integrated flight test program. The test regimen will significantly expand to include operational interceptors both for ground and flight testing. These will subsequently be replaced with new interceptors from the ongoing production line to ensure the most technically capable GBI inventory while ensuring backward compatibility to the maximum extent possible. This rotatable pool of GBI assets provides GMD the capability to maintain youngest average age for interceptors on alert. GMD will continuously evaluate the capabilities of available interceptors through this inventory surveillance program to be initiated in FY06 to ensure that the newest, most technologically capable missiles are on Alert.

Older GBIs will be used for the Integrated Flight Test Program (up to 3 IFTs per year) to verify/validate maturing component capability improvements.

Software is another key area of development supporting the BMDS. Software development supports the Upgraded Early Warning radars, the X-Band radars, the IDTs, EKV on-board processing and interfaces, the GBI systems interfaces, system-wide communications interfaces and nodes, and fire control. This software must support not only the operational BMDS but also the systems-wide testing during ground and flight tests.

Planning continues to provide a capability to respond to additional future fielding orders in the shortest time possible. This includes site surveys and activation planning, silo design and planning, facility planning, environmental impact studies and assessments, logistics planning, and operational procedures.

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B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Ground Based Interceptor (GBI)	483,267	621,577	359,900	515,274
RDT&E Articles (Quantity)	8	4	8	6

The GBI development program funds the development of booster and EKV technologies. It also provides developmental assets for flight-testing. GMD has successfully demonstrated a hit-to-kill capability in five (5) separate flight tests.

FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKVs and boost vehicles) was initiated in FY 2002 for delivery in FY 2004. Acquisition of two (2) refurbished silos and two (2) command launch equipment at VAFB.

- Completed refurbishment of 2 silos and acquisition of command launch equipment (CLE) at VAFB for flight test and IDC fielding.
- Continued interceptor integration, ground/system tests, and Integrated Flight Tests.
- Continued modeling and simulation development.
- Continued common silo and common CLE development.
- Continued development of EKV technologies to improve system discrimination, performance, and producibility in the areas of on-board sensors and processors, software/algorithms, vehicle maneuvering, and C3 systems.
- Initiated acquisition of 4 GBIs (EKV and booster) for delivery in FY06.
- Completed acquisition of 2 GBIs (EKV and booster) initiated in FY02 for delivery in FY04.
- Continued acquisition of 2 GBIs (EKV and booster) initiated in FY03 for delivery in FY05.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 GBI (includes both EKV and boost vehicle) was initiated in FY 2003 for delivery in FY 2005. The FY05 column reflects an increase in funding as a result of a congressional adjustment from the FY05 PB submission. This funding is being used to continue the booster recovery plan as a result of the mixer explosion at the Pratt and Whitney Chemical Plant and for other GMD enhancements.

- Initiates acquisition of 3 GBIs (includes both EKV and boost vehicle)
- Continues Silo/GBI/launch systems ground testing, system level simulation, and Verification, Validation, and Accreditation activities.
- Continues interceptor, ground/system tests, and Integrated Flight Tests.
- Continues modeling and simulation development.
- Completes common silo and common CLE development.
- Completes acquisition of 2 GBIs (EKV and boost vehicle) initiated in FY03 for delivery in FY05.
- Continues acquisition of 4 GBIs (EKV and boost vehicle) initiated in FY04 for delivery in FY06.

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FY 2006 Planned Program:

RDT&E Test Articles: Acquisition of 4 GBIs (includes both EKV and boost vehicle) was initiated in FY 2004 for delivery in FY 2006.

- Initiates acquisition of 4 GBIs (includes both EKV and boost vehicle) for delivery in FY08.
- Continues Silo/GBI/launch systems ground testing, system level simulation, and Verification, Validation, and Accreditation activities.
- Continues interceptor, ground/system tests, and Integrated Flight Tests.
- Continues modeling and simulation development.
- Continues acquisition of 3 GBIs (includes both EKV and boost vehicle) initiated in FY05.
- Completes acquisition of 4 GBIs (includes both EKV and boost vehicle) initiated in FY04.

FY 2007 Planned Program:

RDT&E Test Articles: Acquisition of 3 GBIs (includes both EKV and boost vehicle) was initiated in FY 2005 for delivery in FY 2007.

- Initiates acquisition of 5 GBIs (includes both EKV and boost vehicle) for delivery in FY 2009.
- Continues Silo/GBI/launch systems ground testing, system level simulation, and Verification, Validation, and Accreditation activities.
- Continues interceptor, ground/system tests, and Integrated Flight Tests.
- Continues modeling and simulation development.
- Completes acquisition of 3 GBIs (includes both EKV and boost vehicle) initiated in FY05.
- Continues acquisition of 4 GBIs (EKV and boost vehicle) initiated in FY06.

	FY 2004	FY 2005	FY 2006	FY 2007
X Band Radar Technology Development	70,988	79,762	80,129	72,321
RDT&E Articles (Quantity)	0	1	0	0

X-Band radar technologies provide high-resolution tracking and discrimination data to the GMD fire control and subsequently the EKV, by way of the in-flight target update and target object map, thereby significantly improving the tracking and discrimination capabilities of the system. This effort develops highly sophisticated software algorithms to enhance target acquisition and discrimination, and material and electronic component enhancements to improve power output and sensitivity. This technology forms the basis for the SBX.

FY 2004 Accomplishments:

- Continued to develop and field XBR Software Builds.
- Continued flight and ground test support.
- Continued operation and maintenance of GBR-P in support of the BMDS Flight Test Program and targets of opportunity.
- Continued the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules).

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FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of XBR software build initiated in FY 2003 and delivered in FY 2005

- Continues the development XBR Software.
- Continues flight and ground test support.
- Supports a Radar Certification Flight (RCF).
- Continues operation and maintenance of GBR-P in support of the BMDS Flight Test Program and targets of opportunity.
- Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules).
- Initiates Primary Support Base development for future fielding options for the Sea-Based X-Band Radar.

FY 2006 Planned Program:

- Continues the development of XBR software.
- Continues flight and ground test support.
- Supports a Radar Certification Flight (RCF).
- Continues operation and maintenance of GBR-P.
- Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules).
- Completes Primary Support Base development for future fielding options for the Sea-Based X-Band Radar.

FY 2007 Planned Program:

- Completes development of XBR software.
- Continues flight and ground test support.
- Continues operation and maintenance of GBR-P.
- Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules).

	FY 2004	FY 2005	FY 2006	FY 2007
Upgraded Early Warning Radar (UEWR) Development	35,776	73,354	55,338	35,071
RDT&E Articles (Quantity)	3	1	0	0

Upgraded Early Warning Radars (UEWRs) are large, fixed, phased-array surveillance radars used to detect, track, and count individual targets early in their trajectory. UEWRs are also effective in cueing the higher resolution X-Band radars to the location and trajectory of incoming targets. The planned upgrades provide precise tracking early enough to significantly expand the battlespace for the ground-based interceptors. This program will provide for the development of enhanced EWR software.

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FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of two (2) UEWR software builds initiated in FY 2003 and delivered in FY 2004. Acquisition of Cobra Dane software build initiated in FY 2003 and delivered in FY 2004

- Continued flight and ground test support.
- Continued planning for potential future UEWR sites.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of one (1) UEWR software build initiated in FY 2004 and delivered in FY 2005

- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.
- Supports a radar certification flight.

FY 2006 Planned Program:

- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.
- Supports a radar certification flight.

FY 2007 Planned Program:

- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.

	FY 2004	FY 2005	FY 2006	FY 2007
Element Engineering & Integration	175,969	181,407	155,126	154,747
RDT&E Articles (Quantity)	0	0	0	0

GMD Element Engineering provides engineering and analysis support for building and integrating the functional components of the GMD segment of the BMDS. Defines element-level test requirements and objectives and develops element-level assessments and capability-based requirements. Provides engineering, integration, and operations planning supporting the BMDS. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to complement the BMDS systems engineering capability by providing detailed insight and analysis into component technical and design-specific issues. Develops and certifies a simultaneous test and operations capability to ensure no impact to operations in a safe manner.

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FY 2004 Accomplishments:

- Completed Block 2004/2006 Integration Phase 4 (IP-4) Integrated Technical Review (ITR).
- Completed Block 2004/2006 Integration Phase4 (IP-4) Integrated Design Review (IDR).
- Continued software management and specialty engineering.
- Continued software verification and validation.
- Continued modeling and simulation development.
- Continued system analyses, integration, and verification.
- Supported integrated ground tests and specialty testing.
- Conducted pre and post-flight test analyses.

FY 2005 Planned Accomplishments:

- Completes Block 2004 Integration Phase 3 (IP-3) Integrated Assessment Review (IAR).
- Completes Block 2006 Integration Phase 5 (IP-5) Integrated Design Review (IDR).
- Continues software management and specialty engineering.
- Continues software verification and validation.
- Continues modeling and simulation development.
- Continues system analyses, integration, and verification.
- Supports integrated ground tests and specialty testing.
- Conducts pre and post-flight test analyses.
- Supports integration and testing of launch on Forward-Based Radar ESG.
- Initiates simultaneous test and operations efforts.

FY 2006 Planned Program:

- Completes Block 2006 Integration Phase 5 (IP-5) Integrated Technical Review (ITR).
- Completes Block 2004/2006 Integration Phase 4 (IP-4) Integrated Assessment Review (IAR).
- Completes Block 2006/2008 Integration Phase 6 (IP-6) Integrated Design Review (IDR).
- Continues software management and specialty engineering.
- Continues software verification and validation.
- Continues modeling and simulation development.
- Continues system analyses, integration, and verification.
- Supports integrated ground tests and specialty testing.
- Conducts pre- and post-flight test analyses.
- Supports the integration and testing of engage on Forward-Based Radar ESG.
- Continues simultaneous test and operations efforts.

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FY 2007 Planned Program:

- Completes Block 2006 Integration Phase 5 (IP-5) Integrated Assessment Review (IAR).
- Completes Block 2006/2008 Integration Phase 6 (IP-6) Integrated Technical Review (ITR).
- Continues software management and specialty engineering.
- Continues software verification and validation.
- Continues modeling and simulation development.
- Continues system analyses, integration, and verification.
- Supports integrated ground tests and specialty testing.
- Conducts pre- and post-flight test analyses.
- Completes the integration and testing of engage on Forward-Based Radar ESG.
- Continues simultaneous test and operations efforts.

	FY 2004	FY 2005	FY 2006	FY 2007
GMD Fire Control & Communications	217,668	218,879	160,062	148,283
RDT&E Articles (Quantity)	3	1	2	2

The GMD Fire Control and Communications (GFC/C) enables control and operation of the GMD Element as part of the BMDS. The Fire Control sub-component consists of the (1) GMD Fire Control (GFC), Test Exerciser (Tex), and External Systems Interface (ESI). The communications sub-component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communications System (IFICS).

FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of GFC/C software build initiated in FY 2003 and delivered in FY 2004. Acquisition of Aegis ESI software build initiated in FY 2003 and delivered in FY 2004. Acquisition of Command Launch Equipment software build initiated in FY 2003 and delivered in FY 2004.

- Continued flight and ground test support.
- Continued development and installation of GFC and ESI software builds.
- Continued development and installation of IFICS software builds.
- Initiated development and installation of Test Exerciser software builds.
- Continued development and installation of GMD software builds.
- Continued the planning, assessment and evaluation of future GFC/C software and technologies enhancements.

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FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of GFC/C software build initiated in FY 2004 and delivered in FY 2005.

- Continues flight and ground test support.
- Continues development and installation of GFC and IFICS software builds.
- Completes development and installation of Test Exerciser software builds.
- Continues development and installation of GMD software builds in support of GMD capability enhancements.
- Continues the planning, assessment and evaluation of future GFC/C software and technologies enhancements.
- Continues software development upgrades.

FY 2006 Planned Program:

RDT&E Test Articles: Acquisition of External Systems Interface (ESI) software build initiated in FY 2004 and delivered in FY 2006. Acquisition of Command Launch Equipment software build was initiated in FY 2004 and delivered in FY 2006.

- Continues flight and ground test support.
- Continues the planning, assessment and evaluation of future GFC/C software and technologies enhancements.

FY 2007 Planned Program:

RDT&E Test Articles: Acquisition of GFC/C software build initiated in FY 2005 and delivered in FY 2007. Acquisition of External Systems Interface (ESI) software build initiated in FY 2006 and delivered in FY 2007

- Continues flight and ground test support.
- Continues the planning, assessment and evaluation of future GFC/C software and technologies enhancements.

	FY 2004	FY 2005	FY 2006	FY 2007
Element Test and Evaluation	200,517	198,813	305,054	312,333
RDT&E Articles (Quantity)	2	3	4	3

GMD Test and Evaluation utilizes a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources providing critical risk reduction and measurement of system performance for all GMD element components. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance. The GMD Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, minimizes the duplication of test resources and the time required to execute required testing, and supports BMDS level test and evaluation.

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FY 2004 Accomplishments:

RDT&E Test Articles: Acquisition of 2 targets initiated in FY 2002 for delivery in FY 2004.

- Continued operation and maintenance of System Test Lab, Prime Contractor Integration Laboratory (PCIL), and Integrated Systems Test Center 2 (ISTC-2).
- Continued planning activities for implementing ISTC-1.
- Continued ground and flight test planning, design, and scheduling.
- Performed pre- and post-test analyses.
- Performed analyses to define target requirements.
- Established Element Test Objectives.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 3 targets initiated in FY 2003 for delivery in FY 2005.

- Continues operation and maintenance of System Test Lab, PCIL, and ISTC-2.
- Completes installation and implementation of ISTC-1.
- Continues ground and flight test planning, design, and scheduling.
- Conducts Integrated Ground Test (IGT) (development).
- Conducts Distributed Ground Test (DGT).
- Conducts Integrated Flight Tests.
- Performs pre- and post-test analyses.
- Performs analyses to define target requirements.
- Establishes Element Test Objectives.

FY 2006 Planned Program:

RDT&E Test Articles: Acquisition of 4 targets initiated in FY 2004 for delivery in FY 2006.

- Continues operation and maintenance of System Test Lab, PCIL, and ISTC-2.
- Continues ground and flight test planning, design, and scheduling.
- Conducts Integrated Ground Test (IGT) (development).
- Conducts Distributed Ground Test (DGT).
- Conducts Integrated Flight Tests.
- Performs pre- and post-test analyses.
- Performs analyses to define target requirements.
- Establishes Element Test Objectives.

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FY 2007 Planned Program:

RDT&E Test Articles: Acquisition of 3 targets initiated in FY 2005 for delivery in FY 2007.

- Continues operation and maintenance of System Test Lab, PCIL, and ISTC-2.
- Continues ground and flight test planning, design, and scheduling.
- Conducts Integrated Ground Test (IGT) (development).
- Conducts Distributed Ground Test (DGT).
- Conducts Integrated Flight Tests.
- Performs pre- and post-test analyses.
- Performs analyses to define target requirements.
- Establishes Element Test Objectives.

	FY 2004	FY 2005	FY 2006	FY 2007
Site Activation	36,908	36,459	31,672	31,286
RDT&E Articles (Quantity)	0	0	0	0

This effort provides a broad range of site design and layout, facility requirements, and environmental management activities.

FY 2004 Accomplishments:

- Initiated Planning and Design of an additional facility at the Von Braun Complex located at the Redstone Arsenal to consolidate MDA personnel and activities currently located in a number of dispersed locations. Construction was planned to begin in FY 2006. Congressional add in FY 2004 has accelerated start of construction to FY 2004.
- Continued Block 2004 IDO/ Test Bed activation.
- Updated IDO/ Test Bed site activation plans.
- Continued siting, NEPA, and ESH analysis for Block 2004 IDO/ Test Bed.
- Completed siting and Joint Spectrum Center Electromagnetic Interference analysis for SBX.

FY 2005 Planned Accomplishments:

- Continues IDO/ Test Bed support.
- Updates IDO/ Test Bed site activation plans.
- Continues siting, NEPA, and ESH analysis for Block 2004 IDO/ Test Bed.

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FY 2006 Planned Program:

- Continues siting, NEPA, and ESH analysis for Block 2006 and future activities.
- Initiates construction activities for follow-on Test-Bed upgrade programs.
- Updates IDO/Test Bed site activation plans.

FY 2007 Planned Program:

- Continues siting, NEPA, and ESH analysis for Block 2008 and future activities.
- Initiates construction activities for follow-on Test-Bed upgrade programs.
- Updates IDO/Test Bed site activation plans.

	FY 2004	FY 2005	FY 2006	FY 2007
Program Planning and Management	131,106	131,007	110,252	107,020
RDT&E Articles (Quantity)	0	0	0	0

FY 2004 Accomplishments:

- Provided government program office staff and infrastructure for the management of the GMD Program.
- Provided technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities.
- Provided requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution.
- Continued program management, subcontract management, quality assurance, and technical and testing oversight.

FY 2005 Planned Accomplishments:

- Provides government program office staff and infrastructure for the management of the GMD Program.
- Provides technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities.
- Provides requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution.
- Continues program management, subcontract management, quality assurance, and technical and testing oversight.

FY 2006 Planned Program:

- Provides government program office staff and infrastructure for the management of the GMD Program.
- Provides technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities.
- Provides requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution.

- Continues program management, subcontract management, quality assurance, and technical and testing oversight.

FY 2007 Planned Program:

- Provides government program office staff and infrastructure for the management of the GMD Program.
- Provides technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities.
- Provides requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution.
- Continues program management, subcontract management, quality assurance, and technical and testing oversight.

	FY 2004	FY 2005	FY 2006	FY 2007
Logistics Planning, Production and Protection	234,904	259,110	135,076	127,506
RDT&E Articles (Quantity)	0	0	0	0

GFX represents the materiel and services provided to the prime contractor in support of the GMD development and test efforts. It includes Government Furnished Equipment (GFE), Information (GFI), Facilities (GFF), and Services (GFS) (including communication leases).

FY 2004 Accomplishments:

- Continued to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support IDC/ Test Bed activation and GMD test program.
- Continued to provide management efforts to activate a logistics support system to include IDC/ Test Bed site support activation and validation, logistical support requirements, and IDC/ Test Bed readiness reviews.
- Continued to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDC/ Test Bed sites as required.
- Conducted quality assurance planning and implementation.
- Continued to provide functional support for production, quality, configuration and change management.
- Conducted sustainment, fielding, siting, and facility planning.
- Continued to provide program protection to the Test Bed including physical security.
- Conducted reliability and maintainability analyses.

FY 2005 Planned Accomplishments:

- Continues to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support Test Bed activation and GMD test program.
- Continues to provide management efforts to activate a logistics support system to include IDO/ Test Bed site support activations and validation, logistical support requirements, and IDO/ Test Bed readiness reviews.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDO/ Test Bed sites as required.
- Continues to provide functional support for production, quality, configuration and change management.
- Conducts sustainment, fielding, siting, and facility planning.
- Continues to provide program protection including physical security.

- Conducts reliability and maintainability analyses.

FY 2006 Planned Program:

- Continues to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support Test Bed activation and GMD test program.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDO/ Test Bed sites as required.
- Continues to provide functional support for production, quality, configuration and change management.
- Conducts fielding, siting, and facility planning.
- Continues to provide program protection including physical security.
- Conducts reliability and maintainability analyses.

FY 2007 Planned Program:

- Continues to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support Test Bed activation and GMD test program.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDO/ Test Bed sites as required.
- Continues to provide functional support for production, quality, configuration and change management.
- Conducts fielding, siting, and facility planning.
- Continues to provide program protection including physical security.
- Conducts reliability and maintainability analyses.

	FY 2004	FY 2005	FY 2006	FY 2007
Sustainment Development Program Phase II (SDP II)	0	104,750	279,046	375,123
RDT&E Articles (Quantity)	0	0	0	0

This effort provides for Logistics Support for the GMD Initial Defensive Operations. SDPII will provide a level-of-service consistent with established Engagement Sequence Groups (ESG). SDPII will meet LDO support requirements by providing a flexible and robust support capability that emphasizes support of ESG assets.

FY 2005 Planned Accomplishments:

- Establishes contract for developing and gathering equipment logistics data.
- Completes logistics infrastructure and support concept.
- Initiates SDPII program for logistics support and maintenance of IDO.
- Initiates minimal initial spare acquisitions.

FY 2006 Planned Program:

- Continues SDPII for logistics support and maintenance of IDO.
- Continues logistic infrastructure and support.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Initiates SBX logistics support.
- Continues minimal initial spare acquisitions.

FY 2007 Planned Program:

- Continues SDPII for logistics support and maintenance of IDO.
- Continues logistic infrastructure and support plan.
- Continues with SBX logistics support.
- Continues minimal initial spare acquisitions.

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II (GBI)	0	500,348	483,494	208,591
RDT&E Articles (Quantity)	0	0	32	8

The Ground-Based Interceptor consists of an Exoatmospheric Kill Vehicle (EKV) and a Booster Vehicle. These Interceptors will enhance the BMDS capability against long and intermediate range ballistic missile attacks by adding ten (10) interceptors.

FY 2005 Planned Accomplishments:

- Initiates acquisition of at least two (2) additional EKVs for Fort Greely.
- Initiates acquisition of at least two (2) additional boosters for Fort Greely.
- Initiates acquisition of fourteen (14) additional common silos for Fort Greely.
- Initiates acquisition of fourteen (14) sets of command launch equipment for Fort Greely.

FY 2006 Planned Program:

RDT&E Test Articles: Acquisition of at least two (2) EKVs and at least two (2) boosters; fourteen (14) common silos and fourteen (14) sets of associated command launch support equipment was initiated in FY 2005 for delivery in FY 2006.

- Completes acquisition of at least two (2) EKVs for Fort Greely.
- Completes acquisition of at least two (2) boosters for Fort Greely.
- Completes acquisition of fourteen (14) common silos for Fort Greely.
- Completes acquisition of fourteen (14) sets of command launch equipment for Fort Greely.
- Initiates acquisition of at least four (4) additional EKVs for Fort Greely.
- Initiates acquisition of at least four (4) additional boosters for Fort Greely.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2007 Planned Program:

RDT&E Test Articles: Acquisition of at least four (4) EKVs and at least four (4) boosters for Fort Greely was initiated in FY 2006 for delivery in FY 2007.

- Completes acquisition of at least four (4) EKVs for Fort Greely.
- Completes acquisition of at least four (4) boosters for Fort Greely.
- Initiates acquisition of at least four (4) additional EKVs for Fort Greely for delivery in FY 2008.
- Initiates acquisition of at least four (4) additional boosters for Fort Greely for delivery in FY 2008.

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II (IUEWR and IDT)	0	22,385	38,000	59,000
RDT&E Articles (Quantity)	0	0	0	2

The Thule IUEWR will provide increased early warning capability for potential threat objects launched from north and east of CONUS as well as providing a backup capability to the Fylingdales UEWR. The processor (hardware and software) upgrades the GMD fire control access along with the associated GMD Communications Network (GCN) connectivity. They are planned for full implementation at Thule by FY 2007. An additional IDT will be acquired to provide the capability to communicate with multiple interceptors from existing launch sites as well as planned launch sites. The IDT will be located at Fort Greely; acquisition will begin in FY 2005.

FY 2005 Planned Accomplishments:

- Initiates acquisition of long lead IUEWR hardware items.
- Initiates planning / design / environmental process for IUEWR HW/SW installation.
- Initiates acquisition of an IDT at Fort Greely.

FY 2006 Planned Program:

- Continues acquisition of long lead IUEWR hardware items.
- Continues planning / design / environmental process for IUEWR HW/SW installation.
- Continues acquisition of an IDT at Fort Greely.

FY 2007 Planned Program:

RDT&E Test Articles: Acquisition of hardware for one (1) IUEWR was initiated in FY 2005 for delivery in FY 2007. Acquisition of one (1) IDT was initiated in FY 2005 for delivery in FY 2007.

- Completes acquisition of IUEWR hardware items.
- Completes planning / design / environmental process for IUEWR HW/SW installation.
- Completes acquisition of an IDT at Fort Greely.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II (RDT&E Construction)	0	40,267	31,200	85,500
RDT&E Articles (Quantity)	0	0	0	0

This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data.

FY 2005 Planned Accomplishments:

- Initiates construction of 10 additional common silos and supporting facilities at Fort Greely.
- Initiates construction of an IDT at Fort Greely.
- Initiates and completes site facility designs for the Thule IUEWR.

