

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2 RDT&amp;E Budget Item Justification</b>					Date <b>February 2006</b>		
---	--	--	--	--	------------------------------	--	--

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
---	--	--	--	--	--	--	--

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	472,543	471,673	631,616	577,442	455,800	456,664	687,048
0710 Airborne Laser (ABL) Block 2004	447,934	0	0	0	0	0	0
0810 Airborne Laser (ABL) Block 2006	0	454,677	595,425	0	0	0	0
0910 Airborne Laser (ABL) Block 2008	0	0	2,660	542,559	417,425	0	0
0010 Airborne Laser (ABL) Block 2010	0	0	0	0	0	416,425	647,764
0602 Program-Wide Support	24,609	16,996	33,531	34,883	38,375	40,239	39,284

**A. Mission Description and Budget Item Justification**

**A.1 System Element Description**

Program Element 0603883C, Boost Defense Segment (BDS), funds the Airborne Laser (ABL) element portions of the Ballistic Missile Defense System's (BMDS') Blocks 2004, 2006, 2008, and 2010 and other mission area investment activities. The ABL's purpose is to protect the United States, United States forces, allies, friends and areas of vital interest from ballistic missile threats. The ABL provides a capability to destroy ballistic missiles in the boost phase of their trajectory, the segment from post launch through propellant burnout after which the missile enters the midcourse phase of ballistic flight. The boost phase typically includes the first 60-300 seconds of flight and concludes at altitudes between 20-450 kilometers.

**A.2 System Element Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS)**

The primary mission of ABL is to significantly increase the overall defensive capability of the BMDS by reducing the number of targets faced by successive defenders and addressing certain threats difficult for other elements to counter. ABL is the lead boost defense element within the BMDS, uniquely adding the capability to destroy ballistic missiles from theater range to ICBM range during the boost phase. By destroying the missile in boost it also negates the threat prior to their ability to deploy multiple reentry vehicles, submunitions, or countermeasures. Additionally, warheads, and engagement debris, do not reach the intended target areas. Furthermore, there is a high probability that the threat missile debris will fall within the hostile country's own territory, serving as a deterrent and reducing the debris; possible affect on protected areas and assets. Secondary missions provide additional threat protection by including early ballistic missile launch warning, launch site location, cueing to BMDS, and impact point location. Detection and tracking during the boost phase significantly reduces the uncertainty in estimating the launch point location and therefore will enhance the probability of a successful counterstrike against aggressor's missile launchers. ABL's sensor capability further increases the robustness of the BMDS by enhancing the performance of other elements. In addition, the unique and revolutionary aspect of ABL's mobility and directed energy weapon add up to a weapon system that creates multiple additional complexities for those trying to develop or employ missile threats.

As an airborne platform, ABL also adds unique deployment flexibility to address a threat concentration and to more readily adapt the overall protection afforded by the BMDS to evolving situations that may threaten the US or its allies. Without ABL, MDA would have to address in much

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2 RDT&amp;E Budget Item Justification</b>	Date <b>February 2006</b>
---	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

less viable ways both the further proliferation of threats that is expected and the likely adversary counters to the other BMDS elements. It would also severely impact the development of this transformational technology for other applications with a commensurate negative impact on providing the warfighter a true revolutionary technology for changing how wars are fought. In summary, the ABL is a unique and critical element of the BMDS.

**A.3 Major System Element Goals**

The ABL program is designing, building, and testing an air-based laser system to acquire, track, and kill ballistic missiles in their boost phase. ABL integrates three major subsystems (Laser; Beam Control; and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747 aircraft. ABL also includes ABL-specific ground support equipment. The development of the 1st ABL weapon system test bed will be accomplished by incrementally stepping through all the key knowledge points (increasing degrees of integration and testing of the integrated weapon system denoting significant levels of accumulated understanding) that confirm the ABL's viability. The key knowledge points (KPs) are determined and validated on a calendar year basis, and are taken from major milestones within the program for that year.

Some of the major overall program milestones are:

- Completion of ground testing of a flight-worthy, weapon class laser segment suitable for use in an ABL
- Completion of aircraft modifications necessary for integration of the High Energy Laser (HEL) segment
- Completion of flight testing of the Beam Control/Fire Control (BC/FC) segment
- Completion of integration and ground testing of the ABL weapon system combining the laser, BC/FC, and battle management segments
- Successful demonstration of ABL lethality against a boosting ballistic missile (shoot down)
- Flight testing to expand the ABL weapon system performance envelope

Each milestone supports decisions to complete subsequent program milestones. In FY09, the program starts the second key component in ABL's capability-based evolutionary acquisition strategy by initiating the development of the 2nd ABL weapon system which will focus on weaponization, targeted performance improvements, and affordability.

**A.4 Major Events Schedule and Description**

<b>Major Event</b>	<b>Project</b>	<b>Timeframe</b>	<b>Description</b>
<b>Flight Test</b>			
<b>Testing Milestones</b>			
First Flight with BCFC system	0710	1Q FY 2005	• CY04 Knowledge Point
Perform 1st In-Flight Atmospheric Comp (KP)	0810	1Q FY 2007	• CY06 Knowledge Point
<b>Program Milestones</b>			
System Demonstration	0910	1Q FY 2009	

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2 RDT&amp;E Budget Item Justification</b>		Date <b>February 2006</b>
---	--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

Major Event	Project	Timeframe	Description
<b>Ground Test</b>			
<b>Testing Milestones</b>			
First Light	0710	1Q FY 2005	• CY04 Knowledge Point
Complete Laser Module Tests in Laser SIL (KP)	0810	1Q FY 2006	• CY05 Knowledge Point
Complete Low Power Active Ground Test (KP)	0810	4Q FY 2006	• CY06 Knowledge Point
Complete Laser Optics Subsys Refurb & Test (KP)	0810	1Q FY 2007	• CY06 Knowledge Point
Complete Low Power Active System Int. & Test	0810	2Q FY 2007	
Complete System Ground Tests	0910	3Q FY 2008	
<b>Other</b>			
<b>Testing Milestones</b>			
Complete Planned Link-16 tests	0710	3Q FY 2005	
Passive LP System Readiness and Flight Tests	0710	4Q FY 2005	• CY05 Knowledge Point
<b>Program Milestones</b>			
Laser Installation on Aircraft	0810	2Q FY 2007 - 4Q FY 2007	

<b>B. Program Change Summary</b>	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006 PB)	476,179	483,863	648,728
Current President's Budget (FY 2007 PB)	472,543	471,673	631,616
Total Adjustments	-3,636	-12,190	-17,112
Congressional Specific Program Adjustments	0	7,000	0
Congressional Undistributed Adjustments	0	-19,190	0
Reprogrammings	3,899	0	0
SBIR/STTR Transfer	-7,535	0	0
Adjustments to Budget Years	0	0	-17,112

FY05 reduction of \$3.636 million includes the SBIR/STTR transfer and MDA reprogrammings.

