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: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182
0710 Airborne Laser (ABL) Block 2004	463,132	457,900	0	0	0	0	0	0
0810 Airborne Laser (ABL) Block 2006	0	0	464,867	629,761	0	0	0	0
0910 Airborne Laser (ABL) Block 2008	0	0	0	0	601,294	669,120	0	0
0010 Airborne Laser (ABL) Block 2010	0	0	0	0	0	0	791,930	1,163,040
0602 Program-Wide Support	12,779	18,279	18,996	18,967	19,499	21,687	19,500	20,142

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. There is risk associated with any significant downward adjustments in this budget.

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.

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 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 Airborne Laser (ABL), integrated with C2BMC, represents a key engagement sequence group (ESG) within the BMDS. The ABL's sensor capability can also be used by other BMDS elements, expanding the overall BMDS ESGs available. In FY05, ABL is 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 BMD System.

Program Element 0603883C, Boost Defense Segment (BDS), funds the Airborne Laser (ABL) element portions of BMDS' Block 2004, 2006, 2008, and 2010 and other mission area investment activities. The FY 2005 request includes funds for international cooperation. 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. Destroying ballistic missiles in the boost phase means threats can be negated long before they have an opportunity to deploy reentry vehicles, submunitions, or

countermeasures, and debris from successful engagements can be precluded from affecting protected areas and assets. As a result, adding ABL to the BMDS significantly increases the overall defensive capability by reducing the amount of targets faced by successive defenders and addressing certain threats they cannot counter.

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 747-400 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 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 High Energy Laser (HEL) segment
- Completion of flight testing of the Beam Control Fire Control (BCFC) segment
- Completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- Successful demonstration of ABL lethality against a boosting missile (shoot down)
- Flight testing of an ABL weapon system expanded performance envelope

Each point supports decisions to complete subsequent program milestones. In FY07, the program will expand the capability-based evolutionary acquisition strategy by initiating the development of a 2nd ABL weapon system testbed to provide the proof of a robust, supportable, producible capability ultimately needed for an operational ABL force.

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.

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B. Program Change Summary	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005 PB)	617,270	492,614	555,667	611,736
Current President's Budget (FY 2006 PB)	475,911	476,179	483,863	648,728
Total Adjustments	-141,359	-16,435	-71,804	36,992
Congressional Specific Program Adjustments	0	5,750	0	0
Congressional Undistributed Adjustments	0	-22,185	0	0
Reprogrammings	-51,314	0	0	0
SBIR/STTR Transfer	-90,045	0	0	0
Adjustments to Budget Years	0	0	-71,804	36,992

Select activities and the associated funding originally scheduled in FY 2006 were slipped to FY 2007 and FY 2008 as a result of a reduction to FY2006. The FY 2006 funding reduction was offset across the FYDP by increasing FY 2007 and FY 2008, respectively. Impacted government activities include the BMDS Security Guide Implementation, 1st ABL spares, Mission Assurance Implementation Plan (MAIP), and LFT&E efforts. Infrastructure Improvement and Technology Insertion efforts were also impacted. In addition, an FY 2006 and FY2007 reduction occurred as a result of a Zero Budget Transfer (ZBT). Indirect test range costs at Edwards AFB will no longer be paid from the ABL program element.

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: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0710 Airborne Laser (ABL) Block 2004	463,132	457,900	0	0	0	0	0	0
RDT&E Articles Qty	0	5	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The ABL Block 2004 effort continues 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 under development in Block 2004 represents a unique, dedicated, highly mobile weapon element for the overall BMDS.

The ABL Block 2004 effort capitalizes on the technical progress achieved to date in integration and test of the 1st ABL weapon system test bed. The primary focus is accomplishing key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. To that end, efforts necessary to reduce the risk and uncertainties associated with follow-on steps to shoot down also continue. The Block 04 program additionally provides continued ABL-specific technology maturation, integration and testing for future blocks; provides continued infrastructure sustainment to maintain and improve domestic capability to produce advanced optics and sensors for high-energy laser systems; and provides international cooperation exploration. The ABL initial development 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.

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. Each 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 High Energy Laser (HEL) segment
- Completion of flight testing of the Beam Control Fire Control (BCFC) segment
- Completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- Successful demonstration of the ABL lethality against a boosting ballistic missile (shoot down)
- Flight testing of an ABL weapon system expanded performance envelope

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 FY05, ABL will be 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 BMD System.

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
1st ABL	378,828	377,200	0	0
RDT&E Articles (Quantity)	0	0	0	0

Continue Block 2004 efforts for developing the 1st ABL weapon system testbed. This includes ground integration and testing of a flight worthy weapons class laser. This also includes efforts to integrate and test the Beam Control Fire Control (BCFC) segment on the aircraft.