FY 2006 Planned Program:

- Completes construction of 10 additional common silos and supporting facilities at Fort Greely.
- Continues construction of an IDT at Fort Greely.
- Initiates construction of Thule IUEWR.

FY 2007 Planned Program:

- Completes construction of an IDT at Fort Greely.
- Completes construction for Thule IUEWR.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

GMD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks and spiral upgrades. The Department has structured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial GMD parts of the BMDS NLT DEC 2004, while continuing RDT&E work and spiral upgrades such that some number of components of GMD will remain part of the BMDS Test Bed even after being fielded as part of the initial capability. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities. The development approach has been enhanced to include (1) adding test infrastructure and improving test management to allow more operationally challenging representative flight tests and providing for increased testing against more challenging targets, and (2) increasing the fidelity of the project simulations.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Ground Based Interceptor (GBI)										
Ground Based Interceptor (GBI)	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	456,985	596,622	1/2Q	340,521	1/2Q	496,089	1/2Q	1,890,217
X Band Radar Technology Development										
X Band Radar Technology Development	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	69,723	66,262	1/2Q	67,592	1/2Q	59,909	1/2Q	263,486
Upgraded Early Warning Radar (UEWR) Development										
Upgraded Early Warning Radar (UEWR) Development	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	8,223	57,774	1/2Q	40,231	1/2Q	20,115	1/2Q	126,343
Element Engineering & Integration										
Systems Engineering & Integration	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	137,083	139,786	1/2Q	102,166	1/2Q	26,007	1/2Q	405,042
Concurrent Test & Ops			0	20,000	1/2Q	21,000	1/2Q	73,000	1/2Q	114,000
FDR Japan - Bundle			0	0	N/A	10,000	1/2Q	6,000	1/2Q	16,000
BMDS Integration			0	0	N/A	0	N/A	28,000	1/2Q	28,000
GMD Fire Control & Communications										
Fire Control & Communications	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	200,460	206,074	1/2Q	147,641	1/2Q	135,986	1/2Q	690,161

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Element Test and Evaluation										
	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	49,296	55,126	1/2Q	161,413	1/2Q	159,161	1/2Q	424,996
Logistics Planning, Production and Protection										
Logistics Planning, Production and Protection	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	160,500	149,603	1/2Q	27,729	1/2Q	21,513	1/2Q	359,345
Missile Defense Plan II (GBI)										
GBI`s	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	233,615	1/2Q	318,694	1/2Q	93,000	1/2Q	645,309
Expansion	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	266,733	1/2Q	154,800	1/2Q	115,591	1/2Q	537,124
European Site Planning	SS/CPAF	Boeing/ AL	0	0	N/A	10,000	1/2Q	0	N/A	10,000
Missile Defense Plan II (IUEWR and IDT)										
UEWR & IDT	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	22,385	1/2Q	38,000	1/2Q	59,000	1/2Q	119,385
Subtotal Product Development			1,082,270	1,813,980		1,439,787		1,293,371		5,629,408

Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Ground Based Interceptor (GBI)										
	SS/FP	DCD/ AL	1,192	1,192	1/2Q	231	1/2Q	245	1/2Q	2,860
	SS/FP	BAE/ AL	7,894	7,894	1/2Q	6,715	1/2Q	6,525	1/2Q	29,028
	SS/FP	TSI/ AL	7,449	6,136	1/2Q	4,885	1/2Q	4,685	1/2Q	23,155
	C/CPAF	Sparta/ AL	1,394	1,394	1/2Q	0	N/A	0	N/A	2,788
	MIPR	AMCOM/ AL	354	354	1/2Q	1,684	1/2Q	1,875	1/2Q	4,267
	MIPR	USASMDC/ AL	391	391	1/2Q	482	1/2Q	500	1/2Q	1,764
	MIPR	GSA/ AL	231	231	1/2Q	662	1/2Q	700	1/2Q	1,824
	MIPR	Mitre/ DC	291	291	1/2Q	0	N/A	0	N/A	582
	MIPR	Picatinny/ NJ	100	125	1/2Q	43	1/2Q	45	1/2Q	313
	MIPR	Crane/ IN	174	149	1/2Q	32	1/2Q	34	1/2Q	389
	SS/FP	CSC/ AL	6,798	6,798	1/2Q	4,645	1/2Q	4,576	1/2Q	22,817
X Band Radar Technology Development										
	C/FP	BAE/ AL	1,095	10,595	1/2Q	10,059	1/2Q	6,687	1/2Q	28,436

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	AMCOM/ AL	850	1,210	1/2Q	913	1/2Q	850	1/2Q	3,823
	MIPR	MIT/LL/ MA	600	700	1/2Q	600	1/2Q	575	1/2Q	2,475
	C/CPAF	GA Tech/ GA	565	565	1/2Q	565	1/2Q	550	1/2Q	2,245
	C/CPFF	Xontech/ AL	162	430	1/2Q	400	1/2Q	3,750	1/2Q	4,742
Upgraded Early Warning Radar (UEWR) Development										
	SS/CPAF	Ga. Tech/ GA	1,220	1,220	1/2Q	1,720	1/2Q	1,569	1/2Q	5,729
	C/CPFF	Xontech/ AL	780	780	1/2Q	880	1/2Q	880	1/2Q	3,320
	C/FP	Mevatec/ AL	12,120	11,960	1/2Q	10,487	1/2Q	10,487	1/2Q	45,054
	MIPR	AMCOM/ AL	1,631	1,620	1/2Q	2,020	1/2Q	2,020	1/2Q	7,291
Element Engineering & Integration										
	MIPR	SMDC/ AL	1,040	1,271	1/2Q	1,285	1/2Q	1,272	1/2Q	4,868
	MIPR	NSWC/ VA	3,861	4,549	1/2Q	4,598	1/2Q	4,552	1/2Q	17,560
	MIPR	DTRA/ Ft Belvior, VA	540	740	1/2Q	749	1/2Q	741	1/2Q	2,770
	MIPR	NAIC/ Wright Patterson, AFB	810	834	1/2Q	843	1/2Q	835	1/2Q	3,322

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	SBIRS SPO/ LA AFB, CA	2,975	515	1/2Q	0	N/A	0	N/A	3,490
	MIPR	GMD/ AL	1,857	2,163	1/2Q	2,186	1/2Q	2,164	1/2Q	8,370
	MIPR	GME Engineering Analysis/ AL	1,668	2,100	1/2Q	2,123	1/2Q	2,102	1/2Q	7,993
	MIPR	John Hopkins/ MD	1,000	500	1/2Q	505	1/2Q	500	1/2Q	2,505
	MIPR	MIT Lincoln Labs/ MA	3,665	3,765	1/2Q	3,806	1/2Q	3,767	1/2Q	15,003
	MIPR	Photon Labs/ VA	700	834	1/2Q	843	1/2Q	835	1/2Q	3,212
	SS/CPAF	IDA/ VA	90	0	1/2Q	0	N/A	0	N/A	90
	C/CPAF	Various/ AL	310	300	1/2Q	928	1/2Q	919	1/2Q	2,457
	MIPR	JNIC/ CO	3,749	3,741	1/2Q	3,782	1/2Q	3,744	1/2Q	15,016
	MIPR	ARES/ CA	300	309	1/2Q	312	1/2Q	309	1/2Q	1,230
GMD Fire Control & Communications										
	MIPR	NSWC/ Dahlgren, VA	3,619	3,185	1/2Q	3,185	1/2Q	3,061	1/2Q	13,050
	FFRDC	MITRE/ HSV, AL	1,147	1,307	1/2Q	1,307	1/2Q	1,307	1/2Q	5,068
	C/FP	TSI/ HSV, AL	0	1,263	1/2Q	1,250	1/2Q	1,250	1/2Q	3,763

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	C/CPAF	SPARTA/ HSV, AL	3,053	3,566	1/2Q	3,540	1/2Q	3,540	1/2Q	13,699
	C/FP	BAE Systems/ HSV, AL	201	200	1/2Q	180	1/2Q	180	1/2Q	761
	C/FP	Gray Sys/ HSV, AL	707	950	1/2Q	850	1/2Q	850	1/2Q	3,357
	C/CPAF	CSC/ Arlington, VA	1,760	1,350	1/2Q	1,350	1/2Q	1,350	1/2Q	5,810
	C/CPAF	Northup/ COS, CO	0	759	1/2Q	759	1/2Q	759	1/2Q	2,277
	MIPR	Various	0	225	1/2Q	0	N/A	0	N/A	225
Site Activation										
	C/CPFF	CSC/ AL	4,000	2,350	2Q	4,000	1/2Q	4,000	1/2Q	14,350
	MIPR	OGA/ Various	2,226	3,104	1/2Q	2,176	1/2Q	2,176	1/2Q	9,682
	MIPR	USACE/ AL	3,472	3,661	1/2Q	2,199	1/2Q	1,892	1/2Q	11,224
	C/CPFF	CSC/ AL	3,105	2,966	1/2Q	2,105	1/2Q	2,105	1/2Q	10,281
	C/CPFF	L3 Communications/ AL	1,339	1,339	1/2Q	1,339	1/2Q	1,339	1/2Q	5,356
	C/CPFF	TSI/ AL	864	864	1/2Q	864	1/2Q	864	1/2Q	3,456
	C/CPFF	CSC/ AL	8,629	7,086	1/2Q	6,629	1/2Q	6,629	1/2Q	28,973
	C/CPFF	CSC/ AL	1,975	1,947	1/2Q	1,975	1/2Q	1,975	1/2Q	7,872

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	C/CPFF	L3 Communications/ AL	2,200	2,200	1/2Q	2,200	1/2Q	2,200	1/2Q	8,800
	MIPR	OGA/ Various	2,077	3,524	1/2Q	1,077	2Q	1,077	1/2Q	7,755
	MIPR	USARAK/ AK	3,952	2,354	1Q	4,350	1/2Q	4,271	1/2Q	14,927
	C/CPFF	BAE/ AL	3,952	4,615	1/2Q	2,309	1/2Q	2,309	1/2Q	13,185
	C/CPFF	BAE/ AL	449	449	1/2Q	449	1/2Q	449	1/2Q	1,796
Program Planning and Management										
SPT DC	C/CPAF	CSC/ VA	93,254	90,254	1/2Q	79,381	1/2Q	77,054	1/2Q	339,943
SPT HSV	C/CPAF	CSC/ AL	25,977	25,406	1/2Q	30,871	1/2Q	29,966	1/2Q	112,220
TRADOC System Manager	MIPR	SMDC/ AL	15,046	15,347	1/2Q	0	N/A	0	N/A	30,393
Logistics Planning, Production and Protection										
Logistics	C/CPFF	L3 Communications/ AL	3,610	3,781	1/2Q	3,781	1/2Q	3,781	1/2Q	14,953
	C/CPFF	BAE Systems/ AL	631	631	1/2Q	631	1/2Q	631	1/2Q	2,524
	C/CPFF	CSC/ AL	942	942	1/2Q	942	1/2Q	942	1/2Q	3,768
	C/CPFF	TSI/ AL	1,311	1,311	1/2Q	1,311	1/2Q	1,311	1/2Q	5,244

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	C/CPFF	SPARTA/ AL	460	460	1/2Q	460	1/2Q	460	1/2Q	1,840
	C/CPFF	CIRRUS/ AL	499	499	1/2Q	499	1/2Q	499	1/2Q	1,996
	MIPR	MMC/ AL	261	261	1/2Q	261	1/2Q	261	1/2Q	1,044
	MIPR	ARL/ MD	452	452	1/2Q	400	1/2Q	375	1/2Q	1,679
	MIPR	Brooks AFB/ TX	148	148	1/2Q	100	1/2Q	59	1/2Q	455
	MIPR	NSWC/ FL	213	213	2Q	34	1/2Q	34	1/2Q	494
GFX	MIPR	SPAWAR/ CA	850	850	1/2Q	895	1/2Q	940	1/2Q	3,535
	MIPR	AMCOM/ AL	1,052	1,050	1/2Q	1,103	1/2Q	1,159	1/2Q	4,364
	MIPR	DISA/ VA	32,342	29,580	1/3Q	27,122	1/2Q	28,378	1/2Q	117,422
	MIPR	JSC/ MD	250	250	1/2Q	250	1/2Q	150	1/2Q	900
	MIPR	JNIC/ CO	3,237	1,802	1/2Q	1,865	1/2Q	1,969	1/2Q	8,873
	C/CPAF	Boeing/ AL	1,331	1,134	1/2Q	650	1/2Q	670	1/2Q	3,785
	MIPR	Hill AFB/ UT	130	130	1/2Q	130	1/2Q	130	1/2Q	520
	MIPR	AMCOM/ AL	700	650	1/4Q	650	1/2Q	650	1/2Q	2,650
	MIPR	NSA/ MD	2,021	750	1/2Q	500	1/2Q	300	1/2Q	3,571

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	NIST/ OH	1,980	1,390	2/4Q	1,370	1/2Q	1,300	1/2Q	6,040
	MIPR	L3 Communications/ AL	3,790	4,275	1/2Q	4,275	1/2Q	4,275	1/2Q	16,615
	MIPR	SMDC/ AL	8,000	13,945	1/2Q	13,945	1/2Q	13,945	1/2Q	49,835
	MIPR	611th / AK	9,496	9,000	1/2Q	9,000	1/2Q	9,000	1/2Q	36,496
	MIPR	SMDC/ AL	3,074	2,500	1/2Q	4,000	1/2Q	2,500	1/2Q	12,074
	MIPR	VAFB/ CA	1,856	3,000	1/2Q	3,000	1/2Q	3,000	1/2Q	10,856
	MIPR	CCPs/ Various	0	1,500	1/2Q	1,500	1/2Q	1,880	1/2Q	4,880
	MIPR	Various/ Various	231	290	1/2Q	290	1/2Q	290	1/2Q	1,101
	MIPR	Ft Drum/ NY	0	0	N/A	2,500	1/2Q	1,500	1/2Q	4,000
Production	SS/CPFF	TSI/ AL	112	125	1/2Q	125	1/2Q	125	1/2Q	487
	SS/CPFF	BAE Systems/ AL	4,050	3,678	1/2Q	3,019	1/2Q	2,962	1/2Q	13,709
	SS/CPFF	COLSA/ AL	605	625	1/2Q	625	1/2Q	625	1/2Q	2,480
	SS/CPFF	CSC/ AL	285	295	1/2Q	295	1/2Q	295	1/2Q	1,170
	MIPR	AMREDC/ AL	1,575	1,635	1/2Q	1,635	1/2Q	1,635	1/2Q	6,480

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Protection	SS/CPFF	TAMSCO/ AK	8,122	996	1/2Q	1,026	1/2Q	1,057	1/2Q	11,201
	SS/CPAF	Boeing/ AL	0	1,535	1/2Q	0	N/A	0	N/A	1,535
	SS/CPFF	SDC/ AL	790	1,500	1/2Q	1,545	1/2Q	1,591	1/2Q	5,426
	SS/CPFF	US Marshall Service/ TX	0	404	1/2Q	0	N/A	0	N/A	404
	SS/CPFF	C&A/ AL	7,197	3,477	1/2Q	5,104	1/2Q	4,950	1/2Q	20,728
Information Technology	SS/CPFF	SAIC/ AL	6,184	6,121	1/2Q	5,938	1/2Q	5,879	1/2Q	24,122
	SS/CPFF	BAE System/ AL	1,420	1,406	1/2Q	1,363	1/2Q	1,350	1/2Q	5,539
	MIPR	Various/ Various	2,706	2,679	1/2Q	2,598	1/2Q	2,572	1/2Q	10,555
	MIPR	Various/ Various	4,280	4,237	1/2Q	2,610	1/2Q	2,563	1/2Q	13,690
Sustainment Development Program Phase II (SDP II)										
	SS/CPAF	Boeing/ AL/AK/CA	0	104,750	1/2Q	279,046	1/2Q	375,123	1/2Q	758,919
Missile Defense Plan II (RDT&E Construction)										
Facilities Construction	MIPR	COE/ AK	0	40,267	1Q	31,200	1/2Q	85,500	1/2Q	156,967
Subtotal Support Costs			367,053	510,451		640,921		785,512		2,303,937

Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Element Test and Evaluation										
Combined Test Force (CTF)	MIPR	SMDC/ AL	5,877	5,995	1/2Q	0	N/A	0	N/A	11,872
	MIPR	OTAs/ Various	6,700	6,834	1/2Q	0	N/A	0	N/A	13,534
	MIPR	VAFB/ CA	460	428	1/2Q	437	1/2Q	447	1/2Q	1,772
	MIPR	SNL/ NM	100	250	1/2Q	343	1/2Q	350	1/2Q	1,043
	MIPR	NAVSEA/ MD	343	323	1/2Q	395	1/2Q	375	1/2Q	1,436
	MIPR	SMDC/ AL	425	400	1/2Q	442	1/2Q	450	1/2Q	1,717
	MIPR	Kirtland, AFB/ NM	285	400	1/2Q	320	1/2Q	340	1/2Q	1,345
	MIPR	VAFB/ CA	597	450	1/2Q	520	1/2Q	546	1/2Q	2,113
	MIPR	RTS/ Kwajalein	170	200	1/2Q	0	N/A	0	N/A	370
	MIPR	RTS/ Kwajalein	2,426	2,426	1/2Q	0	N/A	0	N/A	4,852
	C/CPFF	COLSA/ AL	4,717	6,099	1/2Q	6,849	1/2Q	6,099	1/2Q	23,764
	C/CPFF	COLSA/ AL	1,446	1,730	1/2Q	2,730	1/2Q	1,730	1/2Q	7,636
	C/CPFF	ELMCO/ AL	557	990	1/2Q	990	1/2Q	990	1/2Q	3,527
	C/CPFF	IEC/ CA	3,122	2,822	1/2Q	3,822	1/2Q	2,822	1/2Q	12,588

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	C/CPFF	BAE Systems/ AL	1,471	1,580	1/2Q	2,130	1/2Q	3,580	1/2Q	8,761
	C/CPFF	BAE Systems/ AL	1,536	1,700	1/2Q	1,700	1/2Q	2,560	1/2Q	7,496
	C/CPFF	COLSA/ AL	1,711	3,350	1/2Q	813	1/2Q	813	1/2Q	6,687
	C/CPFF	COLSA/ AL	3,736	4,015	1/2Q	4,915	1/2Q	5,015	1/2Q	17,681
	C/CPFF	COLSA/ AL	432	432	1/2Q	432	1/2Q	500	1/2Q	1,796
	C/CPFF	AMTEC/ AL	865	1,494	1/2Q	1,744	1/2Q	3,010	1/2Q	7,113
	C/CPFF	CAS/ AL	772	1,300	1/2Q	1,550	1/2Q	2,095	1/2Q	5,717
	C/CPFF	CSC/ AL	208	238	1/2Q	238	1/2Q	288	1/2Q	972
	C/CPFF	IEC/ CA	0	220	1/2Q	0	N/A	0	N/A	220
	C/TM	AMTEC/ AL	0	500	1/2Q	723	1Q	823	1/2Q	2,046
	MIPR	AMCOM/ AL	1,400	1,500	1/2Q	2,250	1/2Q	4,345	1/2Q	9,495
	C/CPFF	L3 Communications/ AL	3,856	3,637	1/2Q	5,387	1/2Q	5,387	1/2Q	18,267
	MIPR	AMCOM/ AL	768	1,012	1/2Q	0	N/A	2,012	1/2Q	3,792
	C/CPFF	BAE Systems/ AL	3,019	5,267	1/2Q	6,100	1/2Q	4,208	1/2Q	18,594

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	Various/ AL	4,908	95	1/2Q	61	1/2Q	76	1/2Q	5,140
Targets	MIPR	MDA/ AL	15,479	88,000	1/2Q	98,750	1/2Q	104,311	1/2Q	306,540
Subtotal Test and Evaluation			67,386	143,687		143,641		153,172		507,886

Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										

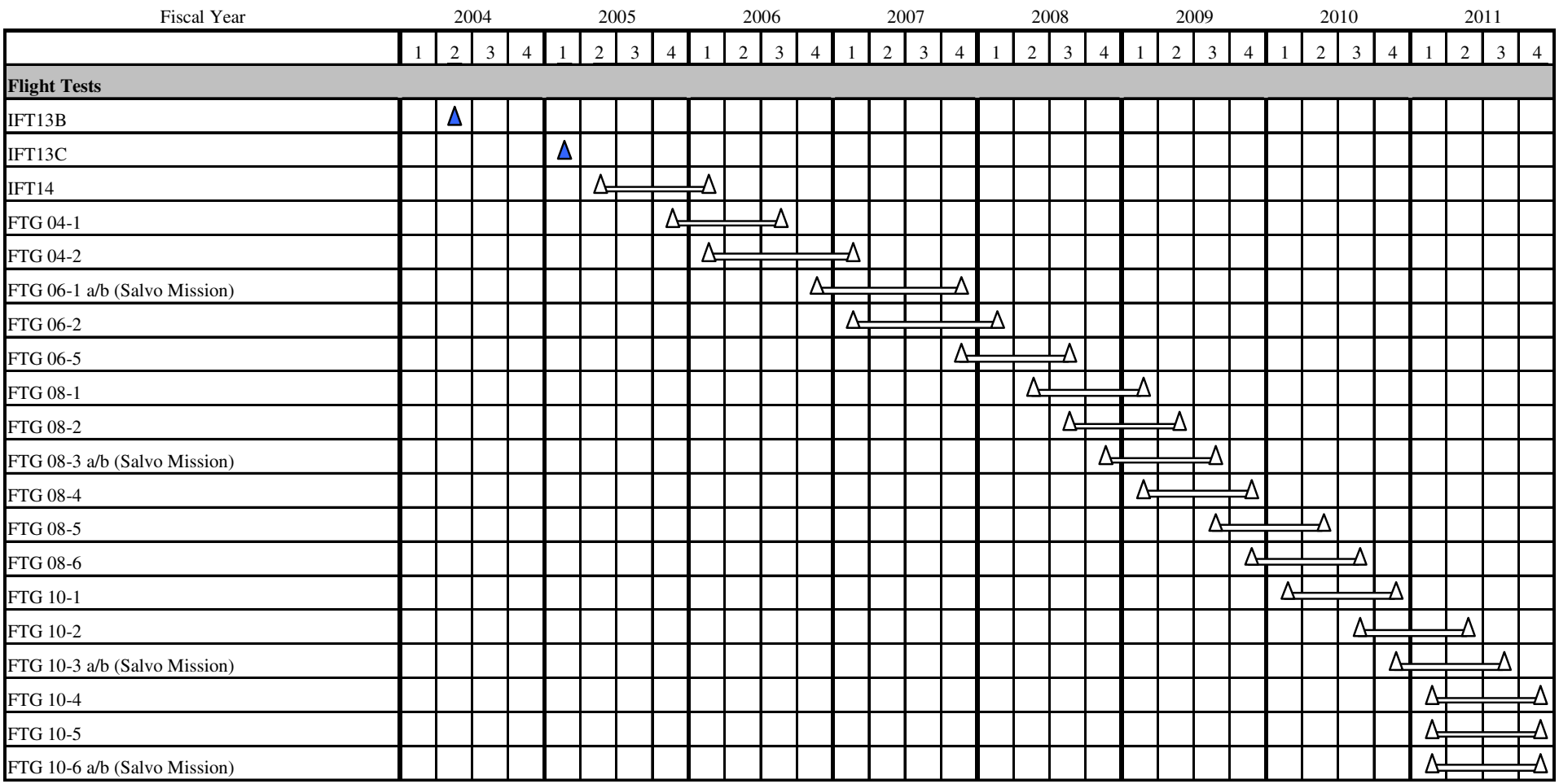
Remarks

Project Total Cost			1,516,709	2,468,118		2,224,349		2,232,055		8,441,231

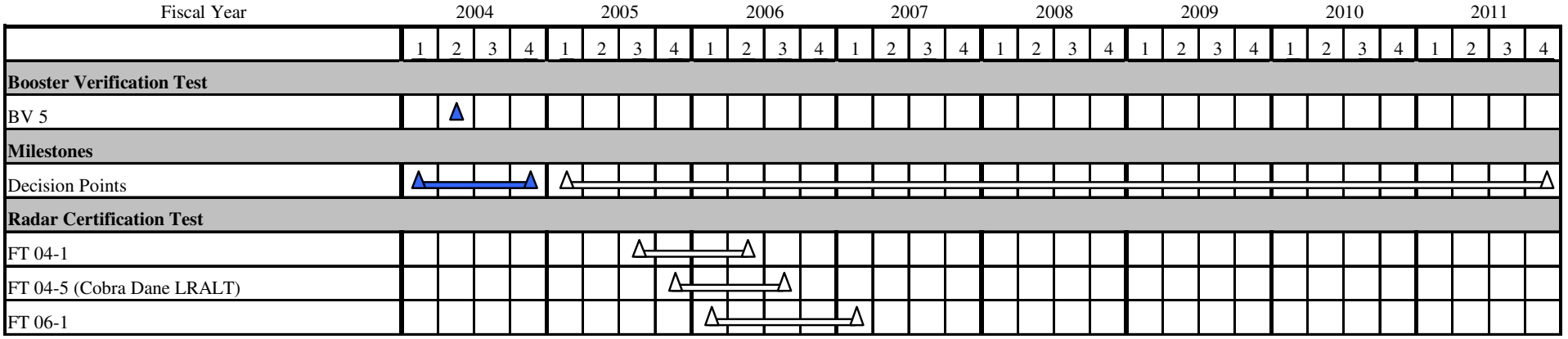
Remarks

The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Flight Tests								
IFT13B	2Q							
IFT13C		1Q						
IFT14		2Q-4Q	1Q					
FTG 04-1		4Q	1Q-3Q					
FTG 04-2			1Q-4Q	1Q				
FTG 06-1 a/b (Salvo Mission)			4Q	1Q-4Q				
FTG 06-2				1Q-4Q	1Q			
FTG 06-5				4Q	1Q-3Q			
FTG 08-1					2Q-4Q	1Q		
FTG 08-2					3Q-4Q	1Q-2Q		
FTG 08-3 a/b (Salvo Mission)					4Q	1Q-3Q		
FTG 08-4						1Q-4Q		
FTG 08-5						3Q-4Q	1Q-2Q	
FTG 08-6						4Q	1Q-3Q	
FTG 10-1							1Q-4Q	
FTG 10-2							3Q-4Q	1Q-2Q
FTG 10-3 a/b (Salvo Mission)							4Q	1Q-3Q
FTG 10-4								1Q-4Q
FTG 10-5								1Q-4Q
FTG 10-6 a/b (Salvo Mission)								1Q-4Q
Booster Verification Test								
BV 5	2Q							
Milestones								
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Radar Certification Test								
FT 04-1		3Q-4Q	1Q-2Q					
FT 04-5 (Cobra Dane LRALT)		4Q	1Q-3Q					
FT 06-1			1Q-4Q	1Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0908 Ground-Based Midcourse Defense (GMD) Block 2008 Development	0	0	73,682	281,000	1,425,476	1,176,220	338,466	213,500
RDT&E Articles Qty	0	0	0	0	38	19	0	0

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the BMDS is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The elements being developed and fielded of the Midcourse segment will comprise most of the critical components in meeting the MDA goals in the near-term.