FY06 reduction of \$12.190 million includes Congressional specific program adjustments (\$7.0 million for Airborne Laser) and a portion of the MDA Congressional undistributed adjustment.

FY07 reduction of \$17.112 million is the result of programmatic changes to refocus the current fiscal environment on near term knowledge points before planning to invest in the second aircraft and overhead/infrastructure reductions.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>					Date <b>February 2006</b>		
--	--	--	--	--	------------------------------	--	--

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 NOMENCLATURE</b>			
<b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0710 Airborne Laser (ABL) Block 2004	447,934	0	0	0	0	0	0
RDT&E Articles Qty	5	0	0	0	0	0	0

*Note: FY05 RDT&E Test Articles: These RDT&E articles are targets that will be used to test the 1st ABL weapon system test bed. The targets will be prepared for generic MDA configuration and placed in hold status until needed for final test configuration.*

**A. Mission Description and Budget Item Justification**

The ABL Block 2004 effort continued integration and test of the first increment in the evolutionary acquisition of an air-based, boost phase intercept capability using directed energy. This 1st ABL weapon system test bed developed in Block 2004 represents a unique, dedicated, highly mobile weapon system element for the overall BMDS. ABL will provide the commander with an air-based revolutionary weapon system. This system will possess unique capabilities supporting the multi-tiered BMDS concept, providing boost phase defense against ballistic missile threats. The ABL Block 2004 effort capitalized on the technical progress achieved to date in integration and test of the 1st ABL weapon system test bed. The primary focus accomplished key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. Efforts are in place to reduce the risk and uncertainties associated with follow-on steps to shoot down. The Block 2004 program additionally provided continued ABL-specific technology maturation, integration and testing for future blocks; provided continued infrastructure sustainment to maintain and improve domestic capability to produce advanced optics and sensors for high-energy laser systems; and provided international cooperation exploration. The initial ABL program definition and risk reduction (PDRR) contract was established to design, fabricate, integrate, and test a Boeing 747 aircraft with a laser device, as well as Beam Control and Battle Management Systems. ABL integrated with C2BMC represents a key engagement sequence group (ESG) within the BMDS. ABL's sensor capability can also be used by other BMDS elements, expanding the overall BMDS ESGs available. In FY06, ABL remains a Level 3 ESG, i.e., in the phase of integrating and proving major subsystems and providing confidence in full integration. C2BMC and BMDS-level systems engineering and integration guide ABL's optimum incorporation into the BMDS.

**B. Accomplishments/Planned Program**

	FY 2005	FY 2006	FY 2007
1st ABL	363,693	0	0
RDT&E Articles (Quantity)	0	0	0

Continued to develop the 1st ABL weapon system testbed. This included ground integration and testing of a flight worthy weapons class laser. This also included significant efforts advancing the integration and testing of the Beam Control/Fire Control (BC/FC) segment on the aircraft. Efforts

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

resulted in a BC/FC segment ready to begin active testing on the aircraft, as well as repeated demonstration of the ability of the weapons-class laser to achieve power and duration necessary for lethal demonstration and operational capability.

**FY05 Accomplishments:**

- Completed first flight of the ABL with the Beam Control System to include unstow and pointing of the main optics proving their packaging, integration and air worthiness
- Completed demonstrations of the passive portions of the beam control system to operate as required during flight testing
- Completed first light of the full laser within the laser System Integration Laboratory (SIL) demonstrating 6 modules working together to form the highest power Chemical Oxygen Iodine Laser (COIL) laser ever
- Continued High Energy Laser (HEL) SIL testing to verify operation of all support systems
- Completed planned Link-16 implementation, providing for integration into the BMDS
- Conducted Common Cost Methodology Working Group (CCMWG) efforts in support of ABL life cycle cost estimates, and affordability modeling. This effort incorporated the use of Block 2004 actual costs for estimating a 2nd ABL unit
- Conducted international cooperation efforts to investigate future potential benefits to ABL
- Initiated phased implementation of MDA BMDS security compliance to continue improving the program's security stance

	FY 2005	FY 2006	FY 2007
Government Activities	75,466	0	0
RDT&E Articles (Quantity)	5	0	0

The Block 2004 government activities included support for the increased operations tempo of the Integrated Test Force (ITF), ground test activities at Edwards AFB, diagnostics for flight tests, boost diagnostics, targets, Atmospheric Decision Aid (ADA) support to ABL flight testing, ITF environmental activities, modeling and simulation efforts for BMDS integration, logistics, contractor personnel support (Advisory and Assistance Services, System Engineering Technical Assistance, Federally Funded Research and Development Center), and System Program Office (SPO) administrative operating support.

**FY05 Accomplishments:**

**RDT&E Test Articles:** These RDT&E articles are targets that will be used to test the 1st ABL weapon system test bed. The targets will be prepared for generic MDA configuration and placed in hold status until needed for final test configuration.

The delivery of 5 Foreign Military Assets (FMA) was completed in FY05.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

- Completed planned AF Link-16 testing
- Supported ground and flight test operations out of Edwards AFB
- Provided atmospheric decision aid support to ABL flight testing
- Provided diagnostics and targets to support ABL flight testing
- Supported MDA Engagement Sequence Group (ESG) management activities
- Continued modeling and simulation activities to support ABL development and incorporation within the BMDS
- Continued program operations for managing the execution of the ABL program

	FY 2005	FY 2006	FY 2007
Infrastructure Improvement	4,777	0	0
RDT&E Articles (Quantity)	0	0	0

Conducted investments to enhance the ABL-specific industrial base with the focus on large optics, optical coatings, sensors and targeted manufacturing shortfalls for a 2nd ABL weapon system.