GMD system capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the GMD system within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the GMD GBI against a target. Consistent with the BMDS block development strategy, additional ESGs are incorporated into blocks as sensor systems become available and after integrated testing and checkout is accomplished in the BMDS Test Bed. Block 2004 includes seven BMDS ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs (Beale and Fylingdales), Engage on Sea-Based X-Band radar, and Launch on Forward-Based X-Band radar. Block 2006 incorporates at least three additional BMDS ESGs (Engage on UEWR (Thule), Launch on DSP/SBIRS, and Engage on Forward-Based X-Band radar (FBX)). Block 2008 incorporates additional BMDS ESGs (Launch/Engage on EO/IR and Launch/Engage on THAAD). Block 2010 will add increased capability for existing BMDS ESGs through incorporation of advanced sensor discrimination, improved hit-to-kill, and more flexible fire control strategies within BMD fire control and C2BMC. ESGs are embedded into GMD Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities including GBI surveillance testing; EKV and GMD fire control upgrades; and improved GBIs enable improvements to all ESGs and increase warfighter confidence.

The Block 2004 and 2006 (Projects 0708 and 0808) will develop and field the IDC and the first upgrades of the BMDS. GMD will build and field the initial infrastructure (both IDC and Test Bed), deploy the initial increment of interceptors (up to 30), and provide for initial sustainment infrastructure for the IDC.

Block 2008 includes the next increment of fielded capability with additional interceptors (up to 10), and an upgraded IUEWR. It also supports the continuing development and testing of new and evolving BMDS technologies. This consists of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS operational alert and Test Bed. These efforts will include Preplanned Product Improvements (P3I) to GMD components and integration of emerging MDA technologies, including enhanced EKV and SBX capabilities, additional GFC capabilities, countermeasures mitigation, multi-sensor fusion, and other midcourse interceptors. This development effort will mature key technologies in logical stages to allow for an enhanced BMDS operational capability and Test Bed (using operationally representative hardware and software vice developmental hardware and software), and a continuing program to develop and demonstrate a wide range of technologies supporting a ground-based “Hit-to-Kill” capability. This effort includes improved integration of SBX and FBX radars, including enhanced discrimination, fire control and data fusion software within GFC, to fully utilize this expanded sensor network. This development effort also provides hardware, planning, mission support and execution of the GMD test program.

Block 2010 further supports the continuing development and testing of new and evolving BMDS technologies. In addition, GMD will expand the BMDS capability by beginning the planning for a third missile site starting in FY07 to be fielded in 2010/2011. Block 2010 also includes the next increment of fielded capability with additional interceptors (up to 10), and upgraded IUEWR.

The flow down of BMDS capability specifications resulting from Systems Engineering efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program Operations Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II - Follow-On (GBI)	0	0	70,682	245,000
RDT&E Articles (Quantity)	0	0	0	0

The Ground-Based Interceptors consists of an Exoatmospheric (EKV) and a booster vehicle. These interceptors will enhance the BMDS capability against long and intermediate range ballistic missile attacks by adding additional interceptors.

FY 2006 Planned Program:

- Initiates acquisition of ten (10) common silos at Fort Greely.
- Initiates acquisition of ten (10) sets of command launch equipment.
- Initiates acquisition of up to five (5) EKVs.
- Initiates acquisition of up to five (5) boosters.

FY 2007 Planned Program:

- Continues acquisition of ten (10) common silos at Fort Greely.
- Continues acquisition of ten (10) sets of command launch equipment.
- Continues acquisition of up to five (5) EKVs.
- Continues acquisition of up to five (5) boosters.
- Initiates acquisition of up to five (5) EKVs.
- Initiates acquisition of up to five (5) boosters.
-

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II - Follow-On (IUEWR)	0	0	0	7,000
RDT&E Articles (Quantity)	0	0	0	0

The Otis IUEWR will provide increased early warning capability for potential threat objects launched from north and east of CONUS. The processor (hardware and software) upgrades the GMD fire control and communications access. Upgrades are planned for completion by FY 2009.

FY 2007 Planned Program:

- Initiates acquisition of long lead IUEWR hardware items.
- Initiates planning / design / environmental process for HW/SW installation.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007
Missile Defense Plan II - Follow-On (RDT&E Construction)	0	0	3,000	29,000
RDT&E Articles (Quantity)	0	0	0	0

This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibit, RDT&E Construction Data.

FY 2006 Planned Program:

- Initiates construction of 10 additional silos at Fort Greely.
- Initiates site facility designs for the Otis I-UEWR.

FY 2007 Planned Program:

- Continues construction of 10 additional silos at Fort Greely.
- Continues construction for the Otis I-UEWR.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

GMD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks and spiral upgrades. The Department has structured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial GMD parts of the BMDS NLT DEC 2004, while continuing RDT&E work and spiral upgrades such that some number of components of GMD will remain part of the BMDS Test Bed even after being fielded as part of the initial capability. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities. The development approach has been enhanced to include (1) adding test infrastructure and improving test management to allow more operationally challenging representative flight tests and providing for increased testing against more challenging targets, and (2) increasing the fidelity of the project simulations.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Missile Defense Plan II - Follow-On (GBI)										
GBIs	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	0	N/A	50,000	1/2Q	154,000	1/2Q	204,000
Expansion	SS/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	0	N/A	20,682	1/2Q	91,000	1/2Q	111,682
Missile Defense Plan II - Follow-On (IUEWR)										
	SS/CPAF	Boeing/ AL/AZ/CA	0	0	N/A	0	N/A	7,000	1/2Q	7,000
Subtotal Product Development			0	0		70,682		252,000		322,682

Remarks

The Prime Contract is not definitized for the restructured Ground-based Midcourse Defense capability-based acquisition strategy, therefore the funding breakouts shown above are estimates. When definitized, the Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Missile Defense Plan II - Follow-On (RDT&E Construction)										
	MIPR	USACOE/ AK	0	0	N/A	3,000	N/A	29,000	1/2Q	32,000
Subtotal Support Costs			0	0		3,000		29,000		32,000

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Remarks

The Prime Contract is not definitized for the restructured Ground-based Midcourse Defense capability-based acquisition strategy, therefore the funding breakouts shown above are estimates. When definitized, the Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										

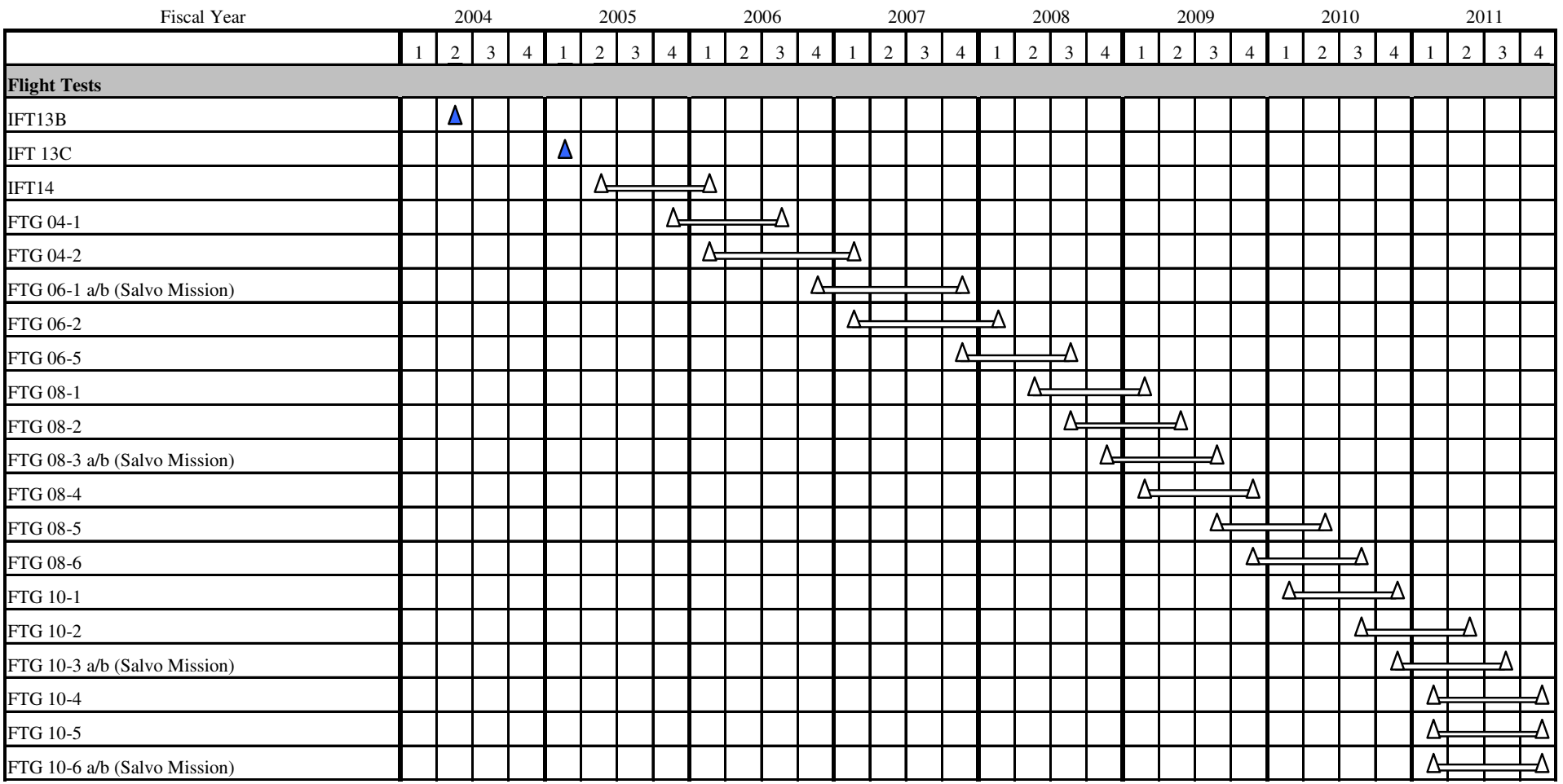
Remarks

Project Total Cost			0	0		73,682		281,000		354,682

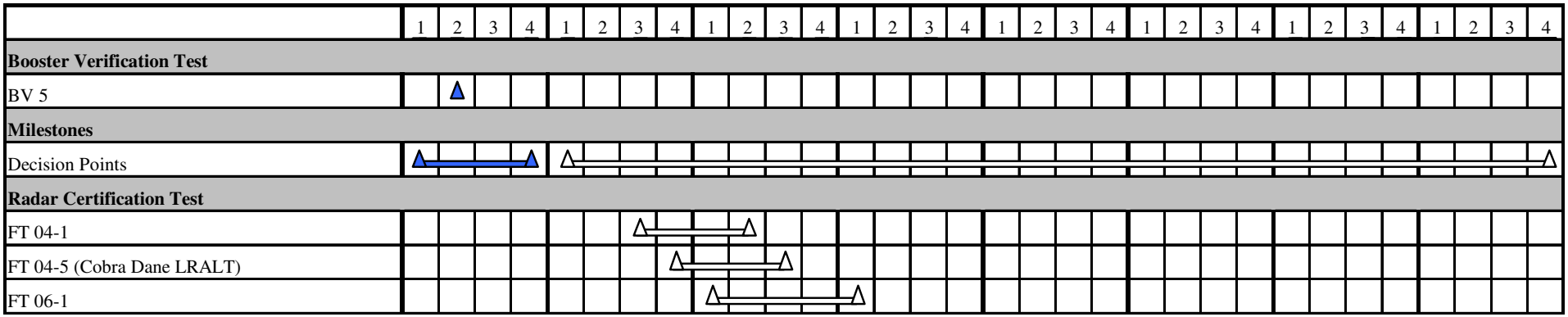
Remarks

The Prime Contract is not definitized for the restructured Ground-based Midcourse Defense capability-based acquisition strategy, therefore the funding breakouts shown above are estimates. When definitized, the Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Flight Tests								
IFT13B	2Q							
IFT 13C		1Q						
IFT14		2Q-4Q	1Q					
FTG 04-1		4Q	1Q-3Q					
FTG 04-2			1Q-4Q	1Q				
FTG 06-1 a/b (Salvo Mission)			4Q	1Q-4Q				
FTG 06-2				1Q-4Q	1Q			
FTG 06-5				4Q	1Q-3Q			
FTG 08-1					2Q-4Q	1Q		
FTG 08-2					3Q-4Q	1Q-2Q		
FTG 08-3 a/b (Salvo Mission)					4Q	1Q-3Q		
FTG 08-4						1Q-4Q		
FTG 08-5						3Q-4Q	1Q-2Q	
FTG 08-6						4Q	1Q-3Q	
FTG 10-1							1Q-4Q	
FTG 10-2							3Q-4Q	1Q-2Q
FTG 10-3 a/b (Salvo Mission)							4Q	1Q-3Q
FTG 10-4								1Q-4Q
FTG 10-5								1Q-4Q
FTG 10-6 a/b (Salvo Mission)								1Q-4Q
Booster Verification Test								
BV 5	2Q							
Milestones								
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Radar Certification Test								
FT 04-1		3Q-4Q	1Q-2Q					
FT 04-5 (Cobra Dane LRALT)		4Q	1Q-3Q					
FT 06-1			1Q-4Q	1Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0008 Ground-Based Midcourse Defense (GMD) Block 2010	0	0	0	188,885	717,000	654,831	1,557,354	1,349,209
RDT&E Articles Qty	0	0	0	0	0	10	38	9

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense System (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. In late 2004 the United States fielded a limited capability to defeat a ballistic missile threat. Continuing through the Future Years Defense Plan (FYDP), the breadth and depth of this initial capability will be expanded by adding and networking forward-deployed sensors, interceptors at sea and on land, and layers of increasingly capable weapons and sensors. Today's MDA activities are focused on six objectives: 1) complete development, fielding, and transition to alert of Block 2004; 2) provide warfighter support and sustainment for BMDS; 3) develop a totally integrated BMDS for Block 2006 and beyond; 4) improve the BMD system through incremental improvements and Block upgrades over time; 5) conduct an increasingly robust integrated test program concurrent with operations; and 6) build an international foundation for missile defense.

The Ground-Based Midcourse (GMD) segment of the BMDS is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The elements being developed and fielded of the Midcourse segment will comprise most of the critical components in meeting the MDA goals in the near-term.

GMD system capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the GMD system within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the GMD GBI against a target. Consistent with the BMDS block development strategy, additional ESGs are incorporated into blocks as sensor systems become available and after integrated testing and checkout is accomplished in the BMDS Test Bed. Block 2004 includes seven BMDS ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs (Beale and Fylingdales), Engage on Sea-Based X-Band radar, and Launch on Forward-Based X-Band radar (FBX)). Block 2006 incorporates at least three additional BMDS ESGs (Engage on UEWR (Thule), Launch on DSP/SBIRS, and Engage on Forward-Based X-Band radar (FBX)). Block 2008 incorporates additional BMDS ESGs (Launch/Engage on EO/IR and Launch/Engage on THAAD). Block 2010 will add increased capability for existing BMDS ESGs through incorporation of advanced sensor discrimination, improved hit-to-kill, and more flexible fire control strategies within GMD fire control and C2BMC. ESGs are embedded into GMD Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities including GBI surveillance testing; EKV and GMD fire control upgrades; and improved GBIs enable improvements to all ESGs and increase warfighter confidence.

The Block 2004 and 2006 (Projects 0708 and 0808) will develop and field the IDC and the first upgrades of the BMDS. GMD will build and field the initial infrastructure (both IDC and Test Bed), deploy the initial increment of interceptors (up to 20) and the next increment of interceptors (up to 10), and provide for initial sustainment infrastructure for the IDC.

Block 2008 supports the continuing development and testing of new and evolving BMDS technologies, and the next increment of additional interceptors (up to 10). This consists of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS operational alert and Test Bed. These efforts will include Preplanned Product Improvements (P3I) to GMD components and integration of emerging MDA technologies, including enhanced EKV and SBX capabilities, additional GFC capabilities, countermeasures mitigation, multi-sensor fusion, and other midcourse interceptors. This development effort will mature key technologies in logical stages to allow for an enhanced BMDS operational capability and Test Bed (using operationally representative hardware and software vice developmental hardware and software), and a continuing program to develop and demonstrate a wide range of technologies supporting a ground-based Hit-to-Kill capability. This effort includes improved integration of SBX and FBX radars, including enhanced discrimination, fire control and data fusion software within GFC, to fully utilize this expanded sensor network. This development effort also provides hardware, planning, mission support and execution of the GMD test program.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Block 2010 further supports the continuing development and testing of new and evolving BMDS technologies. In addition, GMD will begin to expand the BMDS capability by beginning the planning for a third missile site. Block 2010 also includes the next increment of fielded capability with additional interceptors (up to 10), for either the Third Site or aging inventory at Fort Greely, AK, and upgraded IUEWR.

The flow down of BMDS capability specifications resulting from system engineering efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program Operations Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
GBI Capability & Third Site	0	0	0	188,885
RDT&E Articles (Quantity)	0	0	0	0

FY 2007 Planned Program:

- Initiates acquisition of up to 5 EKVs.
- Initiates acquisition of up to 5 boosters.
- Initiates geo-technical site survey location studies for a possible third interceptor launch site.
- Initiates planning for third site launch complex.
- Conduct environmental, safety and health management analyses/documentation and compliance.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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GMD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks and spiral upgrades. The Department has structured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial GMD parts of the BMDS NLT DEC 2004, while continuing RDT&E work and spiral upgrades such that some number of components of GMD will remain part of the BMDS Test Bed even after being fielded as part of the initial capability. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities. The development approach has been enhanced to include (1) adding test infrastructure and improving test management to allow more operationally challenging representative flight tests and providing for increased testing against more challenging targets, and (2) increasing the fidelity of the project simulations.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
GBI Capability & Third Site										
Third Site	C/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	0	N/A	0	N/A	146,750	1/2Q	146,750
GBI`s	C/CPAF	Boeing/ AL/AK/AZ/CA/ CO/TX/VA	0	0	N/A	0	N/A	42,135	1/2Q	42,135
Subtotal Product Development			0	0		0		188,885		188,885

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Support Costs			0	0		0		0		0

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

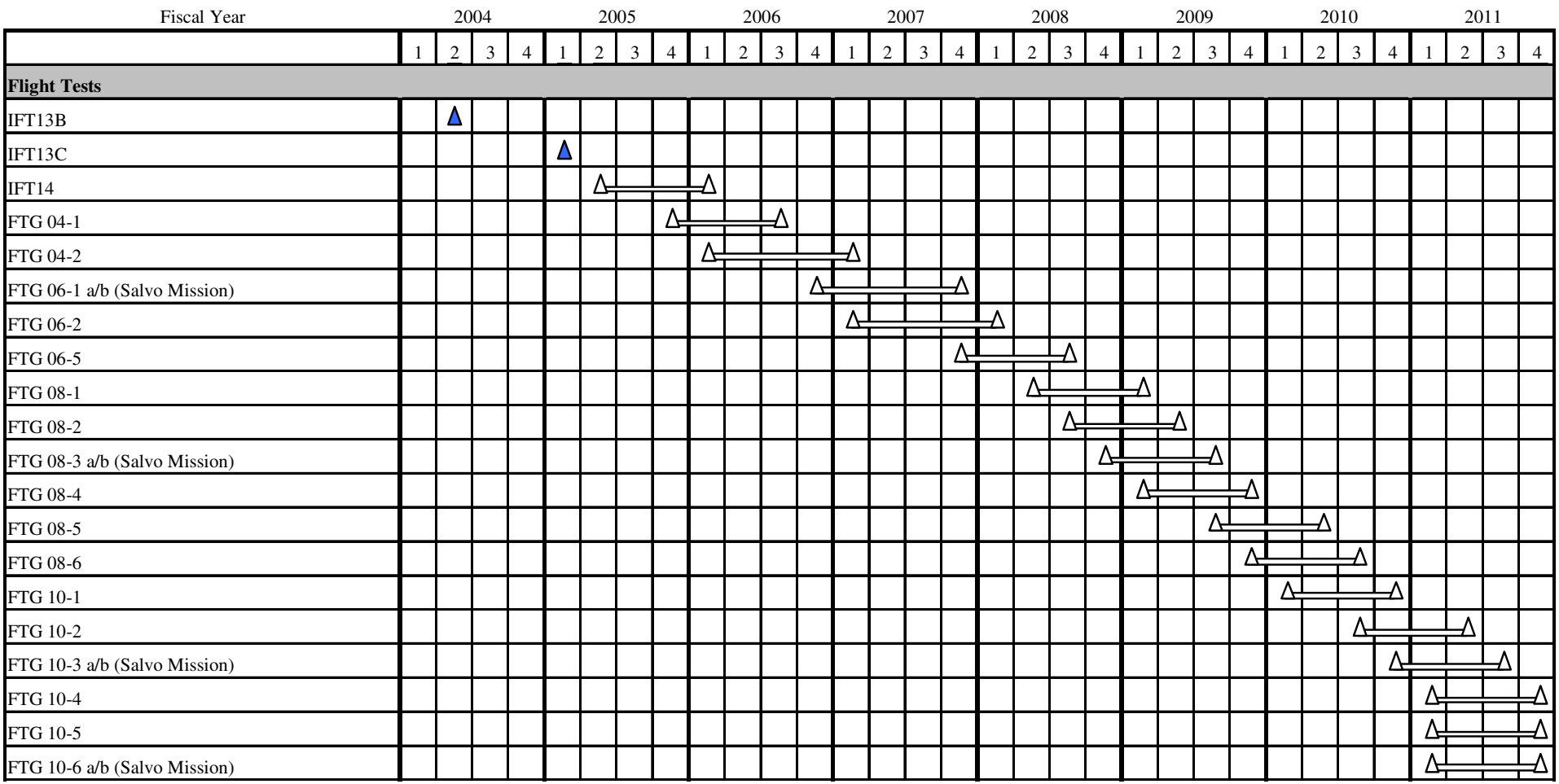
Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

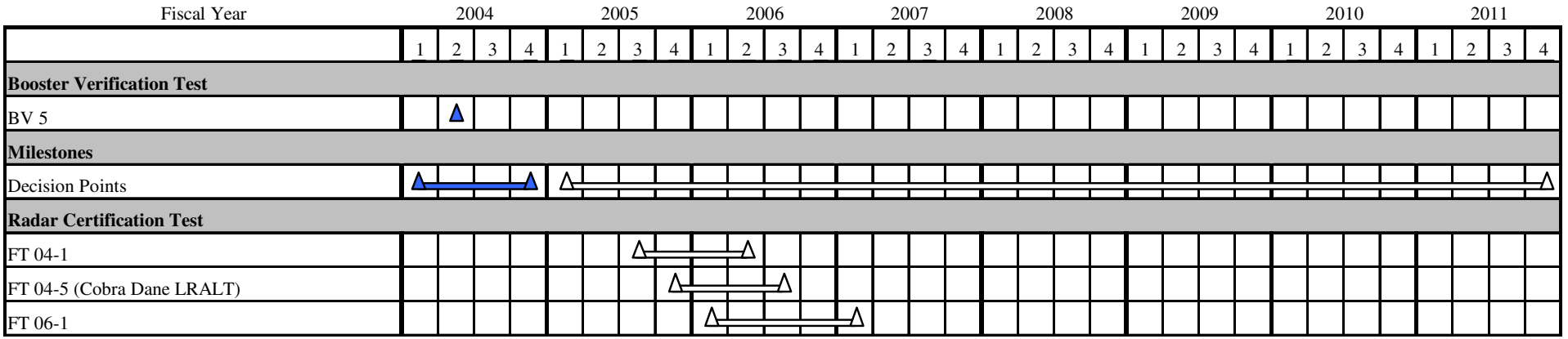
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		0		188,885		188,885
Remarks										

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Flight Tests								
IFT13B	2Q							
IFT13C		1Q						
IFT14		2Q-4Q	1Q					
FTG 04-1		4Q	1Q-3Q					
FTG 04-2			1Q-4Q	1Q				
FTG 06-1 a/b (Salvo Mission)			4Q	1Q-4Q				
FTG 06-2				1Q-4Q	1Q			
FTG 06-5				4Q	1Q-3Q			
FTG 08-1					2Q-4Q	1Q		
FTG 08-2					3Q-4Q	1Q-2Q		
FTG 08-3 a/b (Salvo Mission)					4Q	1Q-3Q		
FTG 08-4						1Q-4Q		
FTG 08-5						3Q-4Q	1Q-2Q	
FTG 08-6						4Q	1Q-3Q	
FTG 10-1							1Q-4Q	
FTG 10-2							3Q-4Q	1Q-2Q
FTG 10-3 a/b (Salvo Mission)							4Q	1Q-3Q
FTG 10-4								1Q-4Q
FTG 10-5								1Q-4Q
FTG 10-6 a/b (Salvo Mission)								1Q-4Q
Booster Verification Test								
BV 5	2Q							
Milestones								
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Radar Certification Test								
FT 04-1		3Q-4Q	1Q-2Q					
FT 04-5 (Cobra Dane LRALT)		4Q	1Q-3Q					
FT 06-1			1Q-4Q	1Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0709 AEGIS Ballistic Missile Defense Block 2004	605,993	942,975	101,177	15,000	0	0	0	0
RDT&E Articles Qty	6	25	5	0	0	0	0	0

Note:
The following guidelines were used in counting the Aegis BMD RDT&E Articles:

- Missiles, targets, and ship modifications are shown in this budget exhibit in their fiscal year of delivery.
- Aegis BMD computer program deliveries are shown as a single unit delivery in the fiscal year the Engineering Assessment (EA) is conducted.
- SM-3 deployment missiles and shipsets are considered to be Block 04 if they deliver in CY04 or CY05.

Block 2004 funding is split between Research & Development and Deployment as follows:

Research & Development:

- FY04 $521.6M
- FY05 $709.4M
- FY06 $91.2M
- FY07 $0.0M

Deployment:

- FY04 $84.4M
- FY05 $233.6M
- FY06 $0.0M
- FY07 $0.0M

Operations & Support:

- FY04 $0.0M
- FY05 $0.0M
- FY06 $10.0M
- FY07 $15.0M

A. Mission Description and Budget Item Justification

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable Ballistic Missile Defense Capability in Aegis cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by creating synergy with other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral improvements as part of BMDS block upgrades.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System. Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:

- In all regions in locations within range of international waters by providing surveillance, tracking, and engagement capabilities. Japan, and possibly other countries, will deploy Aegis BMD.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against all ranges:
  - Against long range ballistic missiles by providing surveillance and tracking support as part of the Block 04 Initial Defensive Operations (IDO).
  - Against short and medium range ballistic missiles by providing engagement support as part of Block 04.
  - Against intermediate range ballistic missiles by providing engagement support as part of Block 2006 and Block 2008.

Aegis BMD supports IDO by providing Long Range Surveillance and Track (LRS&T) data to other elements of the BMDS. Aegis BMD will further improve both national and international security with its ability to launch STANDARD Missile 3 (SM-3) missiles based upon autonomous data and upon data received via the Tactical Digital Information Link Joint (TADIL-J) network. Through development and fielding of the Aegis BMD Signal Processor and upgrades to the SM-3 Block IA missile in Block 06/08, Aegis BMD will significantly improve discrimination capability and performance against more diverse and longer range threats.

In collaboration with the MDA systems engineer, Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). Aegis BMD supports an autonomous engagement against Short Range Ballistic Missiles (SRBMs) and Medium Range Ballistic Missiles (MRBMs) without requiring external cueing. It supports an engagement against SRBMs and MRBMs using cueing data from other BMDS elements and external sensors. Aegis BMD will also provide target track data to support Ground Based Interceptor Launch and Engagement against Long Range Ballistic Missiles (LRBMs) and Intermediate Range Ballistic Missiles (IRBMs) via input for the Ground-based Midcourse Defense (GMD) Sensor Task Plan (STP) and Weapons Task Plan (WTP). In addition, Aegis BMD will be able to launch or engage with its SM-3 based on target data provided by external sensors.

The Aegis BMD Block 2004 program will:

- Defeat unitary and separating targets (SRBMs and MRBMs) with Aegis BMD configured cruisers and destroyers using STANDARD Missile -3 (SM-3 Blk I/IA) guided missiles.
- Provide Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the BMDS to the GMD element to cue and initiate GMD fire control Weapons Task Plans.
- Expand the engagement battle space by using remote sensor data delivered via the TADIL-J network.
- Supply Aegis BMD operational data to the BMDS C2BMC Element to support Combatant Commander situational awareness.
- Provide a system that can be used operationally or as a testbed.

The Aegis BMD Block 2004 program develops three incremental capabilities:

- LRS&T (BMD 3.0E computer program) support as part of IDO;
- A preliminary engagement capability (BMD 3.0 with SM-3 Blk I) for test bed operations and for emergency use, if required; and
- A BMD capability that combines the engagement capability with the LRS&T capability integrated with the Navy's multi mission Aegis Combat System (BMD 3.1 with SM-3 Blk I/IA). The final Block 2004 is fully compliant with the Element Capability Specification.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Weapon System Engineering	555,149	819,193	91,177	0
RDT&E Articles (Quantity)	4	18	5	0

FY 2004 Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (1), Aegis destroyers configured with BMD 3.0E (2), BMD 3.0E Computer Program (1)

Aegis Weapon System (AWS)

For Initial Defensive Operations (IDO) Long Range Surveillance and Track(LRS&T) Capability:

- Completed definition and verification of C2BMC requirements and objectives including BMDS interface control specifications for Aegis BMD to GMD engagement sequence group.
- Completed surveillance and tracking (SURV 1.2) testbed capability for initial BMDS test and data collection as a risk reduction to IDO.
  - Configured selected Aegis BMD destroyers with Surveillance and Tracking test configuration (SURV 1.2) for integrated flight tests and training.
  - Collected surveillance and tracking data, evaluated algorithms, and verified BMDS communications paths in IGT2 and PACEX II tests.
  - Conducted a live tracking event in a multiple warfare operational environment and exercised the Aegis BMD Weapon System role in supporting a BMDS Engagement Sequence in PACEX III.
- Delivered Long Range Surveillance & Tracking capability in support of BMDS IDO configuration.
  - Completed Common Data Link Management System (CDLMS) V3.3 development required to incorporate BMD data link functionality.
  - Integrated CDLMS V3.3 with BMD 3.0E to support Aegis BMD IDO Command and Control (C2) architecture.
  - Completed algorithm development and design coding of the BMD 3.0E computer program.
  - Completed Joint Tactical Terminal (JTT) integration with BMD 3.0E which provides the data path for space cues to Aegis BMD.
  - Completed Engineering Assessment (to formally characterize the performance of BMD 3.0E as the basis for government acceptance) and computer program authorization for BMD 3.0E.
  - Obtained concurrence for fielding and deployment of BMD 3.0E at the System Software Safety Technical Review Panel and Weapon System Explosive Safety Review Board reviews.
  - Installed BMD 3.0E on two operational Aegis destroyers, meeting the intent of National Security Presidential Directive (NSPD) 23.
  - Completed initial training, logistics and operational concept support necessary to support the IDO mission.
- Incorporated BMD 3.0E into the BMDS IDO configuration.
  - Provided tactical messages to assess BMDS performance during IGT-2 with BMD 3.0E functionality (high fidelity simulation) and IGT-4 with BMD 3.0E computer program.
  - Characterized and verified Aegis BMD interfaces and interoperability to BMDS during Missile Defense Integration Exercise (MDIE) 04A (SURV 1.2) and MDIE 04B (BMD3.0E).
  - Demonstrated Aegis BMD's role in a midcourse engagement sequence using BMD 3.0E during PACEX IV.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

For emergency engagement capability:

- Completed Aegis LEAP Intercept (ALI) testbed for initial Aegis BMD engagement capability.
  - Configured Aegis cruiser for participation in FM-6.
- Neared completion of the Aegis BMD 3.0 computer program in preparation for a December 2004 Engineering Assessment.
- Conducted engineering test and evaluation and multi-element integration testing and verification of the BMD 3.0 computer program.
- Conducted BMD 3.0 Test Procedures Review (TPR) prior to commencing Combat Systems Engineering Development Site (CSEDS) testing.
- Began testing BMD 3.0 at CSEDS, integrating the computer program with a live radar.
- Completed BMD 3.0 ship installation designs.
- Initiated BMD 3.0 installation on one Aegis cruiser in support of FTM 04-1 (FM 7).

For Block 2004:

- Approved the BMD 3.1 system design at the successfully completed System Design Disclosure (SDD).
- Began computer program development of the BMD 3.1.
- Upgraded high fidelity simulation tools to BMD 3.1 functionality and performed system analysis to improve BMD 3.1 and BMDS capability.
- Developed plan for integration of CDLMS V3.4 into BMD 3.1 to accomplish multiple satellite paths (UHF, SHF, and EHF) for improved BMDS interoperability.
- Initiated BMD 3.1 ship installation design activities.
- Completed Joint Tactical Terminal ship installation plan for Block 04 cruisers.
- Assessed open multi-mission computer program issues and defined scope of effort for BMD 3.1 to enhance operational performance.
- To incorporate Short Range Ballistic Missile functions into BMD 3.1:
  - Implemented low exo-atmospheric intercept guidance control changes by developing ship system algorithms and software coding changes.
  - Modified models and simulation tools to support the Weapon System and SM-3 missile changes for the low exo-atmospheric intercept capability.
  - Modified SM-3 Third Stage Guidance Control and Rocket Motor pulse management algorithms to support the low exo-atmospheric intercept.

Vertical Launching System (VLS):

For emergency engagement capability:

- Addressed plans for the canister forward cover to support SM-3 Block I missiles at the Mk 41 VLS Phase I In-Process Review
- Completed Formal Qualification Testing of Mk 41 VLS computer program, Vertical Launching System/Global Positioning System Integration (VGI), and test equipment.
- Conducted Mk 41 VLS Phase I Critical Design Review for approval of VGI design, Mk 41 VLS software, and test requirements.
- Refurbished and procured Mk 21 Mod 2 canisters for SM-3 Blk I missiles.

For Block 2004:

- Addressed pressure and thermal requirements on the Mk 41 VLS and Mk 21 Mod 2 canister to support the deployment of the SM-3 guided missile.
- Demonstrated that the Mk 41 VLS upgrades support BMD 3.1 and the SM-3 missile at the Mk 41 VLS Phase II System Requirements Review.
- Approved proceeding to detailed design of the Mk 41 VLS Phase II at the Preliminary Design Review.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Completed the engineering development for implementation of Selective Availability Anti-Spoofing Module (SAASM)/crypto key capability for the Vertical Launching System/Global Positioning System Integration (VGI) to support SM-3 requirements.
- Proceeding with VGI upgrades for SAASM/crypto and engineering development of VLS Phase 2 capability for ``any missile, any cell`` multi-mission capability.
- Identified circuit card assembly part obsolescence issues and developed mitigation plan.
- Initiated VLS/NAVSSI interface requirements in support of missile initialization requirements.

Missile:

For emergency engagement capability:

- Conducted ``permit-to-ship`` configuration review to qualify the SM-3 round to meet FM-6 test objectives.
- Demonstrated ability of SM-3 to intercept a ballistic missile with the Kinetic Warhead (KW) performing aimpoint shift during FM-6.
- Completed SM-3/VLS initial VGI integration testing to ensure interface integrity.
- Completed SM-3 Blk I Electromagnetic Interference (EMI) compliance testing for shipboard compatibility.
- Completed SM-3 Blk I In-Process Review (IPR) to review fabrication and assembly status.
- Continued Virtual Operational Missile (VOM) integration at CSEDS to verify missile-to-weapon system interfaces and integrity.
- Completed Hazard of Electronic Radiation on Ordnance (HERO) analysis for SM-3 Blk I configuration.
- Completed Hazard Assessment and Safety tests for SM-3 Blk I configuration (40 foot drop test, slow cook off, transportation, shipboard vibration, and temperature/humidity tests).
- Delivered all sections of five SM-3 Block I missiles to White Sands Missile Range (WSMR) for all-up-round assembly.
- Began fabrication of sections for an additional six SM-3 Blk I missiles
- Completed 80% of initial non-recurring engineering preparation for rate manufacturing of SM-3 components in Tucson AZ, Elkton MD, Canoga Park CA, Tempe AZ, and Camden AR.
- Completed first phase of missile assembly training for Camden Arkansas personnel.
- Initiated support of flight mission analysis (FTM 04-1) in preparation of Mission Control Panel concurrence
  - Completed pre-flight 6 degree of freedom and Monte Carlo performance analysis for FTM 04-1.

For Block 2004:

- Gained approval to continue with detailed design and ground tests of the pulse capable Solid Divert Attitude Control System (SDACS) at the completed SDACS Blk IA Preliminary Design Review (PDR).
- Initiated SM-3 hardware/software integration testing for Block 2004 capability.
- Completed SM-3 Blk IA performance assessment to support requirement compliance of the design.
- Supported the SM-2 Value Engineering Change Proposal (VECP) flight test analysis to incorporate VECPs into the SM-3 Blk IA to extend the SM-3 Blk IA the service life requirements.
- Completed the SM-3 Blk IA System Requirements Review (SRR) that delineated requirements flow from SM-3 ``All-Up-Round`` level to component level.
- Established a Joint Service Insensitive Munitions (IM) technical panel review approval process to obtain IM approval from the Joint Requirements Oversight Council (JROC).
- Completed the nosecone rain erosion test at Holloman AFB to ensure the nosecone meets system requirements.
- Completed most component level Critical Design Reviews (CDR) for the SM-3 Blk IA configuration to support the ``All-Up-Round`` CDR.
- Continued SM-3 ``All-Up-Round`` obsolete material replacement development effort.
- Completed End To End Distributed Development System (ETEDDS) link to Aegis Weapon System (at CSEDS) to verify interfaces and performance.
- Continued Third Stage Rocket Motor (TSRM) obsolete material replacement development and verification tests.
- Completed All-Up-Round design and construction modifications for extended shelf life.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Initiated test equipment modifications and facility upgrades to expand missile delivery throughput.
- Procured long lead material for initial twelve Blk IA missiles with delivery beginning in FY06.

FY 2005 Planned Accomplishments:

RDT&E Articles: SM-3 Block 1 Missiles (8), BMD 3.0 Computer Program (1), Aegis BMD Cruiser (2), Surveillance and Tracking Aegis Destroyers (7)
Aegis BMD Weapon System:

For Initial Defensive Operations(IDO)(LRS&T Capability):

- Install BMD 3.0E LRS&T capability on seven (7) additional Aegis destroyers.
- Continue crew training in support of installations.
- Monitor the operational performance of the BMD 3.0E computer program.
  - Identify, prioritize, and develop plans to incorporate changes in final Block 04 delivery.
  - Respond to Fleet issues
- Participate in Aegis BMD and other BMDS test events to collect and analyze ballistic missile tracking data.
- Update C2BMC interface control specifications requirements with other elements of the BMDS.

For emergency engagement capability:

- Complete and deliver the emergency engagement capability, BMD 3.0.
  - Complete testing BMD 3.0 at the Combat Systems Engineering Development Site (CSEDS).
  - Obtain concurrence for fielding and deployment of BMD 3.0 at the System Software Safety Technical Review Panel and Weapon System Explosive Safety Review Board reviews.
  - Conduct BMD 3.0 Engineering Assessment to formally characterize the performance of BMD 3.0 as the basis for government acceptance.
  - Complete authorization of BMD 3.0 computer program.
  - Complete BMD 3.0 installations on two (2) cruisers for testbed and potential deployment.
- Conduct waterfront integration testing.
- Achieved Integrated Logistic Support (ILS) Certification for BMD 3.0.
- Conduct crew training for operation and maintenance of BMD 3.0.
- Characterize operational performance of BMD 3.0 in an At-Sea Demonstration.

For Block 2004:

- Collect data on separating targets, develop algorithm modifications, and test of the BMD 3.1 computer program in advance of an FY06 Engineering Assessment.
- Begin multi-element integration and testing of BMD 3.1.
- Begin CSEDS testing of BMD 3.1 and prepare for the Engineering Assessment.
- Improve C2BMC interface control specifications requirements with other BMDS elements.
- Complete trade study of a tactical missile-to-ship telemetry receiving system to support real time Kill Assessment.
- Complete risk reduction for integration of CDLMS 3.4 into BMD 3.1 to accomplish multiple satellite data paths (UHF, SHF, and EHF) for improved BMDS interoperability.
- Completed BMD 3.1 ship installation design effort.

- Complete modifications to engagement models and simulations to account for the low exo-atmospheric intercept firing test.
- Achieved Integrated Logistic Support (ILS) certification for BMD 3.1.

Vertical Launching System (VLS):

For emergency engagement capability:

- Conduct Mk 41 VLS Phase I system ground tests.
- Install the Mk 41 VLS Phase I modifications to support flight missions.
- Procure Mk 21 Mod 2 VLS canisters for SM-3 Blk I missiles.

For Block 2004:

- Conduct Mk 41 VLS Phase II Critical Design Review (BMD 3.1).
- Complete development of a multi-mission Mk 41 VLS capability as part of BMD 3.1.
- Conduct ground tests of Aegis BMD multi-mission Mk 41 VLS capability.
- Continue circuit card assembly re-design for parts obsolescence.
- Complete Mk 41 VLS Ordnance Alteration Kits.
- Procure Mk 21 Mod 2 VLS canisters for SM-3 Blk IA missiles.
- Complete VLS/NAVSSI Interface design effort

Missile:

For emergency engagement capability:

- Participate in Flight missions with SM-3 Blk I missiles.
  - Complete Pre-Flight analysis to verify scenarios and performance assessment.
  - Prepare and complete missile delivery package for the Mission Control Panel reviews.
  - Perform Post-Flight analysis to validate high fidelity simulations.
  - Conduct post test analysis to support Mission Data Reviews (MDRs).
  - Perform analysis and required update changes to SM-3 Blk I Hardware/Software (HW/SW) based on FTM results.
- Perform analysis to support Block 2004 capability assessments required to support BMDS level capability reviews.
- Validate interface compliance for missile pre-launch and in-flight support by completing weapon systems integration testing at CSEDS
- Deliver the five SM-3 Blk I Initial Deployment Rounds.
- Complete assembly and deliver three additional SM-3 Blk I missiles initiated in FY 2004. The remaining three Blk I missiles will be delivered in FY 2006

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

For Block 2004:

- Complete 90% of SM-3 Blk IA HW/SW integration testing to validate requirement for electrical and mechanical interfaces.
- Conduct SM-3 Blk IA Hazard Assessment and Safety compliance tests. (bullet impact and fragment impact)
- Complete SM-3 Blk IA HERO Test.
- Complete SM-3 Value Engineering Change Proposal (VECP) implementation efforts to ensure service life requirement compliance.
- Conduct SM-3 Blk IA design verification tests (i.e., Live Battery, Battery Qualification, EMI etc) to ensure design requirement compliance and margin assessment.
- Complete Third Stage Rocket Motor obsolete material replacement design verification tests.
- Complete SDACS pulse capability engineering, design verification and qualification (environment and safety) tests.
- Gain approval to proceed with the SM-3 Blk IA hardware/software development by completing the Critical Design Review (CDR).
- Continue to monitor ``All-Up-Round`` obsolete material replacement effort.
- Complete initial non-recurring engineering preparation for rate manufacturing of SM-3 components in Tucson AZ, Elkton MD, Canoga Park CA, Tempe AZ, and Camden AR.
- Begin fabrication of sections for first 12 SM-3 Blk IA missiles.
- Procure Long Lead Material (LLM) for additional SM-3 Blk IA Missiles.

FY 2006 Planned Program:

RDT&E articles: Aegis DDGs configured with BMD 3.0E (1), Aegis BMD 3.1 CG (1), SM-3 Blk I missiles (2), SM-3 Blk IA missile (1).

Aegis BMD Weapon System:

For LRS&T:

- Install BMD 3.0E (LRS&T) on one (1) Aegis Destroyer
- Monitor the operational performance of the BMD 3.0E LRS&T Aegis destroyers.
- Participate in Aegis BMD flight missions and other BMDS test events.

For emergency engagement capability:

- Install BMD 3.1 on one (1) Aegis Cruiser
- Provide BMD 3.0 support on operational Aegis cruisers for testbed operations and emergency deployment.

For Block 2004:

- Complete development of BMD 3.1 Weapon System.
  - Complete integration of CDLMS V3.4 into BMD 3.1 to accomplish multiple satellite data paths (UHF, SHF, and EHF) for improved BMDS interoperability.
  - Complete multi-element integration and testing of BMD 3.1.
  - Formally characterize the performance of BMD 3.1, as the basis for government acceptance, by conducting the BMD 3.1 Engineering Assessment. (Actual delivery occurs in CY06, and is captured under Block 2006, Project 0809).

- Gain approval for fielding BMD 3.1 at the SSSTRP and WSESRB reviews.
- Conduct waterfront integration testing of BMD 3.1.
- Conduct At-Sea Demonstration of BMD 3.1 to characterize operational performance.
- Participate in Flight Mission to demonstrate the low exo-atmospheric intercept capability.
- Participate in other Aegis BMD flight missions and other BMDS test events.
- Continue to participate in the improvement of C2BMC interface control specifications requirements with other BMDS elements.
- Achieve Integrated Logistic Support (ILS) support for BMD 3.1 Aegis Destroyers
- Install engineering load of the BMD 3.1 computer program on an Aegis cruiser to support a missile firing as part of the certification of BMD 3.1

Vertical Launching System:

Emergency engagement capability:

- Provide BMD 3.0 support on operational Aegis cruisers for testbed operations and emergency deployment.
- Support Mk 41 VLS Phase I software and hardware during the transition to Mk 41 VLS Phase II implementation.