**FY05 Accomplishments:**

- Continued improvements in process and process controls for coating large and small optics to increase quality and repeatability
- Continued optics fabrication and sustainment efforts
- Completed effort to improve Electron Bombarded Charged Couple Device (EBCCD) camera manufacturing yields and processes

	FY 2005	FY 2006	FY 2007
Technology Insertion	3,998	0	0
RDT&E Articles (Quantity)	0	0	0

Developed promising technologies for possible incorporation in the 1st ABL weapon system after lethal demonstration, and for the 2nd ABL weapon system and later ABLs. Efforts have focused on technologies that will improve ABL lethality, reliability, and maintainability to improve ABL's contribution to the BMDS.

**FY05 Accomplishments:**

- Continued efforts to reduce optical jitter and improve beam control performance
- Continued project to develop a cryogenically cooled Yb:YAG illuminator laser and initiated form, fit, function illuminator concept definition
- Initiated program to develop EBCCD camera replacement prototype
- Continued effort to develop oxy fluoride glass for laser beam path windows

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

<b>C. Other Program Funding Summary</b>								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

UNCLASSIFIED

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	

**D. Acquisition Strategy**

The Airborne Laser entered into a program definition and risk reduction (PDRR) contract in November 1996. The initial development contract was awarded to the Boeing/TRW (now Northrop Grumman)/Lockheed Martin team. Since then, there has been steady and significant progress. The program remains structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. The current contractual vehicles were implemented to provide better management in the high-risk environment for the technology advanced ABL program, thereby, reducing uncertainties and improving planning. The program structure allows remaining efforts to be grouped and phased to emphasize the focus on incremental achievement of technical milestones and increasing confidence in the technical viability of the airborne laser.

The development of the 1st ABL weapon system test bed will be accomplished by incrementally stepping through all the key knowledge points (integration and test milestones denoting significant levels of accumulated understanding) that confirm the ABL's viability. Each knowledge point supports program decisions to complete subsequent milestones. The key knowledge points are:

- Completion of ground testing of a flight-worthy, weapon class laser segment suitable for use in an ABL
- Completion of aircraft modifications necessary for integration of the High Energy Laser (HEL) segment
- Completion of flight testing of the Beam Control Fire Control (BC/FC) segment
- Completion of integration and ground testing of the ABL weapon system combining the laser, BC/FC, and battle management segments
- Successful demonstration of ABL lethality against a boosting ballistic missile (shoot down)
- Flight testing to expand the ABL weapon system performance envelope

The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Blocks 2004, 2006, 2008, and 2010). This approach systematically and incrementally adds more capability as technology matures.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

**I. Product Development Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>1st ABL</b>								
	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	1,582,901	0	N/A	0	N/A	1,582,901
<b>Infrastructure Improvement</b>								
Contract	SS/MIPR	Multiple, i.e. Lockheed Martin/ Multiple, i.e. MD, CA	17,597	0	N/A	0	N/A	17,597
<b>Technology Insertion</b>								
Contract	SS/MIPR	Multiple, i.e. Northrop Grumman, Lockheed Martin/ Multiple, i.e. CA	25,405	0	N/A	0	N/A	25,405
<b>Subtotal Product Development</b>			<b>1,625,903</b>	<b>0</b>		<b>0</b>		<b>1625903</b>

**Remarks** Prior year totals reflect post transfer of ABL from an Air Force program to an MDA program. An FY05 \$4.25M Congressional Add is included for international cooperation for the 1st ABL.

**II. Support Costs Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Government Activities</b>								
Technical Support Costs	C/CPAF	Northrop Grumman/ Kirtland AFB	50,774	0	N/A	0	N/A	50,774

**UNCLASSIFIED**

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Technical Support Costs	MIPR	Aerospace/ Kirtland AFB	4,303	0	N/A	0	N/A	4,303
Technical Support Costs	MIPR	Tecolote Research/ Kirtland AFB	6,885	0	N/A	0	N/A	6,885
Technical Support Costs	MIPR	MITRE/ Kirtland AFB	1,434	0	N/A	0	N/A	1,434
Government and Other Support Costs	C/FP	ABL SPO/ Kirtland AFB	300	0	N/A	0	N/A	300
Government and Other Support Costs	MIPR	AFRL/ TX, CA	3,014	0	N/A	0	N/A	3,014
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	1,395	0	N/A	0	N/A	1,395
Government and Other Support Costs	MIPR	UDRI/ OH	2,171	0	N/A	0	N/A	2,171
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	2,534	0	N/A	0	N/A	2,534
Government and Other Support Costs	MIPR	NAVAIR/ CA	781	0	N/A	0	N/A	781
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	1,395	0	N/A	0	N/A	1,395
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	2,802	0	N/A	0	N/A	2,802
Government and Other Support Costs	C/FP	ABL SPO/ Kirtland AFB	1,116	0	N/A	0	N/A	1,116
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB, MA	2,511	0	N/A	0	N/A	2,511
Government and Other Support Costs	C	ABL SPO/ Kirtland AFB	5,581	0	N/A	0	N/A	5,581

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Government and Other Support Costs	C	ABL SPO/ Kirtland AFB	7,255	0	N/A	0	N/A	7,255
Government and Other Support Costs	MIPR	ACC/ VA	2,791	0	N/A	0	N/A	2,791
Government and Other Support Costs	C	ABL SPO/ Kirtland AFB	307	0	N/A	0	N/A	307
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	324	0	N/A	0	N/A	324
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	1,105	0	N/A	0	N/A	1,105
Government and Other Support Costs	C	ABL SPO/ Kirtland AFB	6,217	0	N/A	0	N/A	6,217
Government and Other Support Costs	C	ABL SPO/ Kirtland AFB	1,674	0	N/A	0	N/A	1,674
<b>Subtotal Support Costs</b>			<b>106,669</b>	<b>0</b>		<b>0</b>		<b>106669</b>