Block 2004:

- Test the Mk 41 VLS Phase II system in ground tests.
- Field the Mk 41 VLS Phase II to support SM-3 Blk IA missile deployments and implement the ``any missile, any cell`` multi-mission capability.

Missile:

For Block 2004:

- Participate in FTM 06-1 (FM-10) and FTM 06-3 (FM-11)
  - Complete Pre-Flight analysis to verify scenarios and performance assessment.
  - Prepare and complete missile delivery package for the Mission Control Panel reviews.
  - Perform Post-Flight analysis to validate high fidelity simulations.
  - Conduct post test analysis to support Mission Data Reviews (MDRs)
  - Perform analysis and required update changes to SM-3 Blk I Hardware/Software (HW/SW) based on FTM results.
- Complete SM-3 Blk IA Hazard Assessment and Safety compliance tests.
- Complete SM-3 Blk IA design verification tests (i.e., Live Battery, Battery Qualification, EMI etc) to ensure design requirement compliance and margin assessment.
- Complete test equipment modifications and facility upgrades to expand missile delivery throughput.
- Monitor All Up Round obsolete material replacement effort.
- Complete assembly and delivery of two (2) SM-3 Blk I missiles and the first SM-3 Blk IA missile

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
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FY 2007 Planned Program:

Aegis BMD Weapon System:

For Block 2004:

- Participate in Aegis BMD flight missions and other BMDS test events.
- Monitor the operational performance of BMD 3.1 Weapon System, if necessary.
- Respond to Fleet issues.

	FY 2004	FY 2005	FY 2006	FY 2007
Test & Evaluation	50,844	123,782	0	0
RDT&E Articles (Quantity)	2	7	0	0

FY 2004 Accomplishments:

RDT&E Articles: Targets/Aegis Readiness Assessment Vehicles (ARAVs) (2)

- Acquired one Group A (SRBM) target for FM-6.
- Conducted FM-6 flight test. Evaluated Aegis BMD support of BMDS engagement capabilities:
  - AWS capability against a Group A target using an SM-3 Block 0 missile.
  - LRS&T support to the BMDS from Aegis cruisers and destroyers.
- Conducted PACEX II to verify TADIL J connectivity between an Aegis destroyer and BMDS. Exercised operational aspects of LRS&T mission using high fidelity LRBM targets and actual fleet forces.
- Procured an ARAV for PACEX III.
- Participated in PACEX III flight mission using an Aegis destroyer with SURV 1.2 to detect and track Ballistic Missiles (simulated), pass Launch Point data via TADIL J, and provide Ballistic Missile Tracks/Status to BMDS and other tactical data link participants.
- Conducted Glory Trip 185.
  - Proved the capability to search and track a long-range multi-stage target;
  - Transmitted track data to BMDS and the Missile Defense Communication and Operations Node (MIDCON) using the LINK 16 tactical data communications network to support the generation of a fire control solution by the GMD fire control system.
- Conducted PACEX IV.
  - Tested the BMDS midcourse engagement sequence functionality using BMD 3.0E.
  - Demonstrated the IDO Aegis destroyer could pass simulated space tracks to other BMDS elements.
- Conducted Missile Defense Integration Exercises (MDIEs) to characterize and verify BMDS interfaces and interoperability with the SURV 1.2 computer program (in MDIE 04A) and BMD 3.0E (in MDIE 04B).
- Initiated acquisition of targets for future flight test operations.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- FY 2005 Planned Accomplishments:

RDT&E Articles: Targets/ARAVs (7)

- Acquire 1 Group A (SRBM) target for FTM 04-1(FM-7), 1 Group B (MRBM) target for FTM 04-2 (FM-8), 1 Group B target for FTM 04-3 (FM-9), and 4 ARAVs for the At-Sea Demonstration 3.0 test event.
- Conduct STELLAR DRAGON campaign consisting of FTM 04-1, and At-Sea Demonstration 3.0:
  - Participate in an ARAV Group A simulated engagement to verify BMD 3.0 ability to track.
  - Conduct FTM 04-1 (FM-7) flight test to verify BMD 3.0 emergency engagement capability with an intercept of a Group A target using an SM-3 Blk I missile.
  - Participate in At-Sea Demonstration 3.0 flight mission using an Aegis destroyer (BMD 3.0E) and Aegis cruiser (BMD 3.0) in a Multi-Warfare Environment. The mission will simulate multiple Group A engagements and a Group B engagement concurrent with exercising Aegis Combat System capabilities in other warfare areas.
- Conduct FTM 04-2 (FM-8) and FTM 04-3 (FM-9) flight tests to verify BMD 3.0 intercept of a Group B target.
- Conduct IFT-13C flight mission, using an Aegis destroyer to provide target-tracking data to other BMDS elements.
- Conduct planning for IFT-14 flight mission, using an Aegis destroyer to provide target-tracking data to other BMDS elements and the SM-3 Kinetic Warhead IR Seeker Captive Carry Test Bed in support of BMDS integration.
- Participate in FTG 04-4a/b (IFT-17/18) flight test, using an Aegis destroyer and/or Aegis cruiser to exercise the system for an IDO threat.
- Conduct Glory Trip 188 LRS&T test event. Will verify the AWS capability to search, detect, and track a long-range multi-stage target; and transmit data using satellite Link 16 to BMDS.

	FY 2004	FY 2005	FY 2006	FY 2007
Operations & Support	0	0	10,000	15,000
RDT&E Articles (Quantity)	0	0	0	0

FY 2006 Planned Program:

- Provide In-Service Engineering support to Aegis BMD elements: including the Aegis Weapon System, SM-3, and Vertical Launching System.
- Provide operational and maintenance training for Aegis BMD ship crews.
- Provide logistics support (including technical manuals, spares, and Reliability, Maintainability, and Availability) for the Aegis BMD elements: including the Aegis Weapon System, SM-3, and Vertical Launching System.

FY 2007 Planned Program:

- Provide In-Service Engineering support to Aegis BMD elements: including the Aegis Weapon System, SM-3, and Vertical Launching System.
- Provide operational and maintenance training for Aegis BMD ship crews.
- Provide logistics support (including technical manuals, spares, and Reliability, Maintainability, and Availability) for the Aegis BMD elements: including the Aegis Weapon System, SM-3, and Vertical Launching System.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

D. Acquisition Strategy

The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has implemented a missile defense acquisition strategy using a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. After considering all the technical and management aspects of the program and to meet the requirements presented by the ballistic missile threat, the Aegis BMD program has awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 missile and Aegis Weapon System, respectively.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapon System Engineering										
AWS	SS/CPIF	Lockheed Martin/ NJ	133,700	190,985	2Q	63,410	1Q	0	N/A	388,095
AWS	FFRDC	MIT/LL/ MA	2,475	2,850	2Q	0	N/A	0	N/A	5,325
AWS	SS/CPFF	JHU/APL/ MD	1,825	5,775	1Q	0	N/A	0	N/A	7,600
AWS	MIPR	NSWC/DD/ VA	11,515	17,321	1Q	4,309	1Q	0	N/A	33,145
AWS	MIPR	MITRE/ VA	550	850	1Q	0	N/A	0	N/A	1,400
AWS	MIPR	NSWC/PHD/ CA	4,855	8,969	1Q	1,380	1Q	0	N/A	15,204
AWS		MDA	1,747	11,839	1Q	2,070	1Q	0	N/A	15,656
AWS	Various	VARIOUS	6,313	12,703	1Q	0	N/A	0	N/A	19,016
MISSILE	SS/CPIF	RAYTHEON/ AZ	286,512	418,125	2Q	17,917	1Q	0	N/A	722,554
MISSILE	SS/CPIF	JHU/APL/ MD	9,905	11,788	2Q	303	2Q	0	N/A	21,996
MISSILE	FFRDC	MIT/LL/ MA	1,000	650	1Q	0	N/A	0	N/A	1,650
MISSILE	MIPR	NSWC/DD/ VA	5,942	10,725	1Q	380	1Q	0	N/A	17,047
MISSILE	MIPR	NSWC/PHD/ CA	5,650	4,015	1Q	217	1Q	0	N/A	9,882
MISSILE	MIPR	WSMR/ NM	0	1,642	1Q	306	1Q	0	N/A	1,948

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
MISSILE	MIPR	NSWC/CD/ CA	2,550	1,618	2Q	0	N/A	0	N/A	4,168
MISSILE	MIPR	NSWC/IH/ MD	1,463	1,550	2Q	0	N/A	0	N/A	3,013
MISSILE	MIPR	NAWC/CL/ CA	855	900	1Q	0	N/A	0	N/A	1,755
MISSILE		MDA/ VA	1,559	23,117	1Q	577	1Q	0	N/A	25,253
MISSILE	Various	VARIOUS/ VARIOUS	4,073	2,207	1Q	308	1Q	0	N/A	6,588
Subtotal Product Development			482,489	727,629		91,177		0		1,301,295

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapon System Engineering										
	SS/CPFF	JHU/APL/ MD	6,634	1,268	2Q	0	N/A	0	N/A	7,902
	SS/CPAF	Lockheed Martin/ NJ	3,000	7,500	2Q	0	N/A	0	N/A	10,500
	MIPR	NSWC/DD/ VA	4,249	7,075	1Q	0	N/A	0	N/A	11,324
	MIPR	NSWC/PHD/ CA	2,707	4,100	1Q	0	N/A	0	N/A	6,807
	MIPR	SPAWAR/ CA	3,484	1,250	1Q	0	N/A	0	N/A	4,734

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
		MDA	811	1,678	1Q	0	N/A	0	N/A	2,489
	MIPR	NAVSEA/ DC	0	3,700	1Q	0	N/A	0	N/A	3,700
	MIPR	SupShip Pascagoula/ MS	525	4,110	1Q	0	N/A	0	N/A	4,635
	MIPR	SupShip Bath/ ME	265	1,700	1Q	0	N/A	0	N/A	1,965
	MIPR	VARIOUS/SSES Philadelphia/ VARIOUS	0	220	1Q	0	N/A	0	N/A	220
Operations & Support										
AWS	MIPR	NSWC/DD/ VA	0	0	N/A	2,500	1Q	3,750	1Q	6,250
AWS	MIPR	NSWC/PHD/ CA	0	0	N/A	2,500	1Q	3,750	1Q	6,250
Missile	MIPR	NSWC/DD/ VA	0	0	N/A	2,500	1Q	3,750	1Q	6,250
Missile	MIPR	NSWC/PHD/ CA	0	0	N/A	2,500	1Q	3,750	1Q	6,250
Subtotal Support Costs			21,675	32,601		10,000		15,000		79,276

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test & Evaluation										
	MIPR	PMRF/ HI	2,060	9,942	1Q	0	N/A	0	N/A	12,002
	C/CPFF	HTS/ CA	1,750	1,540	2Q	0	N/A	0	N/A	3,290
	SS/CPAF	Xontech/ CA	122	2,000	2Q	0	N/A	0	N/A	2,122
	MIPR	NSWC/PHD/ CA	3,479	8,077	1Q	0	N/A	0	N/A	11,556
	MIPR	NAWC/PM/ CA	1,372	6,775	1Q	0	N/A	0	N/A	8,147
	MIPR	NSWC/Corona/ CA	1,034	3,550	1Q	0	N/A	0	N/A	4,584
	MIPR	NSWC/DD/ VA	6,141	14,165	1Q	0	N/A	0	N/A	20,306
	MIPR	CINPACFLT/ HI	0	2,650	1Q	0	N/A	0	N/A	2,650
	SS/CPFF	JHU/APL/ MD	7,315	12,767	2Q	0	N/A	0	N/A	20,082
	MIPR	SMDC/ AL	260	4,410	1Q	0	N/A	0	N/A	4,670
	MIPR	SPAWAR/ CA	1,113	6,004	1Q	0	N/A	0	N/A	7,117
	MIPR	DOI/ DC	0	1,210	1Q	0	N/A	0	N/A	1,210
	MIPR	MDAO	17,300	32,000	1Q	0	N/A	0	N/A	49,300
	Various	VARIOUS/ VARIOUS	1,668	6,945	1Q	0	N/A	0	N/A	8,613

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	WSMR/ CA	5,685	5,350	1Q	0	N/A	0	N/A	11,035
		MDA	0	6,397	1Q	0	N/A	0	N/A	6,397
Subtotal Test and Evaluation			49,299	123,782		0		0		173,081

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapon System Engineering										
		NAVSEA/ DC	13,000	13,435	1Q	0	N/A	0	N/A	26,435
	SS/CPFF	JHU/APl/ MD	1,569	1,265	2Q	0	N/A	0	N/A	2,834
	MIPR	NSWC/DD/ VA	1,065	1,333	1Q	0	N/A	0	N/A	2,398
	C/CPFF	Anteon/ VA	22,100	24,649	1Q	0	N/A	0	N/A	46,749
	SS/CPFF	Paradigm/ VA	2,425	1,750	1Q	0	N/A	0	N/A	4,175
	SS/CPAF	Lockheed Martin/ NJ	700	1,000	1Q	0	N/A	0	N/A	1,700
	SS/CPAF	Raytheon/ AZ	1,000	1,000	2Q	0	N/A	0	N/A	2,000
		MDA	5,101	9,821	1Q	0	N/A	0	N/A	14,922
	Various	Various/ Various	5,570	2,947	1Q	0	N/A	0	N/A	8,517

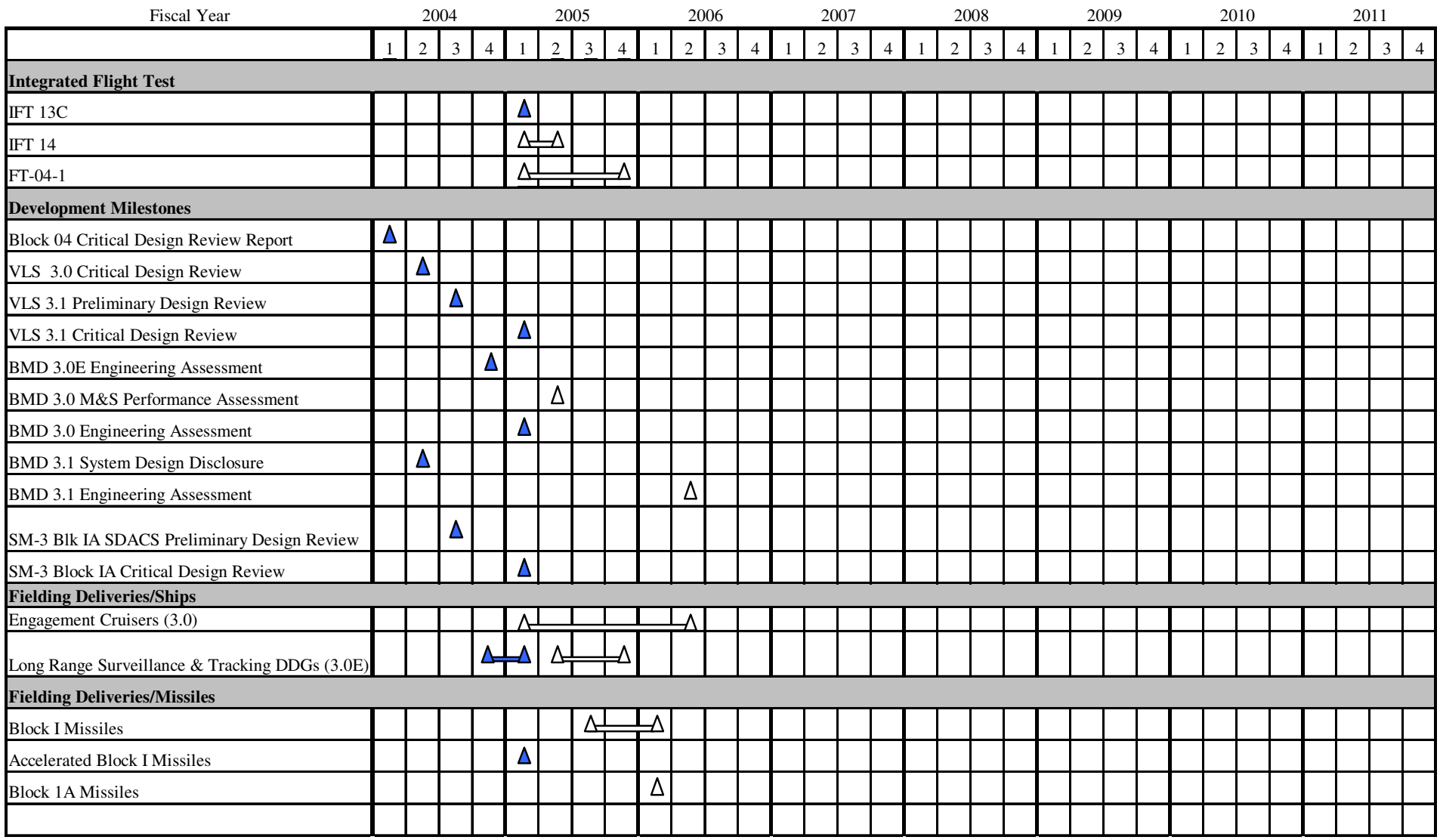
Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
		MDA (Salaries)	0	1,763	1Q	0	N/A	0	N/A	1,763
Subtotal Management Services			52,530	58,963		0		0		111,493
Remarks										
Project Total Cost			605,993	942,975		101,177		15,000		1,665,145
Remarks										

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																																
Pacific Explorer III				▲																												
At-Sea Demo 3.0 (Concurrent with FM-7)						△																										
At-Sea Demo 3.1											△																					
SM-3 Blk I Hazard Assessment and Safety Test			▲																													
SM-3 Blk I HERO Test				▲																												
SM-3 Blk IA HERO Test								△																								
PACEX IV				▲																												
Third Stage Rocket Motor DVT-2			▲																													
Third Stage Rocket Motor DVT-3						△																										
MDIE 04b				▲																												
Manufacturing Processes and Advanced Materials																																
Aegis BMD FM 6 configuration	▲																															
Block 04 Computer Program 3.0E				▲																												
Block 04 Computer Program 3.0						△																										
Aegis BMD FTM 04-1 configuration						△																										
Flight Tests																																
FM-6	▲																															
FTM 04-1 (FM-7)						△																										
FTM 04-2 (FM-8)							△																									
FTM 04-3 (FM-9)								△																								

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Testing Milestones								
Pacific Explorer III	4Q							
At-Sea Demo 3.0 (Concurrent with FM-7)		2Q						
At-Sea Demo 3.1			3Q					
SM-3 Blk I Hazard Assessment and Safety Test	3Q							
SM-3 Blk I HERO Test	4Q							
SM-3 Blk IA HERO Test		4Q						
PACEX IV	4Q							
Third Stage Rocket Motor DVT-2	3Q							
Third Stage Rocket Motor DVT-3		2Q						
MDIE 04b	4Q							
Manufacturing Processes and Advanced Materials								
Aegis BMD FM 6 configuration	1Q							
Block 04 Computer Program 3.0E	4Q							
Block 04 Computer Program 3.0		2Q						
Aegis BMD FTM 04-1 configuration		2Q						
Flight Tests								
FM-6	1Q							
FTM 04-1 (FM-7)		2Q						
FTM 04-2 (FM-8)		3Q						
FTM 04-3 (FM-9)		4Q						
Integrated Flight Test								
IFT 13C		1Q						
IFT 14		1Q-2Q						
FT-04-1		1Q-4Q						
Development Milestones								
Block 04 Critical Design Review Report	1Q							
VLS 3.0 Critical Design Review	2Q							
VLS 3.1 Preliminary Design Review	3Q							
VLS 3.1 Critical Design Review		1Q						
BMD 3.0E Engineering Assessment	4Q							
BMD 3.0 M&S Performance Assessment		2Q						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BMD 3.0 Engineering Assessment		1Q						
BMD 3.1 System Design Disclosure	2Q							
BMD 3.1 Engineering Assessment			2Q					
SM-3 Blk IA SDACS Preliminary Design Review	3Q							
SM-3 Block IA Critical Design Review		1Q						
Fielding Deliveries/Ships								
Engagement Cruisers (3.0)		1Q-4Q	1Q-2Q					
Long Range Surveillance & Tracking DDGs (3.0E)	4Q	1Q-4Q						
Fielding Deliveries/Missiles								
Block I Missiles		3Q-4Q	1Q					
Accelerated Block I Missiles		1Q						
Block 1A Missiles			1Q					

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0809 AEGIS Ballistic Missile Defense Block 2006	24,418	121,494	574,766	546,817	69,000	15,000	0	0
RDT&E Articles Qty	0	0	25	27	8	0	0	0

Note:
The following guidelines were used in counting the Aegis BMD RDT&E Articles:

- Missiles, targets, and ship modifications are shown in this budget exhibit in their fiscal year of delivery.
- Aegis BMD computer program deliveries are shown as a single unit delivery in the fiscal year the Engineering Assessment (EA) is conducted. .
- SM-3 missiles and shipsets are considered to be Block 2006 if they deliver in CY06 or CY07.

Block 2006 funding is split between Research & Development and Deployment as follows:

Research & Development:

- FY04 $24.4M
- FY05 $83.5M
- FY06 $439.8M
- FY07 $484.8M
- FY08 $54.0M
- FY09 $0.0M

Deployment:

- FY04 $0.0M
- FY05 $38.0M
- FY06 $135.0M
- FY07 $62.0M
- FY08 $0.0M
- FY09 $0.0M

Operations & Support:

- FY04 $0.0M
- FY05 $0.0M
- FY06 $0.0M
- FY07 $0.0M
- FY08 $15.0M
- FY09 $15.0M

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

A. Mission Description and Budget Item Justification

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable Ballistic Missile Defense Capability in Aegis cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by creating synergy with other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral improvements as part of BMDS block upgrades.

The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System. Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:

- In all regions in locations within range of international waters by providing surveillance, tracking, and engagement capabilities. Japan, and possibly other countries, will deploy Aegis BMD.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against all ranges:
  - Against long range ballistic missiles by providing surveillance and tracking support as part of the Block 2004 Initial Defensive Operations (IDO).
  - Against short and medium range ballistic missiles by providing engagement support as part of Block 2004.
  - Against intermediate range ballistic missiles by providing engagement support as part of Block 2006 and Block 2008.

Aegis BMD supports IDO by providing Long Range Surveillance and Track (LRS&T) data to other elements of the BMDS. Aegis BMD will further improve both national and international security with its ability to launch STANDARD Missile 3 (SM-3) missiles based upon data received via the Tactical Digital Information Link Joint (TADIL-J) network. Through development and fielding of the Aegis BMD Signal Processor and upgrades to the SM-3 Block IA missile in Block 06/08, Aegis BMD will significantly improve discrimination capability and performance against more diverse and longer range threats.

In collaboration with the MDA systems engineer, Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). Aegis BMD supports an autonomous engagement against Short Range Ballistic Missiles (SRBMs) and Medium Range Ballistic Missiles (MRBMs) without requiring external cueing. It supports an engagement against SRBMs and MRBMs using cueing data from other BMDS elements and external sensors. Aegis BMD will also provide target track data to support Ground Based Interceptor Launch and Engagement against Long Range Ballistic Missiles (LRBMs) and Intermediate Range Ballistic Missiles (IRBMs) via input for the Ground-based Midcourse Defense (GMD) Sensor Task Plan (STP) and Weapons Task Plan (WTP). In addition, Aegis BMD will be able to launch or engage with its SM-3 based on target data provided by external sensors.

Aegis BMD Block 2006 will continue the evolutionary spiral development of Block 2004 to enhance support of the BMDS missions of intercepting ballistic missiles in all regions, all phases, and all ranges.

AN/SPY-1 radar capability will be enhanced with the development of an Aegis BMD Signal Processor (BSP) that will improve remote tracking capability for BMDS as well as provide enhanced local engage capability against more robust threats.

Missile improvements include introduction of seeker All-Reflective-Optics-Optics (ARO) and a Kinetic Warhead Advanced Signal Processor (ASP) to mitigate diminished manufacturing source issues in SM-3 Blk IA missiles. Additionally, the increase processing capability of the ASP will support new discrimination algorithms. The optics and processing improvements will enhance the Aegis BMD contribution to the BMDS missions by providing greater sensitivity and seeker discrimination capability.