**Remarks** Prior year totals reflect post transfer of ABL from an Air Force program to an MDA program.

**III. Test and Evaluation Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Government Activities</b>								
Integrated Test Force	MIPR	AFFTC/ Edwards AFB	58,900	0	N/A	0	N/A	58,900
LFT&E-Lethality Baseline Tests	MIPR	AFRL/ Kirtland AFB	27,846	0	N/A	0	N/A	27,846
Target - Test Instrumentation	MIPR	Hanscom AFB, Peterson AFB	53,876	0	N/A	0	N/A	53,876

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation			140,622	0		0		140622

**Remarks** Prior year totals reflect post transfer of ABL from an Air Force program to an MDA program.

**IV. Management Services Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	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			1,873,194	0		0		1,873,194
--------------------	--	--	-----------	---	--	---	--	-----------

**Remarks** Prior year totals reflect post transfer of ABL from an Air Force program to an MDA program.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

Fiscal Year	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
<b>Testing Milestones</b>																												
First Light	▲																											
First Flight with BCFC system	▲																											
Complete Planned Link-16 tests			▲																									
Passive LP System Readiness and Flight Tests				▲																								

<b>Legend</b>	
▲	Significant Event (complete)
★	Milestone Decision (complete)
◆	Element Test (complete)
▼	System Level Test (complete)
▲—▲	Complete Activity
▲	Significant Event (planned)
☆	Milestone Decision (planned)
◇	Element Test (planned)
▼	System Level Test (planned)
▲—▲	Planned Activity

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail</b>						Date <b>February 2006</b>	
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
<b>Testing Milestones</b>							
First Light	1Q						
First Flight with BCFC system	1Q						
Complete Planned Link-16 tests	3Q						
Passive LP System Readiness and Flight Tests	4Q						

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>						
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0810 Airborne Laser (ABL) Block 2006	0	454,677	595,425	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification**

The ABL Block 2006 effort will continue the program's integration and ground and flight test activities for the 1st ABL weapon system test bed. It will also provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure sustainment to maintain and improve domestic capability to produce advanced optics and sensors for high-energy laser systems. More specifically, the ABL program will continue preparations for installation of the High Energy Laser (HEL) onto the aircraft, as well as continuing testing of the integrated BC/FC, aircraft, and Battle Management (BMC4I) systems, to include active testing with the beacon and tracking illuminators.

The ABL program is designing, building, and testing an air-based laser system to acquire, track, and kill ballistic missiles. ABL integrates three major subsystems (Laser; Beam Control; and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747 aircraft. ABL also includes ABL-specific ground support equipment. ABL will provide the commander with an air-based revolutionary weapon system. This system will possess unique capabilities supporting the multi-tiered BMDS concept, providing boost phase defense against ballistic missile threats. The development of the 1st ABL weapon system test bed will be accomplished by incrementally stepping through all the key knowledge points (increasing degrees of integration and testing of the integrated weapon system denoting significant levels of accumulated understanding) that confirm the ABL's viability. The key knowledge points (KPs) for calendar year 2006 are:

- Complete Low Power Active Ground Test - To achieve this knowledge point the program will have to install, activate and demonstrate ground operation of the beacon and tracking illuminators, as well as demonstrate automated interoperation of the entire low-power system.
- Perform First In-Flight Atmospheric Compensation w/tracking illuminator laser (TILL) tracking & beacon illuminator laser (BILL) beacon - This knowledge point demonstrates the critical atmospheric compensation portion of the system in the air.
- Complete Laser Optics Subsystem Test - Completion of this knowledge point will signal that a major portion of the laser refurbishment is complete and that the first major laser subsystems are ready for installation on the aircraft.

**B. Accomplishments/Planned Program**

	FY 2005	FY 2006	FY 2007
1st ABL	0	392,413	512,844
RDT&E Articles (Quantity)	0	0	0

Continue program for developing the 1st ABL weapon system test bed, to include start of the integration of the laser into the 1st ABL weapon system testbed, the initiation of ground testing and the purchase of spares for the 1st ABL weapon system test bed. Air Vehicle Integration and Test (AVIT)

UNCLASSIFIED

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
<p>provides the main framework for integration of all aspects of the weapon system. The Integrated Product Teams (IPTs) are key to ensuring AVIT is able to effectively integrate all components of the weapon system. They provide expert engineering, analysis, and manufacturing associated with their respective system components. The IPTs are working together so that by the completion of FY06 we will have completed all known structural aircraft modifications needed for shoot down, and we will have completed active ground testing of the low-power portion of the weapon system. Additionally, we will have completed System Integration Laboratory (SIL) testing, will have the laser disassembled and begun refurbishment and retrofit of all high-energy laser (HEL) parts, and will have completed substantial laser provisioning in the aircraft. By the end of FY07, low-power system integration will be complete and the HEL integration will be well underway on the aircraft. An increase in funding occurs from FY06-FY07 mainly due to increased Air Vehicle Integration and Test (AVIT) activities at Edwards AFB, the initiation of the Service Life Extension Program (SLEP), spares purchases, Core Standards/Mission Assurance Implementation Plan (MAIP), and the implementation of amended classification guidance and protection plans.</p> <p>FY06 Planned Program:</p> <p>Laser (\$72.5 million):</p> <ul style="list-style-type: none"><li>• Initiate refurbishment and retrofit of major laser subsystems &amp; components</li><li>• Complete planned design, component fabrication, and support of laser provisions integration</li></ul> <p>Aircraft (\$10.1 million):</p> <ul style="list-style-type: none"><li>• Complete engineering support, design, drawings for aircraft structural modifications</li><li>• Complete engineering support, design, drawings, for laser provisioning</li></ul> <p>Beam Control/Fire Control (BC/FC) (\$51.7 million):</p> <ul style="list-style-type: none"><li>• Complete Low Power System Integration (LPSI) active ground tests</li><li>• Complete integration of BILL and TILL on the aircraft</li><li>• Initiate testing of active laser atmospheric compensation using the BILL return</li></ul> <p>Battle Management (\$13.2 million):</p> <ul style="list-style-type: none"><li>• Complete software coding to support system ground test</li><li>• Continue software support of low-power flight tests</li><li>• Complete software and validation tests to support predictive avoidance certification</li><li>• Continue Active Ranging System (ARS) development</li></ul>		

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>		Date <b>February 2006</b>
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>	
<p>Air Vehicle Integration and Test (\$213.7 million):</p> <ul style="list-style-type: none"><li>• Complete High Energy Laser (HEL) SIL testing<ul style="list-style-type: none"><li>○ Demonstrate long-duration lasing capability in the SIL</li><li>○ Demonstrate repeated long duration lasing</li><li>○ Perform power-chemical characterization tests</li></ul></li><li>• Complete laser System Integration Laboratory (SIL) disassembly<ul style="list-style-type: none"><li>○ Remove laser components from the SIL</li><li>○ Ready laser components to begin refurbishment</li></ul></li><li>• Complete planned aircraft modifications, laser provisioning and laser integration work</li><li>• Complete low-power system ground tests<ul style="list-style-type: none"><li>○ Integrate tracking illuminator into the low-power system</li><li>○ Integrate the beacon illuminator into the low-power system</li><li>○ Demonstrate ground operation of the integrated low-power system in active mode</li></ul></li><li>• Initiate low-power system flight tests</li></ul> <p>Program Management/System Engineering (\$27.2 million):</p> <ul style="list-style-type: none"><li>• Continue System Engineering and Structural Integrity, Quality Assurance, Safety, Hardware and System Analysis and Integration</li><li>• Conduct baseline studies to capture 1st ABL baseline and identify required content and extent of ABL future improvement</li><li>• Conduct Common Cost Methodology Working Group (CCMWG) efforts in support of ABL life cycle cost estimates and affordability modeling</li></ul> <p>Other Support Activities (\$4.0 million):</p> <ul style="list-style-type: none"><li>• Continue phased implementation of amended classification guidance and protection plans</li></ul> <p>FY07 Planned Program:</p> <p>Laser (\$50.2 million):</p> <ul style="list-style-type: none"><li>• Complete laser optics subsystem refurbishment and test</li><li>• Complete planned laser refurbishment and retrofits</li><li>• Initiate laser integration support on the aircraft</li></ul>		

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>		Date <b>February 2006</b>
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>	
<p>Aircraft (\$11.4 million):</p> <ul style="list-style-type: none"><li>• Continue engineering support for aircraft structural modifications, laser provisioning, BC/FC upgrades and rework</li></ul> <p>Beam Control/Fire Control (BC/FC) (\$32.6 million):</p> <ul style="list-style-type: none"><li>• Complete substantiation of acquisition pointing, and tracking with TILL</li><li>• Complete demonstration Surrogate High Energy Laser (SHEL) scoring with illuminator laser beacons</li><li>• Complete demonstration of first in-flight atmospheric compensation with TILL and BILL</li><li>• Complete substantiation of atmospheric compensation with TILL and BILL</li></ul> <p>Battle Management (\$19.7 million):</p> <ul style="list-style-type: none"><li>• Complete software support of low-power flight tests</li><li>• Continue software support of weapon system integration and test</li><li>• Continue Active Ranging System (ARS) development</li></ul> <p>Air Vehicle Integration and Test (\$261.0 million):</p> <ul style="list-style-type: none"><li>• Complete low-power flight tests</li><li>• Initiate integration of the laser into the 1st ABL weapon system</li><li>• Initiate laser systems activation</li><li>• Complete substantiation of atmospheric compensation with TILL and BILL in flight</li></ul> <p>Program Management/System Engineering (\$39.9 million):</p> <ul style="list-style-type: none"><li>• Continue System Engineering and Structural Integrity, Quality Assurance, Safety, Hardware and System Analysis and Integration</li><li>• Conduct Common Cost Methodology Working Group (CCMWG) efforts in support of ABL life cycle cost estimates and affordability modeling</li><li>• Continue baseline studies to capture 1st ABL baseline and identify required content and extent of ABL future improvement</li></ul> <p>Other Support Activities (\$98.0 million):</p> <ul style="list-style-type: none"><li>• Initiate Service Life Extension Program (SLEP), activities include; aircraft (engine wear and other maintenance), laser (valves and other plumbing, turbo pumps, gas generators, tanks), BC/FC (processors/cards, steering mirrors, illuminator diodes), BMC4I (processors/cards, Infrared Search and Track (IRST) components)</li><li>• Complete implementation of amended classification guidance and protection plans</li></ul>		

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>		Date <b>February 2006</b>	
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>		<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>	
<ul style="list-style-type: none"> <li>• Initiate core standards trade studies and Mission Assurance Implementation Plan (MAIP) in order to increase the likelihood of mission success in delivering a useful operational capability</li> <li>• Initiate purchase of deployable ground support equipment and 1st ABL spares</li> </ul>			
	FY 2005	FY 2006	FY 2007
Infrastructure Improvement	0	5,550	9,623
RDT&E Articles (Quantity)	0	0	0
<p>Conduct investments to enhance the ABL specific industrial base with the focus on large optics, optical coatings and targeted manufacturing shortfalls for current and future ABL weapon systems. Maintain an industrial base to ensure critical personnel, facilities and processes are available to meet future ABL requirements. Targeted improvements are in quality, schedule, effectiveness, affordability, reliability, sustainability, maintainability, robustness, flexibility, compatibility and provable ability. Provide a rapid response capability if a critical component is needed while addressing sparing and long lead needs. Funding requirements increased in FY07 due to additional optics sustainment efforts.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> <li>• Continue sustainment of optics fabrication and coating capabilities</li> <li>• Continue improvements to bulkhead window production capability</li> <li>• Continue optical coatings process and chamber control improvements</li> <li>• Continue to improve Electron Bombarded Charged Couple Device (EBCCD) camera designs</li> </ul> <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> <li>• Continue sustainment of optics fabrication and coating capabilities</li> <li>• Continue improvements to bulkhead window production capability</li> <li>• Continue optical coatings process and chamber control improvements</li> <li>• Initiate higher performing, lower risk conformal window coating processes</li> </ul>			