Block 06 development is focused on enhancing BMDS engagement sequence support. Aegis BMD Block 2006 will:

- Defeat unitary and separating targets: Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), and Intermediate Range Ballistic Missiles (IRBM) with Aegis BMD configured cruisers, destroyers and STANDARD Missile-3 (SM-3) Blk IA) guided missiles.

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- Expand the battle space from the Block 2004 capability by developing the capability to launch an SM-3 missile based on track data received from remote sensors.
- Provide improved Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the BMDS to GMD fire control for radar cueing and development of early fire control solutions. Provide improved ballistic missile target tracking, discrimination, and object classification via the Aegis Weapon System BSP's Engineering Development Model (EDM) high resolution medium frequency band tracker and synthetic wide band surface feature discrimination AN/SPY-1 Radar modifications.
- Support additional engagement scenarios against MRBMs and IRBMs using remote track data from other forward deployed BMDS Elements.
- Within Block 2006, Aegis BMD will install the BMD 3.1 engagement capability on additional Aegis destroyers and procure 40 additional SM-3 Blk IA missiles.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Weapons System Engineering	24,418	119,394	475,920	430,017
RDT&E Articles (Quantity)	0	0	14	24

FY 2004 Accomplishments:

Aegis BMD Weapon System:

- Transitioned the radar High Range Resolution (HRR) wideband signal processing efforts into the real-time Aegis BMD Signal Processor (BSP).
- Completed fabrication and started incremental testing of an Advanced Development Model (ADM) of the AN/SPY-1 BMD Signal Processor (BSP).
- Demonstrated real time enhanced S-Band tracking, discrimination feature extraction, and target designation.
- Commenced definition of Block 06 engagement coordination methods, integration and capabilities including engagement coordination among BMDS elements.
- Supported performance capability assessment engineering.
- Conducted real-time synthetic wideband feature extraction as future system risk reduction activities.
- Conducted Wideband Static Image Display Demonstration.
- Conducted an Engineering Evaluation of the Aegis BSP.

FY 2005 Planned Accomplishments:

Aegis BMD Weapon System:

- Begin improvements to ballistic missile tracking, characterization, discrimination, feature extraction, object classification, and kill assessment as a part of the Aegis BSP work, to include:
  - Real-time feature extraction capability and classification algorithm development
  - Incremental and at-sea testing of the Aegis BSP Advanced Development Model
- Commence development of BMD 6.1.
  - Commence top level requirements flow down for Block 2006 Aegis Combat System design .
  - Commence detailed design for Aegis components: SPY radar system, command and control system, weapons control system, and mission planning system.
- Undertake S-Band Advanced Radar (SBAR) algorithm research and analysis in the areas of digital signal processing, radio frequency processing, systems engineering, and radar control processing.

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- Commence Aegis BMD Multi-Asset Planning in support of Joint Defense Planner.
- Begin definition, planning, and initial implementation of Aegis BMD Link certification requirements.

Missile:

- Continue Pre-flight analysis support for Block 06 related Flight Mission Planning Analysis.
- Monitor parts obsolescence replacement material engineering.
- Review data analysis and requirements changes to update, as required, missile changes to pace threat and weapon system changes.
- Initiate IR discrimination risk reduction and algorithm development.
- Conduct Design Verification Tests (DVTs) of All Reflective Optics (AROs) and integrate into the Kinetic Warhead in preparation for FY06 and FY07 flight tests as a risk reduction effort for the particle anomaly observed in previous flight missions.
- Fabricate generation two Advanced Signal Processor (ASP) and conduct computer-in-the-loop and hardware-in-the-loop testing for improved missile discrimination and to mitigate diminished manufacturing source issues.
- Initiate ARO/ASP Kinetic Warhead integration testing to verify Aegis BMD performance against requirements.
- Initiate Block 2006 Element Capability Specifications (ECS) requirements analysis for flow down to missile top-level requirements.
- Initiate Block 2006 capability performance assessment studies for SM-3 Blk IA.
- Review manufacturing practices to lower unit cost of SM-3 Blk IA via improved manufacturing processes/changes.
- Procure long lead material for Blk IA missiles with delivery beginning in FY07.

FY 2006 Planned Program:

RDT&E Articles: BMD 3.1 Computer Program (1), BMD 3.0 Aegis Cruiser (1), BMD 3.1 Aegis Cruiser (1), BMD 3.0E Surveillance and Tracking Aegis Destroyers (2), BMD 3.1 engage Aegis Destroyers (2), SM-3 Block I Missiles (1), SM-3 Block IA Missiles (6)

Aegis BMD Weapon System:

- Install BMD 3.0E on two (2) Aegis Destroyers. (Actual shipsets for all BMD 3.0E destroyers will be completed in FY06. Remaining ship installations are based on projected ship availability).
- Install BMD 3.0 on one (1) Aegis Cruiser
- Formally accept BMD 3.1 computer program following the successful Engineering Assessment conducted as part of Block 2004, Project 0709.
- Initiate installation of BMD 3.1 on Aegis Cruisers and Aegis Destroyers.
- Install BMD 3.1 on one (1) Aegis Cruiser and two (2) Aegis Destroyers.
- Improve ballistic missile tracking, characterization, discrimination, feature extraction, object classification, and kill assessment as a part of the Aegis BSP work, to include:
  - Real-time feature extraction capability and classification algorithm development.
  - Incremental and at-sea testing of the BSP Advanced Development Model.
- Complete all design documentation and system modeling analysis for the Block 2006 Aegis Combat System.
- Continue development of the computer program upgrade BMD 6.1 in order to achieve an FY07 Engineering Assessment.
- Commence Block 2006 Aegis Combat System level integration and test at the land site (CSEDS) test facility.
- Incorporate CDLMS upgrades into BMD 6.1 including:
  - Enhanced Launch on TADIL J design and development to increase the battle space.
  - Aegis BMD Engagement Coordination with other BMDS elements.

- Aegis BMD Multi-Asset (e.g., sensor or weapon) Planning in support of Joint Defense Planner.
- Conduct definition, planning, and initial implementation of Aegis BMD Link certification requirements
- Initiate efforts to review the migration of the Aegis BMD C2BMC architecture into future Global Information Grid (GIG) compliant networks.

Missile:

- Conduct Pre-flight analysis support for Block 2006 related Flight Mission Planning analysis.
- Review data analysis and requirements changes to update, as required, missile changes to pace threat and weapon system changes.
- Continue IR discrimination risk reduction and algorithm development.
- Near completion of All Reflective Optics (ARO) engineering (completion in FY07) for improved missile discrimination capabilities.
- Near completion of Advanced Signal Processor (ASP) design efforts (completion in FY07) for improved missile discrimination and to mitigate diminished manufacturing source issues.
- Complete Block 2006 Element Capability Specifications (ECS) requirements analysis for flow down to missile top-level requirements.
- Complete Block 2006 capability performance assessment studies for SM-3 Blk IA.
- Review manufacturing practices to lower unit cost of SM-3 Blk IA via improved manufacturing processes/changes.
- Complete assembly and deliver the final SM-3 Block I missile.
- Complete assembly and deliver the first six (6) SM-3 Blk IA missiles initiated in FY05. Deliveries continue into succeeding fiscal years.
- Continue component level assembly build-up for succeeding SM-3 Blk IA missiles.
- Procure Long Lead Material for SM-3 Blk IA Missiles with delivery beginning in FY08.
- Continue monitoring parts obsolescence replacement material engineering.

FY 2007 Planned Program:

RDT&E Articles: BMD 3.0E Aegis Surveillance and Tracking destroyers (2), BMD 3.1 Aegis cruiser (1), BMD 3.1 engage Aegis destroyers (5), Aegis BSP Engineering Development Model (1), SM-3 Block IA Missiles (15)

Aegis BMD Weapon System:

- Install BMD 3.0E capability on two (2) Aegis destroyers. (Shipsets for final BMD 3.0E destroyer will be available at this time. Projected installation dates for remaining destroyer is based on ship availability).
- Install BMD 3.1 on one (1) Aegis Cruiser.
- Install BMD 3.1 on five (5) Aegis destroyers.
- Continue improvement to ballistic missile tracking, characterization, discrimination, feature extraction, object classification, and kill assessment as a part of the Aegis BSP work, to include:
  - Real-time feature extraction capability and classification algorithm development.
  - Incremental and at-sea testing of the Advanced Development Model (ADM) Aegis BSP.
  - Fabrication and incremental testing of the Engineering Development Model (EDM) version of the Aegis BSP.
- Complete CDLMS upgrades into BMD 6.1 to incorporate:
  - Enhanced Launch on TADIL J design and development to increase the battle space.
  - Design and development of Aegis BMD Engagement Coordination with other BMDS elements.
  - Aegis BMD Multi-Asset (e.g., sensor or weapon) Planning in support of Joint Defense Planner.
- Complete development of the computer program upgrade BMD 6.1 culminating with an Engineering Assessment (EA) which provides government acceptance of the computer program.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
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- Complete real-time feature extraction capability and object classification algorithm development.
- Complete Block 2006 Aegis Combat System level integration and test at land site (CSEDS) before delivery to test ship.
- Complete definition, planning, and initial implementation of Aegis BMD Link certification requirements.

Missile:

- Complete All Reflective Optics (ARO) engineering for improved missile discrimination capabilities.
- Complete Advanced Signal Processor (ASP) design efforts for improved missile discrimination and to mitigate diminished manufacturing source issues.
- Perform Design Verification tests of SM-3 Blk IA with ARO/ASP to validate design and performance.
- Complete IR discrimination risk reduction and algorithm development.
- Initiate ``All-Up-Round`` level electromagnetic interference tests to ensure shipboard compatibility.
- Upgrade Virtual and Inert Operational Missiles to validate interface integrity within missile and across weapon system interfaces.
- Continue assembly and delivery of SM-3 Blk IA missiles.
- Continue monitoring parts obsolescence replacement material engineering.

	FY 2004	FY 2005	FY 2006	FY 2007
Test & Evaluation	0	2,100	98,846	116,800
RDT&E Articles (Quantity)	0	0	11	3

FY 2005 Planned Accomplishments:

Initiate acquisition of targets for FTM 06-1 (FM-10)

- Begin test planning for FTM 06-1 and FTM 06-2 (FM-11)
- Participate in Critical Measurements and Countermeasures (CMCM-1) flight tests with the Aegis BMD Signal Processor Advanced Development Model (ADM).

FY 2006 Planned Program:

RDT&E Articles: targets/ARAVs (11)

- Conduct At-Sea Demonstration 3.1 with BMD 3.1 in a simulated engagement against multiple ARAVs (Group A (SRBM), Group B (MRBM), and Group D (LRBM).
- Conduct FTM 06-1 to verify BMD 3.1 engagement capability with intercept of multiple targets using SM-3 Block I and IA missiles in separate engagements.
- Conduct FTM 06-2 to verify BMD 3.1 engagement capability with intercept of multiple ARAV targets in separate engagements.
- Participate in GMD Integrated Flight Tests.
- Participate in THAAD flight tests.
- Continue to test interoperability with other BMDS elements.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Initiate acquisition of targets for FTM 06-3 (FM-12) and FTM 06-4 (FM-13).
- Begin test planning for FTM 06-3 and FTM 06-4

FY 2007 Planned Program:

RDT&E Articles: targets/ARAVs (3)

- Conduct FTM 06-3 to verify Aegis BMD 3.1 multiple simultaneous engagement capability with intercept of multiple targets.
- Conduct FTM 06-4 to verify Aegis BMD 3.1 engagement capability with intercept of Group D (LRBM) target using Launch on TADIL J capability.
- Participate in GMD Integrated Flight Tests.
- Continue to test interoperability with other BMDS elements.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253

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	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. The best approach (competitive or selected source) will be determined after considering all the technical and management aspects of the program.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
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I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapons System Engineering										
AWS	SS/CPAF	Lockheed Martin/ NJ	13,770	61,950	1Q	105,766	1Q	125,175	1Q	306,661
AWS	FFRDC	MIT/LL/ MA	3,185	1,890	1Q	2,981	1Q	2,564	1Q	10,620
AWS	CPFF	JHU/APL/ MD	0	1,100	1Q	1,304	1Q	1,122	1Q	3,526
AWS	MIPR	NSWC/DD/ VA	2,150	500	1Q	2,395	1Q	2,179	1Q	7,224
AWS	MIPR	MITRE/ VA	365	400	1Q	745	1Q	641	1Q	2,151
AWS	MIPR	NSWC/PHD/ CA	0	0	N/A	295	1Q	0	N/A	295
AWS		MDA	2,000	0	N/A	5,298	1Q	10,318	1Q	17,616
AWS	Various	Various	2,948	0	N/A	1,914	1Q	8,365	1Q	13,227
Missile	SS/CPIF	Raytheon/ AZ	0	0	N/A	214,000	1Q	118,320	1Q	332,320
Missile	SS/CPIF	JHU/APL/ MD	0	0	N/A	6,270	1Q	6,019	1Q	12,289
Missile	FFRDC	MIT/LL/ MA	0	0	N/A	2,640	1Q	2,534	1Q	5,174
Missile	MIPR	NSWC/DD/ VA	0	0	N/A	2,430	1Q	2,903	1Q	5,333
Missile	MIPR	NSWC/PHD/ CA	0	0	N/A	790	1Q	0	N/A	790
Missile	MIPR	WSMR/ NM	0	0	N/A	3,030	1Q	3,485	1Q	6,515

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Missile	MIPR	NAWC/CL/ CA	0	0	N/A	1,970	1Q	2,851	1Q	4,821
Missile	MIPR	NSWC/IH/ MD	0	0	N/A	1,650	1Q	1,584	1Q	3,234
Missile		MDA	0	0	N/A	18,175	1Q	20,857	1Q	39,032
Missile	Various	Various	0	0	N/A	6,020	1Q	5,583	1Q	11,603
Subtotal Product Development			24,418	65,840		377,673		314,500		782,431

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapons System Engineering										
	SS/CPFF	JHU/APL/ MD	0	3,191	1Q	6,670	1Q	5,936	1Q	15,797
	SS/CPAF	Lockheed Martin/ NJ	0	1,000	2Q	2,000	2Q	2,300	2Q	5,300
	SS/CPAF	MIT/LL/ MA	0	2,570	1Q	1,334	1Q	1,187	1Q	5,091
	SS/FPI	NSWC/DD/ VA	0	2,862	1Q	5,865	1Q	9,486	1Q	18,213
	SS/MIPR	NSWC/Corona/ CA	0	225	1Q	368	1Q	328	1Q	921
	SS/MIPR	NSWC/PHD/ CA	0	936	1Q	1,595	1Q	1,420	1Q	3,951
	SS/CPAF	RAYTHEON/ AZ	0	39,960	2Q	2,000	2Q	7,900	2Q	49,860

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	SS/CPFF	SEG/ VA	0	2,095	2Q	5,651	2Q	6,809	2Q	14,555
	SS/CPFF	TSC/ VA	0	365		0	N/A	0	N/A	365
	SS/CPFF	BMPCOE/ MD	0	0	1Q	473	1Q	421	1Q	894
	Various	VARIOUS/ US	0	0	1Q	1,959	1Q	5,617	1Q	7,576
	SS/CPFF	MITRE/ VA	0	350	1Q	1,187	1Q	1,056	1Q	2,593
	MIPR	SPAWAR/ CA	0	0	N/A	3,898	1Q	3,469	1Q	7,367
		MDA	0	0	N/A	2,670	1Q	7,241	1Q	9,911
Subtotal Support Costs			0	53,554		35,670		53,170		142,394

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test & Evaluation										
Test & Eval	MIPR	PMRF/ HI	0	0	N/A	7,450	1Q	6,570	1Q	14,020
Test & Eval	MIPR	SMDC/ AL	0	2,100	2Q	29,565	1Q	64,485	1Q	96,150
Test & Eval	MIPR	NSWC/DD/ VA	0	0	N/A	13,272	1Q	11,810	1Q	25,082
Test & Eval	SS/CPFF	JHU/APL/ MD	0	0	N/A	5,989	1Q	5,265	1Q	11,254

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test & Eval		MDA	0	0	N/A	15,797	1Q	4,249	1Q	20,046
Test & Eval	MIPR	NSWC/PHD/ CA	0	0	N/A	8,313	1Q	7,347	1Q	15,660
Test & Eval	SS/CPAF	Xontech/ CA	0	0	N/A	1,204	1Q	949	1Q	2,153
Test & Eval	C/CPFF	HTS/ CA	0	0	N/A	2,955	1Q	2,525	1Q	5,480
Test & Eval	MIPR	NAWC/PM/ CA	0	0	N/A	4,651	1Q	4,050	1Q	8,701
Test & Eval	MIPR	AIRPAC/ HI	0	0	N/A	993	1Q	813	1Q	1,806
Test & Eval	MIPR	SPAWAR/ CA	0	0	N/A	1,933	1Q	1,587	1Q	3,520
Test & Eval	Various	Various	0	0	N/A	6,724	1Q	5,275	1Q	11,999
Test & Eval	MIPR	WSMR/ CA	0	0	N/A	0	N/A	1,875	1Q	1,875
Subtotal Test and Evaluation			0	2,100		98,846		116,800		217,746

Remarks

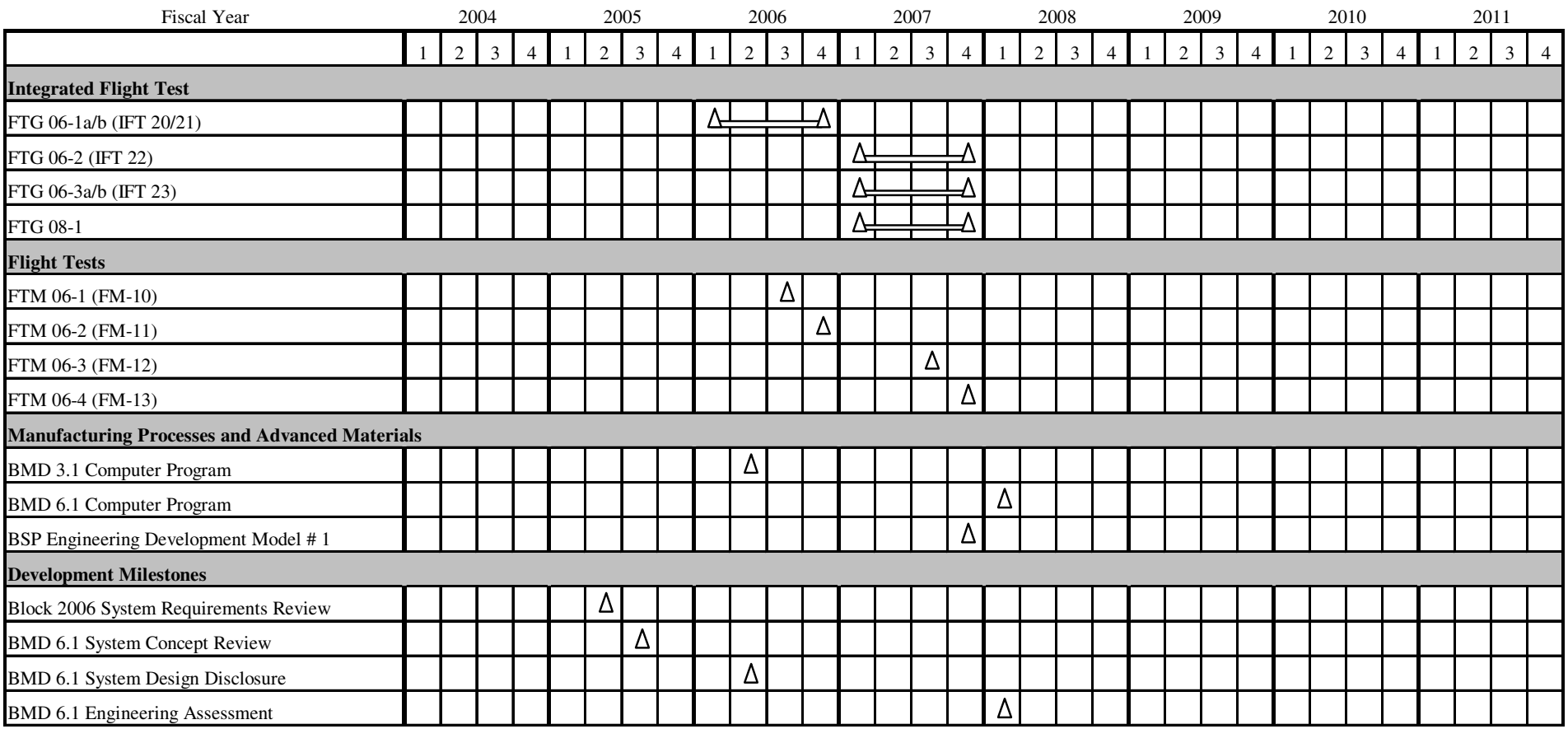
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapons System Engineering										
		NAVSEA/ DC	0	0	1Q	13,867	1Q	14,283	1Q	28,150
	SS/CPFF	JHU/APL/ MD	0	0	1Q	2,519	1Q	2,640	1Q	5,159

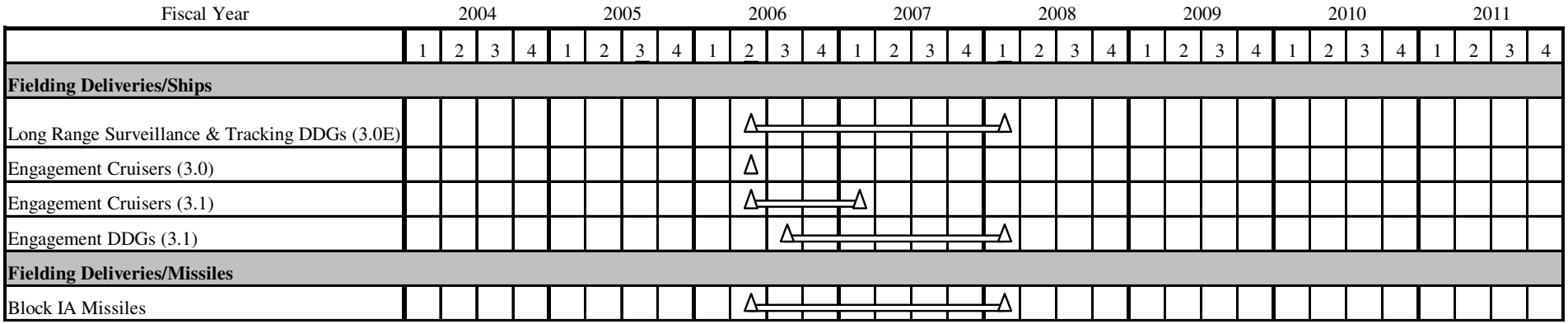
Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	MIPR	NSWC/DD/ VA	0	0	1Q	1,851	1Q	1,954	1Q	3,805
	C/CPFF	Anteon/ VA	0	0	2Q	26,105	1Q	26,976	1Q	53,081
	C/CPFF	Paradigm/ VA	0	0	1Q	3,984	1Q	3,997	1Q	7,981
	SS/CPAF	Lockheed Martin/ NJ	0	0	2Q	1,336	1Q	1,373	1Q	2,709
	SS/CPAF	Raytheon/ AZ	0	0	2Q	1,542	1Q	1,585	1Q	3,127
		MDA	0	0	1Q	7,705	1Q	6,937	1Q	14,642
	Various	Various/ Various	0	0	1Q	3,668	1Q	2,602	1Q	6,270
Subtotal Management Services			0	0		62,577		62,347		124,924
Remarks										
Project Total Cost			24,418	121,494		574,766		546,817		1,267,495
Remarks										

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Integrated Flight Test								
FTG 06-1a/b (IFT 20/21)			1Q-4Q					
FTG 06-2 (IFT 22)				1Q-4Q				
FTG 06-3a/b (IFT 23)				1Q-4Q				
FTG 08-1				1Q-4Q				
Flight Tests								
FTM 06-1 (FM-10)			3Q					
FTM 06-2 (FM-11)			4Q					
FTM 06-3 (FM-12)				3Q				
FTM 06-4 (FM-13)				4Q				
Manufacturing Processes and Advanced Materials								
BMD 3.1 Computer Program			2Q					
BMD 6.1 Computer Program					1Q			
BSP Engineering Development Model # 1				4Q				
Development Milestones								
Block 2006 System Requirements Review		2Q						
BMD 6.1 System Concept Review		3Q						
BMD 6.1 System Design Disclosure			2Q					
BMD 6.1 Engineering Assessment					1Q			
Fielding Deliveries/Ships								
Long Range Surveillance & Tracking DDGs (3.0E)			2Q-4Q	1Q-4Q	1Q			
Engagement Cruisers (3.0)			2Q					
Engagement Cruisers (3.1)			2Q-4Q	1Q				
Engagement DDGs (3.1)			3Q-4Q	1Q-4Q	1Q			
Fielding Deliveries/Missiles								
Block IA Missiles			2Q-4Q	1Q-4Q	1Q			

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	135,158	354,233	636,729	546,069	205,208	44,039
RDT&E Articles Qty	0	0	0	0	31	34	9	0

Note:
Block 2008 funding is split between Research & Development and Deployment as follows:

Research & Development:

- FY06 $10.2M
- FY07 $158.0M
- FY08 $390.6M
- FY09 $437.1M
- FY10 $155.2M
- FY11 $24.0M

Deployment:

- FY06 $125.0M
- FY07 $196.2M
- FY08 $246.1M
- FY09 $109.0M
- FY10 $30.0M
- FY11 $0.0M

Operations & Support

- FY06 $0.0M
- FY07 $0.0M
- FY08 $0.0M
- FY09 $0.0M
- FY10 $20.0M
- FY11 $20.0M

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

A. Mission Description and Budget Item Justification

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable Ballistic Missile Defense Capability in Aegis cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by creating synergy with other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral improvements as part of BMDS block upgrades.
The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System. Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:

- In all regions in locations within range of international waters by providing surveillance, tracking, and engagement capabilities. Japan, and possibly other countries, will deploy Aegis BMD.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against all ranges:
  - Against long range ballistic missiles by providing surveillance and tracking support as part of the Block 2004 Initial Defensive Operations (IDO).
  - Against short and medium range ballistic missiles by providing engagement support as part of Block 2004.
  - Against intermediate range ballistic missiles by providing engagement support as part of Block 2006 and Block 2008.