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>		Date <b>February 2006</b>	
<b>APPROPRIATION/BUDGET ACTIVITY</b>		<b>R-1 NOMENCLATURE</b>	
<b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>		<b>0603883C Ballistic Missile Defense Boost Defense Segment</b>	
	FY 2005	FY 2006	FY 2007
Technology Insertion	0	11,314	10,318
RDT&E Articles (Quantity)	0	0	0
<p>Develop promising technologies for possible incorporation into the 1st ABL weapon system and later ABLs. Efforts will focus on technologies that will improve ABL lethality, reliability, maintainability and improve ABL's contribution to the BMDS. Provide technical/schedule/cost risk reduction for the 1st ABL and future blocks. Focus on critical performance risk items and areas for high-payoff to operational utility.</p> <p><b>FY06 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• Continue efforts to reduce optical jitter and improve beam control performance</li> <li>• Continue project to develop an enhanced illuminator laser</li> <li>• Continue efforts to improve ABL's engagement capabilities</li> <li>• Initiate surveillance sensor study to evaluate infrared search and track (IRST) follow-on options</li> </ul> <p><b>FY07 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• Continue efforts to reduce optical jitter and improve beam control performance</li> <li>• Continue to develop an enhanced illuminator laser</li> <li>• Continue efforts to improve ABL's engagement capabilities</li> <li>• Continue program to increase high energy laser power, efficiency, and operational regime</li> <li>• Develop enhanced Electron Bombarded Charged Couple Device (EBCCD) sensor</li> </ul>			
	FY 2005	FY 2006	FY 2007
Direct Support Activities	0	45,400	62,640
RDT&E Articles (Quantity)	0	0	0
<p>The Block 2006 direct support activities include support for the increased operations tempo for the Integrated Test Force (ITF), ground test activities at Edwards AFB, diagnostics for flight tests, boost diagnostics and live fire test and evaluation (LFT&amp;E). The increase in funding for LFT&amp;E from FY06 to FY07 is due to the increase in the number of target evaluations, initiation of efforts to evaluate alternate target aim-points and initiation of an aggressive full scale lethality evaluation testing process. The increase in funding for diagnostics/instrumentation is due to the purchase of diagnostics for post shoot down.</p>			

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>		Date <b>February 2006</b>
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>	
<p>FY06 Planned Program:</p> <p>Integrated Test Force (ITF) (\$15.2 million):</p> <ul style="list-style-type: none"><li>• Support Low Power System Integration - Active (LPSI-A) ground and flight test activities at test ranges</li><li>• Support System Integration Lab (SIL) disassembly and refurbishment as well as Hangar 151 modification</li></ul> <p>Live Fire Test &amp; Evaluation (LFT&amp;E) (\$12.7 million):</p> <ul style="list-style-type: none"><li>• Continue intelligence, lethality data collection, assessments and evaluations per Title 10 LFT&amp;E requirements</li><li>• Develop modeling and simulation programs and integrate test data to identify compliance with the requirements</li></ul> <p>Diagnostics/Instrumentation (\$17.5 million):</p> <ul style="list-style-type: none"><li>• Provide diagnostics to support ABL flight testing</li><li>• Be prepared to execute up to 3 Low-Power Missile Alternative Range Target Instrument (MARTI) launches for LPSI-A</li><li>• Continue development of Big Crow (NC-135) backup target board for in-flight testing with ABL aircraft</li></ul> <p>FY07 Planned Program:</p> <p>Integrated Test Force (ITF) (\$17.8 million):</p> <ul style="list-style-type: none"><li>• Support continued ground test activities at Edwards AFB</li><li>• Support integration of the High Energy Laser (HEL) into the ABL aircraft</li></ul> <p>Live Fire Test &amp; Evaluation (LFT&amp;E) (\$17.9 million):</p> <ul style="list-style-type: none"><li>• Continue with survivability and vulnerability for Title 10 compliance documentation</li><li>• Initiate aggressive full scale lethality evaluation testing process to support CY08 shoot down</li></ul> <p>Diagnostics/Instrumentation (\$26.9 million):</p> <ul style="list-style-type: none"><li>• Provide diagnostics and long-lead targets acquired through MDA/TC which will support later ABL flight testing</li><li>• Continue to develop and acquire High-Power MARTI for High Power System Integration (HPSI) testing</li></ul>		

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

<b>C. Other Program Funding Summary</b>								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

UNCLASSIFIED

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	

**D. Acquisition Strategy**

The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Blocks 2004, 2006, 2008, and 2010). This approach systematically and incrementally adds more capability as technology matures. The ABL Block 2006 effort will implement improvements learned in ABL Block 2004 and will continue the program's integration and ground and flight test activities for the 1st ABL weapon system testbed. It will also provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure sustainment to maintain and improve domestic capability to produce advanced optics and sensors for high-energy laser systems.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

<b>I. Product Development Cost ( \$ in Thousands )</b>								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>1st ABL</b>								
Prime Contract	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	355,677	1/4Q	378,285	1/4Q	733,962
Service Life Extension Program	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	0	1/4Q	55,400	1/4Q	55,400
BMDS Security	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	4,000	1/4Q	11,300	1/4Q	15,300
1st ABL Spares	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	0	1/4Q	21,800	1/4Q	21,800
BMDS Core Stds/MAIP	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	0	1/4Q	6,100	1/4Q	6,100
Deployable Ground Support	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	0	1/4Q	3,400	1/4Q	3,400
Technical Support Costs	C/CPAF	Northrop Grumman/Kirtland AFB, Various	0	19,136	1/4Q	22,224	1/4Q	41,360
FFRDC Support	MIPR	Aerospace/MITRE/ Kirtland AFB	0	2,350	1/4Q	2,500	1/4Q	4,850
Technical Support Costs	MIPR	Tecolote Research/Kirtland AFB	0	2,550	1/4Q	2,700	1/4Q	5,250
Government and Other Support Costs	C/FP	ABL SPO/Kirtland AFB	0	330	1/4Q	347	1/4Q	677