Aegis BMD supports IDO by providing Long Range Surveillance and Track (LRS&T) data to other elements of the BMDS. Aegis BMD will further improve both national and international security with its ability to launch STANDARD Missile 3 (SM-3) missiles based upon data received via the Tactical Digital Information Link Joint (TADIL-J) network. Through development and fielding of the Aegis BMD Signal Processor and upgrades to the SM-3 Block IA missile in Block 06/08, Aegis BMD will significantly improve discrimination capability and performance against more diverse and longer range threats.

In collaboration with the MDA systems engineer, Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). Aegis BMD supports an autonomous engagement against Short Range Ballistic Missiles (SRBMs) and Medium Range Ballistic Missiles (MRBMs) without requiring external cueing. It supports an engagement against SRBMs and MRBMs using cueing data from other BMDS elements and external sensors. Aegis BMD will also provide target track data to support Ground Based Interceptor Launch and Engagement against Long Range Ballistic Missiles (LRBMs) and Intermediate Range Ballistic Missiles (IRBMs) via input for the Ground-based Midcourse Defense (GMD) Sensor Task Plan (STP) and Weapons Task Plan (WTP). In addition, Aegis BMD will be able to launch or engage with its SM-3 based on target data provided by external sensors.

Aegis BMD Block 2008 will evolve (through spiral capability driven development) from Block 2006 with the focus of development on fully integrated radar discrimination. Aegis BMD Block 2008 will provide:

- Integration of Block 06 Discrimination Capabilities (e.g. Synthetic Wideband Radar Upgrade, Signal Processing & Feature Extraction Algorithms, Improved CCM).
- Improvements in BMDS Command and Control, Battle Management, and Communications (C2BMC) to ensure future BMDS sensor enhancements and the resulting discrimination capabilities are able to be communicated, correlated, and acted upon.
- Analysis for planned upgrades to the SM-3 missile to improve discrimination, divert, and probability of mission success.
- Risk Reduction for integration of the MDA multi-use interceptor to support MDA's performance-based-decisions acquisition strategy.
- Testing of the Aegis BMD Signal Processor and demonstrations of closed-loop synthetic wideband and narrowband discrimination.
- Improvements to the Aegis BMD Signal Processor (BSP) discrimination and feature extraction algorithms to incorporate lessons learned from continued ground and flight testing.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Weapons System Engineering	0	0	135,158	344,233
RDT&E Articles (Quantity)	0	0	0	0

FY 2006 Planned Program:

- Revise BMDS System Specification (SS)
- Perform System level trade-off studies based on the SS.
- Conduct a Preliminary Concept Review to downselect potential system designs
- Procure Long Lead Material for SM-3 Blk IA Missiles with delivery beginning in FY08.
- Commence studies to improve Lethal Object Designation in a clutter environment

FY 2007 Planned Program:

- Review and update the Block 2008 System Specification to the selected system design
- Draft the Block 2008 Element Capability Specification (ECS) based on the approved System Specification
- Conduct System Requirements Review (SRR), based on the approved Element Capability Specification, to present the Block 2008 requirements to the prime contractor
- Conduct the System Concept Review (SCR), based on SRR direction to the prime contractor, to review and gain approval for the contractor's approach to meeting the Block 2008 requirements
- Draft the Block 2008 A-Spec, which defines the Aegis Weapon System design requirements to meet Block 2008 system level requirements.
- Complete work to improve Lethal Object Designation in a clutter environment.
- Procure Long Lead Material for SM-3 Block IA missiles with delivery beginning in FY09
- Conduct critical experiments using Aegis BMD Signal Processor testbed equipment
  - determine/refine the need for further enhancements to be incorporated in Block 2008
  - Begin efforts to incorporate required enhancements
- Conduct critical experiments using the MK-99 Doppler Data Collection System or similar equipment as a risk mitigation for Block 2008 implementation
- Conduct studies on sensor fusion, Engage on Remote capability, and engagement control for a Block 2008 implementation

	FY 2004	FY 2005	FY 2006	FY 2007
Test & Evaluation	0	0	0	10,000
RDT&E Articles (Quantity)	0	0	0	0

FY 2007 Planned Program:

- Begin Procurement of target vehicles for FTM 08-1 and FTM 08-2

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

D. Acquisition Strategy

The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has implemented a missile defense acquisition strategy using a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. After considering all the technical and management aspects of the program and to meet the requirements presented by the ballistic missile threat, the Aegis BMD program has awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 missile and Aegis Weapon System, respectively.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapons System Engineering										
AWS	SS/CPAF	Lockheed Martin/ NJ	0	0	N/A	1,179	1Q	89,102	1Q	90,281
Missile	SS/CPIF	Raytheon/ AZ	0	0	N/A	122,000	1Q	211,420	1Q	333,420
Missile	MIPR	NSWC/DD/ VA	0	0	N/A	1,000	1Q	2,850	1Q	3,850
Missile		NSWC/PHD/ CA	0	0	N/A	1,000	1Q	2,550	1Q	3,550
Missile	Various	Various	0	0	N/A	1,000	1Q	2,180	1Q	3,180
Missile		MDA	0	0	N/A	0	N/A	1,000	1Q	1,000
AWS	FFRDC	MIT/LL/ MA	0	0	N/A	0	N/A	1,200	1Q	1,200
AWS	SS/CPFF	JHU/APL/ MD	0	0	N/A	0	N/A	1,300	1Q	1,300
AWS	MIPR	NSWC/DD/ VA	0	0	N/A	0	N/A	2,250	1Q	2,250
AWS	Various	Various	0	0	N/A	0	N/A	1,240	1Q	1,240
Subtotal Product Development			0	0		126,179		315,092		441,271

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Weapons System Engineering										
AWS	SS/CPAF	Lockheed Martin/ NJ	0	0	N/A	3,450	1Q	4,870	1Q	8,320
AWS	SS/CPFF	JHU/APL/ MD	0	0	N/A	1,100	1Q	2,182	1Q	3,282
AWS	FFRDC	MIT/LL/ MA	0	0	N/A	1,250	1Q	2,426	1Q	3,676
AWS	MIPR	NSWC/DD/ VA	0	0	N/A	1,115	1Q	2,273	1Q	3,388
AWS	SS/MIPR	NSWC/PHD/ CA	0	0	N/A	0	1Q	578	1Q	578
AWS	MIPR	NSWC/Corona/ CA	0	0	N/A	785	1Q	879	1Q	1,664
AWS		Various	0	0	N/A	329	1Q	1,850	1Q	2,179
Missile	SS/CPAF	Raytheon/ AZ	0	0	N/A	950	1Q	12,530	1Q	13,480
Missile	MIPR	NSWC/DD/ VA	0	0	N/A	0	N/A	475	1Q	475
Missile	MIPR	NSWC/PHD/ CA	0	0	N/A	0	N/A	350	1Q	350
Missile	SS/CPFF	JHU/APL/ MD	0	0	N/A	0	N/A	375	1Q	375
Missile		Various/ Various	0	0	N/A	0	N/A	353	1Q	353
Subtotal Support Costs			0	0		8,979		29,141		38,120

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test & Evaluation										
	MIPR	SMDC/ AL	0	0	N/A	0	N/A	10,000	1Q	10,000
Subtotal Test and Evaluation			0	0		0		10,000		10,000

Remarks

IV. Management Services Cost ($ in Thousands)

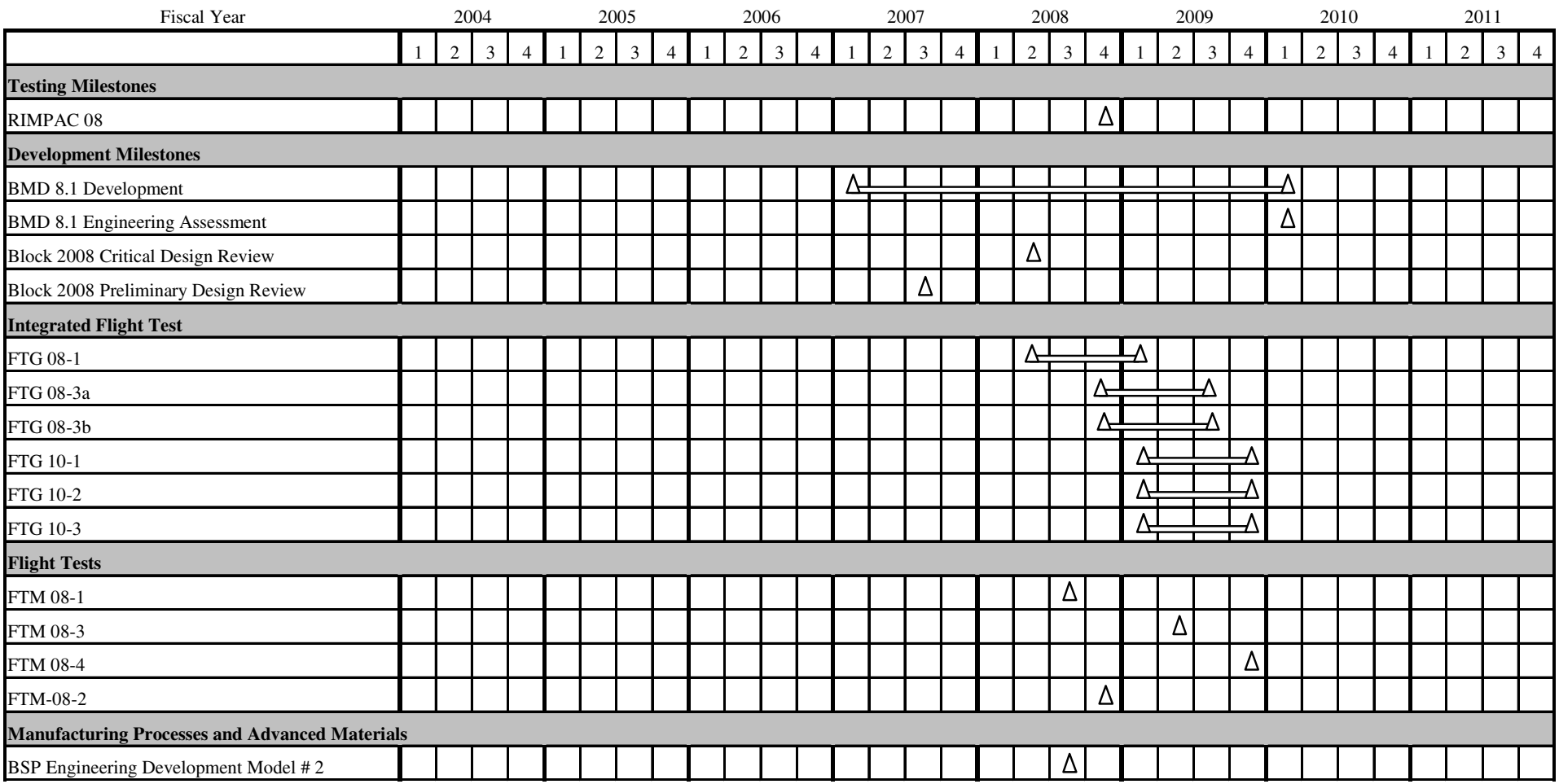
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

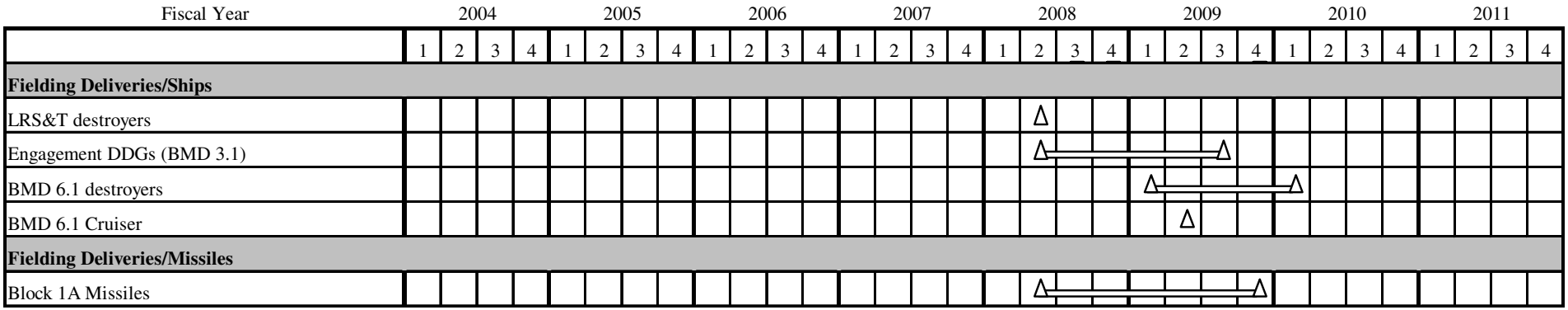
Project Total Cost			0	0		135,158		354,233		489,391

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Testing Milestones								
RIMPAC 08					4Q			
Development Milestones								
BMD 8.1 Development				1Q-4Q	1Q-4Q	1Q-4Q	1Q	
BMD 8.1 Engineering Assessment							1Q	
Block 2008 Critical Design Review					2Q			
Block 2008 Preliminary Design Review				3Q				
Integrated Flight Test								
FTG 08-1					2Q-4Q	1Q		
FTG 08-3a					4Q	1Q-3Q		
FTG 08-3b					4Q	1Q-3Q		
FTG 10-1						1Q-4Q		
FTG 10-2						1Q-4Q		
FTG 10-3						1Q-4Q		
Flight Tests								
FTM 08-1					3Q			
FTM 08-3						2Q		
FTM 08-4						4Q		
FTM-08-2					4Q			
Manufacturing Processes and Advanced Materials								
BSP Engineering Development Model # 2					3Q			
Fielding Deliveries/Ships								
LRS&T destroyers					2Q			
Engagement DDGs (BMD 3.1)					2Q-4Q	1Q-3Q		
BMD 6.1 destroyers						1Q-4Q	1Q	
BMD 6.1 Cruiser						2Q,2Q		
Fielding Deliveries/Missiles								
Block 1A Missiles					2Q-4Q	1Q-4Q		

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0009 AEGIS Ballistic Missile Defense Block 2010	0	0	0	0	20,000	185,000	576,260	644,000
RDT&E Articles Qty	0	0	0	0	0	0	31	34

Note:
Block 2010 funding is split between Research & Development and Deployment as follows:

Research & Development:

- FY08 $0.0M
- FY09 $0.0M
- FY10 $308.2M
- FY11 $447.0M

Deployment:

- FY08 $20.0M
- FY09 $185.0M
- FY10 $268.1M
- FY11 $197.0M

A. Mission Description and Budget Item Justification

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable Ballistic Missile Defense Capability in Aegis cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by creating synergy with other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral improvements as part of BMDS block upgrades.

The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System. Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:

- In all regions in locations within range of international waters by providing surveillance, tracking, and engagement capabilities. Japan, and possibly other countries, will deploy Aegis BMD.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against all ranges:
  - Against long range ballistic missiles by providing surveillance and tracking support as part of the Block 04 Initial Defensive Operations (IDO).
  - Against short and medium range ballistic missiles by providing engagement support as part of Block 04.
  - Against intermediate range ballistic missiles by providing engagement support as part of Block 2006 and Block 2008.

Aegis BMD supports IDO by providing Long Range Surveillance and Track (LRS&T) data to other elements of the BMDS. Aegis BMD will further improve both national and international security with its ability to launch STANDARD Missile 3 (SM-3) missiles based upon autonomous data and upon data received via the Tactical Digital Information Link Joint (TADIL-J) network. Through

development and fielding of the Aegis BMD Signal Processor and upgrades to the SM-3 Block IA missile in Block 06/08, Aegis BMD will significantly improve discrimination capability and performance against more diverse and longer range threats.

In collaboration with the MDA systems engineer, Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). Aegis BMD supports an autonomous engagement against Short Range Ballistic Missiles (SRBMs) and Medium Range Ballistic Missiles (MRBMs) without requiring external cueing. It supports an engagement against SRBMs and MRBMs using cueing data from other BMDS elements and external sensors. Aegis BMD will also provide target track data to support Ground Based Interceptor Launch and Engagement against Long Range Ballistic Missiles (LRBMs) and Intermediate Range Ballistic Missiles (IRBMs) via input for the Ground-based Midcourse Defense (GMD) Sensor Task Plan (STP) and Weapons Task Plan (WTP). In addition, Aegis BMD will be able to launch or engage with its SM-3 based on target data provided by external sensors.

Aegis Ballistic Missile Defense (BMD) Block 2010 will evolve (through spiral capability driven development) from the BMD Block 2008 Aegis Weapon System and its integration with the Navy developed Aegis Open Architecture System:

- Defeats a wide variety of ballistic missiles in the presence of complex counter countermeasures (Short Range Ballistic Missiles (SRBM) , Medium Range Ballistic Missiles (MRBM), Intermediate Range Ballistic Missiles (IRBM), and Intercontinental Ballistic Missiles (ICBMs).
- Incorporate Advanced CCM Improvements - Provides Discrimination Algorithms, Adaptive Processing, C2BMC Upgrades for BMDS Integration.
- Provides for possible integration of the Aegis BMD Weapon System and the Missile Defense Agency (MDA) Common Interceptor.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Funding in this Project is not programmed until FY 2008.	0	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973

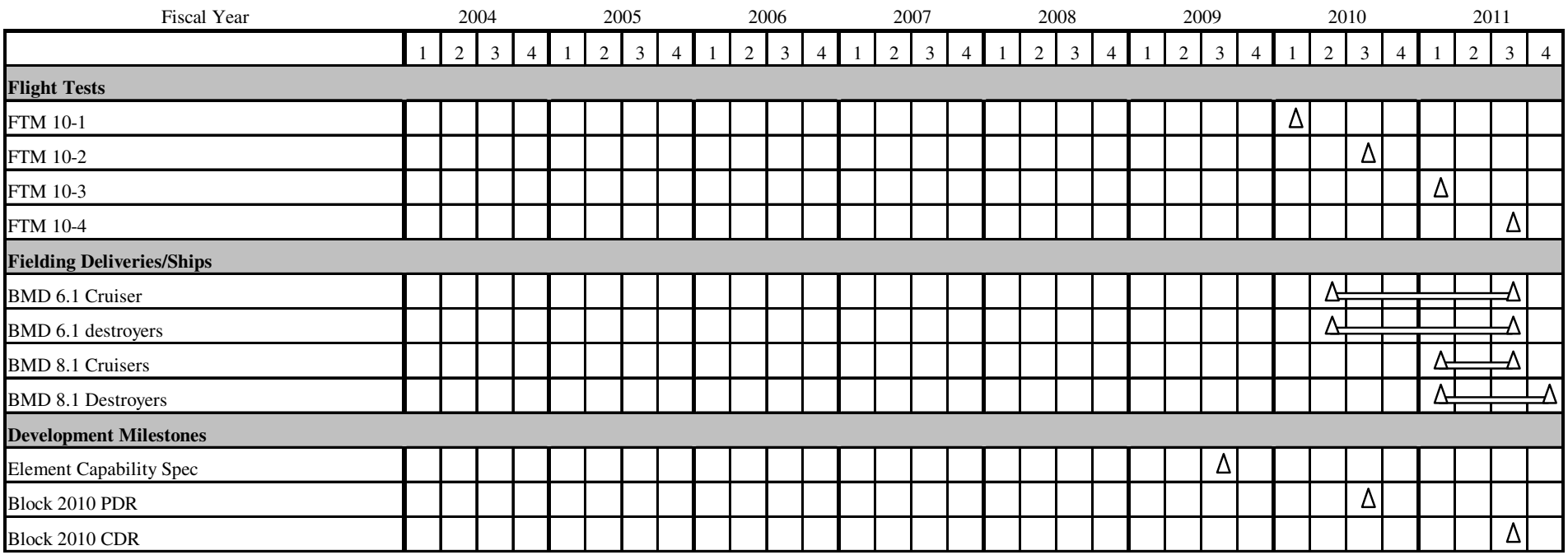
Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has implemented a missile defense acquisition strategy using a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. After considering all the technical and management aspects of the program and to meet the requirements presented by the ballistic missile threat, the Aegis BMD program has awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 missile and Aegis Weapon System, respectively.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Flight Tests								
FTM 10-1							1Q	
FTM 10-2							3Q	
FTM 10-3								1Q
FTM 10-4								3Q
Fielding Deliveries/Ships								
BMD 6.1 Cruiser							2Q-4Q	1Q-3Q
BMD 6.1 destroyers							2Q-4Q	1Q-3Q
BMD 8.1 Cruisers								1Q-3Q
BMD 8.1 Destroyers								1Q-4Q
Development Milestones								
Element Capability Spec						3Q		
Block 2010 PDR							3Q	
Block 2010 CDR								3Q

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0402 Japanese Cooperative Program	51,775	71,283	24,800	52,791	112,500	131,500	129,500	100,000
RDT&E Articles Qty	0	1	1	0	2	2	0	0

A. Mission Description and Budget Item Justification

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- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against all ranges:
  - Against long range ballistic missiles by providing surveillance and tracking support as part of the Block 2004 Initial Defensive Operations (IDO).
  - Against short and medium range ballistic missiles by providing engagement support as part of Block 2004.
  - Against intermediate range ballistic missiles by providing engagement support as part of Block 2006 and Block 2008.

Aegis BMD supports IDO by providing Long Range Surveillance and Track (LRS&T) data to other elements of the BMDS. Aegis BMD will further improve both national and international security with its ability to launch STANDARD Missile 3 (SM-3) missiles based upon autonomous data and upon data received via the Tactical Digital Information Link Joint (TADIL-J) network. Through development and fielding of the Aegis BMD Signal Processor and upgrades to the SM-3 Block IA missile in Block 06/08, Aegis BMD will significantly improve discrimination capability and performance against more diverse and longer range threats.

In collaboration with the MDA systems engineer, Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). Aegis BMD supports an autonomous engagement against Short Range Ballistic Missiles (SRBMs) and Medium Range Ballistic Missiles (MRBMs) without requiring external cueing. It supports an engagement against SRBMs and MRBMs using cueing data from other BMDS elements and external sensors. Aegis BMD will also provide target track data to support Ground Based Interceptor Launch and Engagement against Long Range Ballistic Missiles (LRBMs) and Intermediate Range Ballistic Missiles (IRBMs) via input for the Ground-based Midcourse Defense (GMD) Sensor Task Plan (STP) and Weapons Task Plan (WTP). In addition, Aegis BMD will be able to launch or engage with its SM-3 based on target data provided by external sensors.