**UNCLASSIFIED**

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
Government and Other Support Costs	MIPR	AFRL/Kirtland AFB, MA, Multiple	0	2,690	1/4Q	2,826	1/4Q	5,516
Government and Other Support Costs	MIPR	UDRI/OH	0	428	1/4Q	449	1/4Q	877
Government and Other Support Costs	MIPR	NAVAIR/CA	0	154	1/4Q	162	1/4Q	316
Government and Other Support Costs	C/FP	ABL SPO/Kirtland AFB	0	220	1/4Q	231	1/4Q	451
Government and Other Support Costs	MIPR	ABL SPO/Kirtland AFB/Multiple	0	4,328	1/4Q	4,542	1/4Q	8,870
Government and Other Support Costs	MIPR	ACC/VA	0	550	1/4Q	578	1/4Q	1,128
<b>Infrastructure Improvement</b>								
Contract	SS/MIPR	Multiple, i.e. Lockheed Martin/ Multiple, i.e. MD, CA	0	5,200	1/4Q	8,300	1/4Q	13,500
Technical Support Costs	C/CPAF	Northrop Grumman/Kirtland AFB, Multiple	0	350	1/4Q	1,323	1/4Q	1,673
<b>Technology Insertion</b>								
Contract	SS/MIPR	Multiple, i.e. Northrop Grumman, Lockheed Martin/ Multiple, i.e. MD, CA	0	10,600	1/4Q	8,900	1/4Q	19,500
Technical Support Costs	C/CPAF	Northrop Grumman/Kirtland AFB, Multiple	0	714	1/4Q	1,418	1/4Q	2,132
Subtotal Product Development			0	409,277		532,785		942062

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	R-1 NOMENCLATURE <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
--	---

**Remarks:** Operating support costs have been allocated to the activities they support.

**II. Support Costs Cost ( \$ in Thousands )**

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

**III. Test and Evaluation Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Direct Support Activities</b>								
Integrated Test Force	MIPR	AFFTC/ Edwards AFB	0	15,200	1/4Q	17,800	1/4Q	33,000
LFT&E-Lethality Baseline Tests	MIPR	Kirtland AFB	0	12,700	1/4Q	17,900	1/4Q	30,600
Diagnostics/Instrumentation	MIPR	Hanscom AFB, Peterson AFB	0	17,500	1/4Q	26,940	1/4Q	44,440
Subtotal Test and Evaluation			0	45,400		62,640		108040

**IV. Management Services Cost ( \$ in Thousands )**

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

Project Total Cost			0	454,677		595,425		1,050,102
--------------------	--	--	---	---------	--	---------	--	-----------

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	<b>R-1 NOMENCLATURE</b> 0603883C Ballistic Missile Defense Boost Defense Segment
--	---

Fiscal Year	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				
<b>Testing Milestones</b>																																
Complete Laser Module Tests in Laser SIL (KP)					▲																											
Complete Low Power Active Ground Test (KP)								▲																								
Perform 1st In-Flight Atmospheric Comp (KP)												▲																				
Complete Laser Optics Subsys Refurb & Test (KP)												▲																				
Complete Low Power Active System Int. & Test												▲																				
<b>Program Milestones</b>																																
Laser Installation on Aircraft												▲	—	▲																		

<b>Legend</b>	
▲	Significant Event (complete)
★	Milestone Decision (complete)
◆	Element Test (complete)
◊	System Level Test (complete)
▲	Complete Activity
▲	Significant Event (planned)
☆	Milestone Decision (planned)
◇	Element Test (planned)
◊	System Level Test (planned)
▲—▲	Planned Activity

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail</b>						Date <b>February 2006</b>	
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
<b>Testing Milestones</b>							
Complete Laser Module Tests in Laser SIL (KP)		1Q					
Complete Low Power Active Ground Test (KP)		4Q					
Perform 1st In-Flight Atmospheric Comp (KP)			1Q				
Complete Laser Optics Subsys Refurb & Test (KP)			1Q				
Complete Low Power Active System Int. & Test			2Q				
<b>Program Milestones</b>							
Begin SIL Disassembly and Parts Refurbishment		1Q					
Integrate TILL and BILL on Aircraft		3Q					
Complete A/C Modifications, Laser Provisioning		4Q					
Aircraft Return to Edwards AFB			2Q				
Laser Installation on Aircraft			2Q-4Q				
A/C Residual Provisioning and Mods/BCFC Upgrades			2Q-4Q				

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>						
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0910 Airborne Laser (ABL) Block 2008	0	0	2,660	542,559	417,425	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification**

The ABL Block 2008 continues the spiral development of the ABL for future integration of its capabilities into the BMDS. This is essential to provide a robust boost phase defense capability that dramatically complicates the effort of any potential aggressor to threaten or attack the United States' interests with the use of ballistic missiles. The key component of this spiral activity is the 1st ABL Weapon System test bed. The 1st ABL advances and matures the technology as well as addresses the challenge of integration into a complete weapon system. The weapon system flight testing will culminate in a lethal demonstration of the weapon system. Once lethal demonstration is complete, additional testing to include envelope expansion is planned. The 1st ABL will also provide a flying asset for advancing capability of future ABLs through technology and operations improvement. This system will possess unique capabilities supporting the multi-tiered BMDS concept, providing boost phase defense against ballistic missile threats. To this end, the ABL Block 2008 effort furthers ground and flight testing of the 1st ABL weapon system testbed. The Block 2008 effort continues the ABL-specific technology and infrastructure sustainment efforts. The Block 2008 effort provides for enhancement of BMDS integration and the initiation of future operational ground support development activities. The Block 2008 program will conduct studies and establish the capabilities baseline for an advanced (robust, supportable, and producible) 2nd ABL weapon system.

**B. Accomplishments/Planned Program**

	FY 2005	FY 2006	FY 2007
Targets	0	0	2,660
RDT&E Articles (Quantity)	0	0	0

This effort provides the Missile Defense Agency with ballistic missile target hardware, target range support, logistics support, target integration, and associated launch services to support ABL Block 2008 flight tests, as well as other system wide tests to support the development of the Ballistic Missile Defense System.