The U.S./Japan Joint Cooperative Research (JCR) program will continue per the U.S. Department of Defense (DoD)/Japan Defense Agency (JDA) Memorandum of Agreement signed in 1999 to conduct cooperative research in Ballistic Missile Defense. The focus of research is on four components of the SM-3 guided missile: sensor, advanced kinetic warhead, second stage propulsion and lightweight nosecone. In FY 2005 and 2006, the JCR project plans to flight test the lightweight nosecone in Joint Control Test Vehicle-1 and Joint Flight Mission-1.

The government of Japan has expressed an interest in the joint development of a 21” SM-3 missile (SM-3 Blk II). A significant workshare contribution by Japan is anticipated as follow-on to the ongoing U.S./Japan JCR program being conducted from FY03 to FY06. The SM-3 Blk II missile development will build upon established joint research investments by the government of Japan, including 21” components for the SM-3 2nd stage rocket motor. The funding profile assumes a similar level of effort by Japan.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Aegis BMD will continue the evolutionary development of the SM-3 missile with a U.S./Japan Joint Cooperative Program. The SM-3 Blk II missile development will replace the SM-3 Blk IA 13.5`` rocket motors (2nd , 3rd stages) and warhead. The 2nd and 3rd stages will be redesigned with 21" rocket motors and module components. Trade studies will be conducted to address the redesign of warhead components including optics, seeker, signal processor and Divert & Attitude Control System. Annual continuation reviews will evaluate program progress and Japanese contributions.

The SM-3 Blk II missile will increase the area that can be defended by Aegis BMD and increase the probability of kill against a larger threat set. It will leverage enhanced capability provided by BMDS sensor upgrades.

The Aegis BMD Japanese Cooperative Program will:

- Develop components for the SM-3 Blk II missile and integrate them into an All Up Round (AUR)
  - 21" 2nd stage and rocket motor
  - 21" 3rd stage and rocket motor
  - Improved warhead components based on trade study recommendations
    - All-Reflective Optics (ARO)
    - 2-Color Seeker
    - Advanced Signal Processor (ASP)
    - Improved Divert & Attitude Control System
- Modify the Aegis Weapon System to exploit the capability of the SM-3 Blk II missile and use of threat track data from BMDS sensors.
- Modify the Vertical Launching System (VLS) to accommodate the SM-3 Blk II missile.
  - Includes development of a light weight canister
- Integrate the SM-3 Blk II missile and VLS with Aegis ship systems
- Conduct test and evaluation using ground and flight tests
  - SM-3 Blk II missile
  - Aegis BMD ship systems
  - Aegis BMD weapon systems

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Japan Cooperative Program	51,775	71,283	24,800	52,791
RDT&E Articles (Quantity)	0	1	1	0

FY 2004 Accomplishments:

- Continued development and system engineering support for the four U.S./JCR components.
- Continued procurement of test article and ship modifications for JCTV-1 and JFM-1 Proof of Principle (PoP) flight tests.
- Conducted PoP missile nosecone Critical Design Review (CDR) supporting integration of Japan Defense Agency (JDA) developed lightweight nosecone on SM-3 missiles to be used for JCTV-1 and JFM-1 PoP flight tests.
- Conducted Preliminary Design Review (PDR) for Ship System and Vertical Launching System (VLS) modifications to support JCR JCTV-1 and JFM-1 PoP flight tests.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Completed integration of the Japanese Quantum Well Infrared Photodetector (QWIP) seeker onto Widebody Airborne Sensor Platform (WASP).
- Conducted ground testing of JDA's lightweight nosecone, including Design Verification and Engineering Tests (DVTs) for shielding effectiveness, electrostatic discharge, and nosecone push-through and separation tests.
- Continued system engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components.

FY 2005 Planned Accomplishments:

RDT&E Articles: SM-3 Missile (1)

- Continue development and system engineering support for the four U.S./JCR components.
- Conduct Critical Design Review for Ship System and VLS modifications to support JCR JCTV-1 and JFM-1 PoP flight tests.
- Continue procurement of test articles and ship modifications for JCTV-1 and JFM-1.
- Continue ground testing and test planning to support JCTV-1 and JFM-1 PoP flight tests.
- Deliver SM-3 missile for use in JCTV-1 PoP flight test.
- Conduct JCTV-1 PoP flight test.
- Conduct Captive Carry Testing (CCT) with QWIP sensor on WASP.
- Prepare for and initiate hazard assessment and insensitive munitions testing of JDA rocket motors.
- Continue system engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components.

FY 2006 Planned Program:

RDT&E Articles: SM-3 Missile (1)

- Continue ground testing and test planning to support JFM-1 PoP flight test.
- Deliver SM-3 missile for use in JFM-1 PoP flight test.
- Conduct JFM-1 PoP flight test.
- Conduct analysis of JCTV-1 and JFM -1 PoP flight tests.
- Continue development and system engineering support for the four U.S./JCR components.
- Conduct Captive Carry Testing (CCT) with QWIP sensor on WASP.
- Continue hazard assessment and insensitive munitions testing of JDA rocket motors.
- Continue system engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

FY 2007 Planned Program:

- Initiate Aegis Weapon System design studies for the SM-3 Blk II missile effort.
- Initiate Vertical Launching System lightweight canister design studies for SM-3 Blk II missile effort.
- Initiate SM-3 Blk II missile design.
- Support Japan 21" missile development efforts.
- Begin prototype components development.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
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PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

The major near-term focus of activity for the Japan Cooperative Research Project will be preparation for and execution of the JCTV-1 and JFM-1 flight tests. Both tests will be integrated into the larger Aegis BMD test program. Acquisition of hardware, software modifications and required services will occur in conjunction with contractual and tasking efforts for U. S. Navy work and events.

The Japan Cooperative Program for the SM-3 Blk II missile will utilize a performance based approach that ties program decision milestones to the performance of development module prototypes as well as Control Test Vehicle (CTV) and Guidance Test Vehicle (GTV) flight test article performance.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Japan Cooperative Program										
JCR	SS/CPAF	Raytheon/ AZ	31,272	46,210	2Q	7,436	1Q	42,670	1Q	127,588
JCR	SS/CPAF	Lockheed Martin/ NJ	7,253	7,820	1Q	4,000	1Q	1,000	1Q	20,073
JCR		Various	124	154	1Q	0	N/A	0	N/A	278
Subtotal Product Development			38,649	54,184		11,436		43,670		147,939

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Japan Cooperative Program										
	SS/CPFF	NSWC/DD/ VA	3,163	1,649	1Q	781	1Q	500	1Q	6,093
	SS/CPFF	NSWC/PHD/ CA	0	895	1Q	155	1Q	165	1Q	1,215
	SS/CPFF	JHU/APL/ MD	3,400	2,093	2Q	1,615	1Q	1,615	1Q	8,723
	Various	Various/ Various	1,244	1,036	1Q	739	1Q	448	1Q	3,467
	SS/MIPR	NAWC/CL/ CA	211	514	1Q	750	1Q	200	1Q	1,675
	SS/MIPR	ANTEON/ VA	1,975	2,322	1Q	2,218	1Q	2,218	1Q	8,733

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	SS/CPFF	PARADIGM/ VA	313	130	1Q	135	1Q	135	1Q	713
		MDA/ VA	1,200	1,794	1Q	0	N/A	3,090	1Q	6,084
	SS	NAVSEA/ DC	806	725	1Q	750	1Q	750	1Q	3,031
	SS/CPAF	Lockheed Martin/ NJ	0	3,032	1Q	2,994	1Q	0	N/A	6,026
Subtotal Support Costs			12,312	14,190		10,137		9,121		45,760

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Japan Cooperative Program										
Test & Evaluation	MIPR	PMRF/ HI	0	190	1/2Q	380	1Q	0	N/A	570
	MIPR	NSWC/PHD/ CA	309	850	1/2Q	978	1Q	0	N/A	2,137
	MIPR	NAWC/PM/ CA	0	610	1/2Q	610	1Q	0	N/A	1,220
	MIPR	NSWC/Corona/ CA	420	315	1/2Q	315	1Q	0	N/A	1,050
	MIPR	NSWC/DD/ VA	25	343	1/2Q	343	1Q	0	N/A	711

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
	SS/CPFF	JHU/APL/ MD	60	200	1/2Q	200	1Q	0	N/A	460
	Various	Various	0	401	1/2Q	401	1Q	0	N/A	802
Subtotal Test and Evaluation			814	2,909		3,227		0		6,950

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Project Total Cost			51,775	71,283		24,800		52,791		200,649

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2005

APPROPRIATION/BUDGET ACTIVITY
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)

R-1 NOMENCLATURE
0603882C Ballistic Missile Defense Midcourse Defense Segment

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development Milestones																																
21 Inch Critical Design Review																					Δ											
21 Inch Design Concept Review														Δ																		
21 Inch Preliminary Design Review																	Δ															
Ship System and VLS Critical Design Review						Δ																										
Ship System and VLS Preliminary Design Review				Δ																												
Flight Tests																																
Control Test Vehicle Flight																										Δ						
Guidance Test Vehicle-1																												Δ				
Guidance Test Vehicle-2																														Δ		
Japan Cooperative Research Project																																
JCTV-1								Δ																								
JFM-1										Δ																						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Development Milestones								
21 Inch Critical Design Review						1Q		
21 Inch Design Concept Review				2Q				
21 Inch Preliminary Design Review					1Q			
Ship System and VLS Critical Design Review		2Q						
Ship System and VLS Preliminary Design Review	4Q							
Flight Tests								
Control Test Vehicle Flight							2Q	
Guidance Test Vehicle-1							4Q	
Guidance Test Vehicle-2								2Q
Japan Cooperative Research Project								
JCTV-1		4Q						
JFM-1			2Q					

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0515 Multiple Kill Vehicles	0	0	82,000	219,645	272,900	306,500	308,200	113,500
RDT&E Articles Qty	0	0	0	0	0	0	0	0

Note:
This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

A. Mission Description and Budget Item Justification

The Multiple Kill Vehicles (MKV) program is the Missile Defense Agency's transformational weapon system development program to deal with the midcourse discrimination problem: target selection amid uncertainty and countermeasures. The MKV system consists of a Carrier Vehicle loaded with a complement of small intercepting kill vehicles, each about the size of a loaf of bread. The exact number of kill vehicles carried is restricted information, but can be substantially greater than 10 when MKV is launched by a Ground-Based Midcourse Interceptor. Work to adapt the MKV payload to smaller, more mobile boosters such as kinetic energy interceptors has also begun. During flight, the Carrier Vehicle acquires and tracks the objects in a midcourse complex, consisting of a warhead, countermeasure objects, and deployment debris, all of which can be spread out over many cubic kilometers. It then assigns kill vehicles to targets of concern, and releases them to fly out to their respective targets. Once within range of their assigned targets, the kill vehicles autonomously acquire, hit, and destroy them using their on-board seekers and divert motors. Advancements in sensors, propulsion, computers, and inertial navigation have enabled such kill vehicles, which are small but lethal, due to the vast kinetic energies involved in midcourse hit-to-kill engagements.

What is clearly transformational about MKV is its ability to destroy large numbers of targets using a single engaging interceptor missile. This reduces the burden on sensors and algorithms, which no longer need to be programmed to select one, best target. This dramatically alters the statistical probability of kill in favor of the defender and provides for early, decisive engagement of an adversary complex. Seeing its potential, the BMD System Engineering process monitored the concept development of MKV in the MDA Advanced Systems organization, and determined it to be ready for system development at this time. While the cost of the development program for MKV is anticipated to be over $1B, the out-year cost comparison of a missile field equipped with MKVs versus the large numbers of single-KV interceptors needed to provide equivalent capability fully justifies the cost of MKV development. The MKV payload is anticipated to be ready for initial fielding in the 2012-2014 time frame. To maximize return on investment, MDA will manage MKV using a flexible, decision-based approach supported by vigorous management reviews. If unanticipated technological obstacles surface the program will be delayed, or if the program is on track and the adversary challenge mounts the program may be accelerated.

MKV is a strong example of spiral development. It utilizes the same sensors, battle management, missile fields and even boosters that precede it.

The program is further documented in project 0502 of Program Element 0603175C.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Multiple Kill Vehicles	0	0	82,000	219,645
RDT&E Articles (Quantity)	0	0	0	0

Note: In FY 2004 and FY 2005, the Multiple Kill Vehicle (MKV) program is funded in Engagement Systems portion of Project 0502 of Program Element 0603175C.

FY 2004 Accomplishments:

- Selected one contractor team to begin Multiple Kill Vehicle (MKV) system development.
- Conducted MKV kill vehicle seeker, divert propulsion, and avionics component breadboard demonstrations.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Conducted second MKV system design review to ensure kill vehicle and carrier vehicle compatibility.

FY 2005 Planned Accomplishments:

- Conduct critical design review for the MKV hover test vehicle.
- Purchase long lead items for MKV kill vehicle hover test in FY 2006.
- Conduct MKV kill vehicle seeker, divert propulsion, and avionics brassboard demonstrations.
- Conduct MKV weapon control algorithm and software development.

FY 2006 Planned Program:

- Complete kill vehicle seeker/avionics/software hardware-in-the-loop testing.
- Conduct MKV kill vehicle hover test.
- Continue MKV weapon control algorithm and software development.
- Conduct preliminary design review for the MKV demonstration carrier vehicle.
- Conduct MKV Design Readiness Review.

FY 2007 Planned Program:

- Conduct preliminary design review for the integrated MKV payload.
- Conduct critical design review for the MKV flight test vehicle.
- Purchase long lead items to support MKV kill vehicle flight test in FY 2008.
- Conduct critical design review for the MKV demonstration carrier vehicle.
- Characterize state-of-the-art radiation hardened parts for the tactical payload.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

MKV will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The program will also be controlled through decision-based acquisition. An integrated Design Readiness Review will be conducted at the end of FY06 by the MDA Director to adjust out-year funding levels for the program in future budgets. The MKV system development prime contract was competitively awarded to Lockheed Martin Space Systems Company, Sunnyvale, CA, in FY 2004. The prime contract is an indefinite delivery / indefinite quantity type with a cost plus award fee pricing arrangement for individual task orders. Task Order 1 covers approximately one year of system development effort and culminates in the Hover Test Vehicle Critical Design Review (CDR) in Mid-February 2005. Task Order 2 and subsequent task orders will be issued dependent on the contractor's performance, particularly in achieving specific program milestones, such as the Hover Test Vehicle CDR.

The U. S. Army Space and Missile Defense Command, Huntsville, AL, manages the system development contract on behalf of the Missile Defense Agency as its Executing Agent.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Multiple Kill Vehicles										
MKV System Development	CPAF	LMSSC/ Sunnyvale, CA & Dallas, TX	0	0	1Q	73,371	1Q	183,320	1Q	256,691
Subtotal Product Development			0	0		73,371		183,320		256,691

Remarks

This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Multiple Kill Vehicles										
Support Contracts	FFP	Sparta/ Arlington, VA	0	0	N/A	200	1Q	0	N/A	200
Support Contracts	FFP	Computer Sciences Corp/ Arlington, VA	0	0	N/A	450	1Q	0	N/A	450
Support Contracts	CPFF	Aero Thermo Technology/ Huntsville, AL	0	0	N/A	600	1Q	0	N/A	600
Support Contracts	CPFF	Gray Research/ Huntsville, AL	0	0	N/A	500	1Q	0	N/A	500
Support Contracts	CPAF	ITT/ Huntsville, AL	0	0	N/A	349	1Q	750	1Q	1,099

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Support Contracts	FFP	Science and Technology Associates/ Arlington, VA	0	0	N/A	1,000	1Q	1,200	1Q	2,200
Support Contracts	CPFF	Various/ Various	0	0	N/A	450	1Q	3,200	1Q	3,650
Subtotal Support Costs			0	0		3,549		5,150		8,699

Remarks

This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

Base contract awarded January 2004. Task orders on the contract awarded approximately annually. Task order 2 will be awarded in 2Q of FY05, task order 3's targeted award date is 1Q FY06.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Multiple Kill Vehicles										
Government Test Support (Range Costs and GFE)	MIPR	Pacific Missile Range & Vandenberg AFB/ HI & CA	0	0	N/A	3,530	1Q	28,470	1Q	32,000
Subtotal Test and Evaluation			0	0		3,530		28,470		32,000

Remarks

This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Multiple Kill Vehicles										
Management Support	Various	TBD/ TBD	0	0	N/A	1,550	1Q	2,705	1Q	4,255
Subtotal Management Services			0	0		1,550		2,705		4,255

Remarks

This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

Project Total Cost			0	0		82,000		219,645		301,645

Remarks

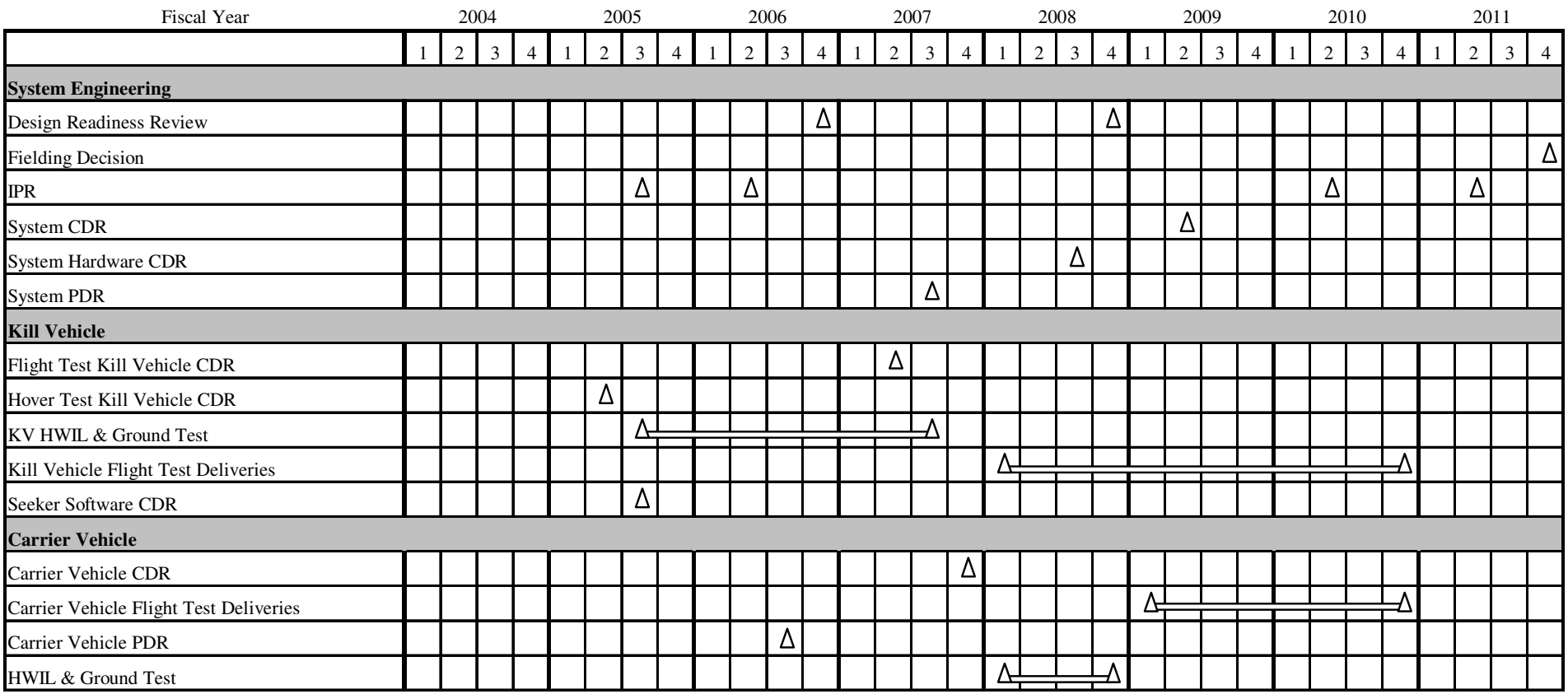
This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

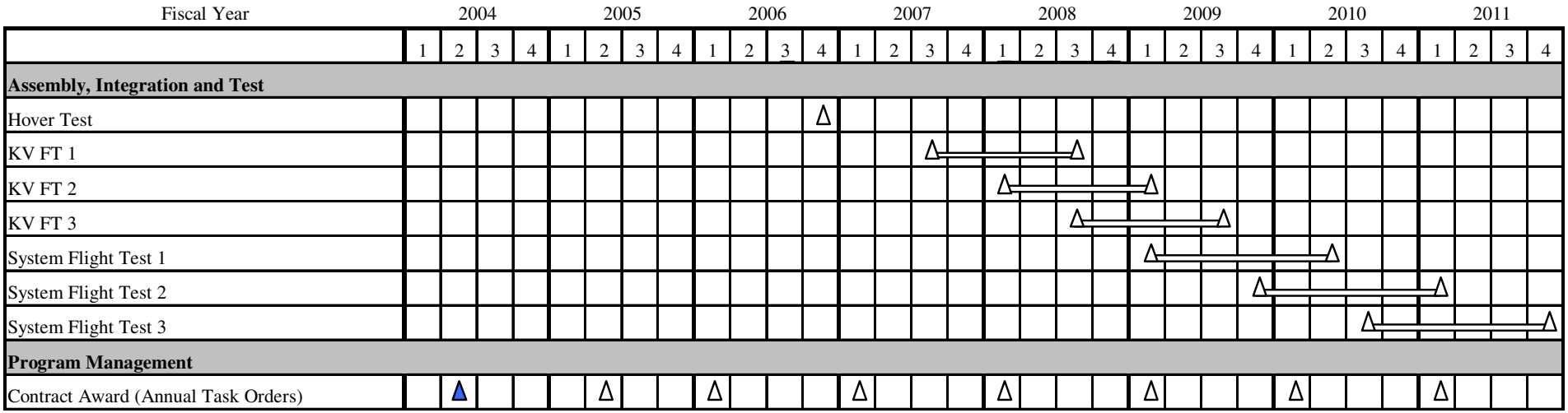
Date
February 2005

APPROPRIATION/BUDGET ACTIVITY
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)

R-1 NOMENCLATURE
0603882C Ballistic Missile Defense Midcourse Defense Segment



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
System Engineering								
Design Readiness Review			4Q		4Q			
Fielding Decision								4Q
IPR		3Q	2Q				2Q	2Q
System CDR						2Q		
System Hardware CDR					3Q			
System PDR				3Q				
Kill Vehicle								
Flight Test Kill Vehicle CDR				2Q				
Hover Test Kill Vehicle CDR		2Q						
KV HWIL & Ground Test		3Q-4Q	1Q-4Q	1Q-3Q				
Kill Vehicle Flight Test Deliveries					1Q-4Q	1Q-4Q	1Q-4Q	
Seeker Software CDR		3Q						
Carrier Vehicle								
Carrier Vehicle CDR				4Q				
Carrier Vehicle Flight Test Deliveries						1Q-4Q	1Q-4Q	
Carrier Vehicle PDR			3Q					
HWIL & Ground Test					1Q-4Q			
Assembly, Integration and Test								
Hover Test			4Q					
KV FT 1				3Q-4Q	1Q-3Q			
KV FT 2					1Q-4Q	1Q		
KV FT 3					3Q-4Q	1Q-3Q		
System Flight Test 1						1Q-4Q	1Q-2Q	
System Flight Test 2						4Q	1Q-4Q	1Q
System Flight Test 3							3Q-4Q	1Q-4Q
Program Management								
Contract Award (Annual Task Orders)	2Q	2Q	1Q	1Q	1Q	1Q	1Q	1Q

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	85,099	47,084	50,264	55,565	66,331	66,690	68,634	81,634
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common support functions across the entire program such as strategic planning, program integration, cost estimating, contracting, financial management to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions as well as support contractors providing government staff augmentation in these areas. Applies to costs at the MDA HQ as well as its Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities. Other costs include physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses at the various MDA Executing Agent locations, which at the MDA HQ are generally funded from the Management Headquarters Program Element (0901598C). Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Civilian Salaries and Support	85,099	47,084	50,264	55,565
RDT&E Articles (Quantity)	0	0	0	0

See Section A: Mission Description and Budget Item Justification

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
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PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754