**FY07 Planned Program:**

- Refurbish and transport Lance missile assets for LPSI-A (up to 6)
- Integrate and launch Lance missiles for LPSI-A (up to 6)
- Post mission analysis

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

<b>C. Other Program Funding Summary</b>								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

UNCLASSIFIED

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	

**D. Acquisition Strategy**

The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Blocks 2004, 2006, 2008, and 2010). This approach systematically and incrementally adds more capability as technology matures. The ABL Block 2008 effort furthers ground and flight testing of the 1st ABL weapon system. The Block 2008 effort continues the ABL-specific technology and infrastructure sustainment efforts. The Block 2008 effort provides for enhancement of BMDS integration and the initiation of ground support. In FY09, the program will expand the capability-based evolutionary acquisition strategy by initiating the development of a 2nd ABL weapon system as a step along the way to ultimately producing an operational ABL force.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>	Date <b>February 2006</b>
---	------------------------------

APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	R-1 NOMENCLATURE <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
--	---

**I. Product Development Cost ( \$ in Thousands )**

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

**Remarks**

**II. Support Costs Cost ( \$ in Thousands )**

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

**Remarks**

**III. Test and Evaluation Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Targets</b>								
Targets	MIPR	Multiple	0	0	N/A	2,660	1/4Q	2,660
Subtotal Test and Evaluation			0	0		2,660		2660

**Remarks**

**IV. Management Services Cost ( \$ in Thousands )**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	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		2,660		2,660
--------------------	--	--	---	---	--	-------	--	-------

**Remarks**

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile</b>	Date <b>February 2006</b>
--	------------------------------

APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	R-1 NOMENCLATURE <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
--	---

Fiscal Year	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
<b>Testing Milestones</b>																												
Continue Ground and Flight Tests																												
Complete System Ground Tests																												
<b>Program Milestones</b>																												
System Demonstration																												

**Legend**

	Significant Event (complete)		Significant Event (planned)
	Milestone Decision (complete)		Milestone Decision (planned)
	Element Test (complete)		Element Test (planned)
	System Level Test (complete)		System Level Test (planned)
	Complete Activity		Planned Activity

**UNCLASSIFIED**

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date <b>February 2006</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				R-1 NOMENCLATURE <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
<b>Testing Milestones</b>							
Continue Ground and Flight Tests				1Q-4Q	1Q-4Q		
Complete System Ground Tests				3Q			
<b>Program Milestones</b>							
System Demonstration					1Q		

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>					Date <b>February 2006</b>		
--	--	--	--	--	------------------------------	--	--

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 NOMENCLATURE</b>			
<b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0010 Airborne Laser (ABL) Block 2010	0	0	0	0	0	416,425	647,764
RDT&E Articles Qty	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification**

The ABL Block 2010 continues the spiral development of the ABL for future integration of its capabilities into the BMDS. This is essential to provide a robust boost phase defense capability that dramatically complicates the effort of any potential aggressor to threaten or attack the United States' interests with the use of ballistic missiles. The two key components of this spiral activity are the 1st ABL Weapon System test bed and the 2nd ABL Weapon System. It will also provide a flying asset for advancing capability of future ABLs through technology and operations improvement. The 2nd ABL effort focuses on developing and producing an ABL that will demonstrate a capability that is operationally significant with a baseline that is robust, reliable, and reproducible in order to support an eventual production decision. To this end, the ABL Block 2010 effort includes evaluations of the 1st ABL against a broader spectrum of threats as an integrated part of the overall BMDS, and also provides for enhancement of BMDS integration. The Block 2010 effort continues trade studies and capability baseline efforts for defining the 2nd ABL weapon system leading to completion of a System Requirements Review. It then transitions the 2nd ABL efforts to the system design activities necessary to complete a System Design Review and support subsystem design work for a Preliminary Design Review. Additionally, it initiates the acquisition activities for the purchase of the 2nd Boeing 747 airframe. ABL-specific technology maturation and infrastructure improvement also continues. The increase in funding in FY10 and FY11 is due to the additional development efforts for the 2nd ABL weapon system.

**C. Other Program Funding Summary**

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>						Date <b>February 2006</b>		
--	--	--	--	--	--	------------------------------	--	--

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>				
---	--	--	--	--	--	--	--	--

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

**D. Acquisition Strategy**

The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Blocks 2004, 2006, 2008, and 2010). This approach systematically and incrementally adds more capability as technology matures. The Block 2010 effort includes evaluations against a broader spectrum of threats as an integrated part of the overall BMDS, and also provides for enhancement of BMDS integration. The Block 2010 program also continues trade studies and then transitions emphasis to design activities and initiates the acquisition of the 2nd Boeing 747 airframe (the green aircraft). ABL-specific technology maturation and infrastructure improvement also continues.

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	<b>R-1 NOMENCLATURE</b> 0603883C Ballistic Missile Defense Boost Defense Segment
--	---

Fiscal Year	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				
<b>Testing Milestones</b>																																
Continued Flight and Ground Tests																																
<b>Legend</b>																																
	▲	Significant Event (complete)										▲	Significant Event (planned)																			
	★	Milestone Decision (complete)										★	Milestone Decision (planned)																			
	◆	Element Test (complete)										◆	Element Test (planned)																			
	▼	System Level Test (complete)										▼	System Level Test (planned)																			
	▲	Complete Activity										▲	Planned Activity																			

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail</b>						Date <b>February 2006</b>	
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
<b>Testing Milestones</b>							
Continued Flight and Ground Tests						1Q-4Q	1Q-4Q

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>					Date <b>February 2006</b>		
--	--	--	--	--	------------------------------	--	--

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 NOMENCLATURE</b>			
<b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>0603883C Ballistic Missile Defense Boost Defense Segment</b>			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	24,609	16,996	33,531	34,883	38,375	40,239	39,284
RDT&E Articles Qty	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification**

Program-Wide Support provides funding for common non-headquarters support functions across the entire program such as strategic planning, program integration, business management, cost estimating, contracting, and 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 outside services and support contractors that augment government staff in these areas. Many of these costs reside within the Missile Defense Agency 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, although some functions and costs within this program element are performed by MDA employees assigned within the National Capital Region (NCR). Other costs included herein provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses. 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 2005	FY 2006	FY 2007
Civilian Salaries and Support	24,609	16,996	33,531
RDT&E Articles (Quantity)	0	0	0

See Section A: Mission Description and Budget Item Justification

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
--	------------------------------

<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>R-1 NOMENCLATURE</b> <b>0603883C Ballistic Missile Defense Boost Defense Segment</b>
---	--

<b>C. Other Program Funding Summary</b>								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475