FY 2004 Accomplishments:

- Completed ground integration and testing of the BCFC segment
- Completed integration of the six laser modules in the laser System Integration Laboratory (SIL)
- Completed SIL testing through iodine flow major activation in preparation for SIL first light
- Completed majority of integration efforts of the beam control segment into the 1st ABL weapon system aircraft

FY 2005 Planned Accomplishments:

- First flight of the ABL with the Beam Control System
- Complete passive Low Power (LP) system readiness and flight tests
- Complete High Energy Laser (HEL) SIL testing
- First light of the full laser within the laser SIL
- Complete Link-16 implementation, providing for integration into the BMDS
- Conduct Common Cost Methodology Working Group (CCMWG) efforts in support of ABL life cycle cost (LCC) estimates, and affordability modeling. This effort incorporates the use of Block 04 actual costs for estimating a 2nd ABL unit.
- Initiate international cooperation efforts
- Initiate phased implementation of MDA BMDS security compliance
- Complete testing of laser modules in the laser SIL

	FY 2004	FY 2005	FY 2006	FY 2007
Government Activities	72,392	73,900	0	0
RDT&E Articles (Quantity)	0	5	0	0

The Block 2004 government activities include 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 (Analysis and Analytical Services, System Engineering Technical Assistance, Federally Funded Research Development Center), and System Program Office (SPO) administrative operating support.

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FY 2004 Accomplishments:

- Continued successful development and testing of airborne instrumentation target.
- Continued development and application of modeling and simulation tools to support ABL testing and BMDS integration
- Continued lethality analysis of conceptual and threat missiles
- Supported BMDS engineering, test planning, and test execution
- Supported ground test activities at Edwards AFB
- Conducted oversight of auxiliary research efforts
- Purchase of 5 Foreign Military Assets (FMA) targets by Targets and Countermeasures (TC) Program Office
- The Targets and Countermeasures (TC) Program Office supported the procurement and launch of targets for ABL

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.

- No delivery in FY 2004 of Foreign Military Assets (FMA). The delivery of 3 FMAs stated in previous PB submission are delayed until FY 2005.

FY 2005 Planned Accomplishments:

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

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.

- 5 Foreign Military Assets. The previous PB submission stated 2 FMAs for FY 2005; the total increased to 5 FMAs due to the delay stated above for FY 2004.

	FY 2004	FY 2005	FY 2006	FY 2007
Infrastructure Improvement	7,400	5,200	0	0
RDT&E Articles (Quantity)	0	0	0	0

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

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FY 2004 Accomplishments:

- Continued large optics fabrication and sustainment efforts
- Initiated program to improve Electron Bombarded Charge Couple Device (EBCCD) camera manufacturing yields and processes
- Initiated effort to improve optical coating process and process controls
- Initiated effort to develop oxy fluoride glass for bulkhead windows

FY 2005 Planned Accomplishments:

- Continue improvements in process and process controls for coating large and small optics to increase quality and repeatability
- Continue optics fabrication and sustainment efforts
- Initiate program to develop EBCCD camera replacement prototype
- Continue effort to develop oxy fluoride glass for bulkhead windows

	FY 2004	FY 2005	FY 2006	FY 2007
Technology Insertion	4,512	1,600	0	0
RDT&E Articles (Quantity)	0	0	0	0

Develop promising technologies for incorporation in 2nd ABL weapon system testbed. Efforts will focus on technologies that will improve ABL lethality, reliability, and maintainability to improve ABL's contribution to the BMDS.

FY 2004 Accomplishments:

- Continued efforts to reduce optical jitter and improve beam control performance
- Initiated investigation to improve High Energy Laser (HEL) power, efficiency, and operational regime
- Initiated project to develop cryogenically cooled Ytterbium-doped: Yttrium Aluminum Garnet (Yb:YAG) crystal illuminator laser
- Developed components for pressure recovery system to enable low altitude operations
- Developed and implemented advanced disturbance filtering algorithms and reference sensor to reduce beam control system jitter
- Initiated target typing study
- Initiated study to improve Active Ranging System (ARS) performance
- Identified potential structural components for lightweighting

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FY 2005 Planned Accomplishments:

- Continue efforts to reduce optical jitter and improve beam control performance
- Continue project to develop cryogenically cooled Yb:YAG illuminator laser
- Continue program to increase High Energy Laser (HEL) power, efficiency, and operational regime

	FY 2004	FY 2005	FY 2006	FY 2007
Weapon System Development	0	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

The line for Weapon System Development is listed here since it appears in the R-3, which provides the historical costs for this item.

	FY 2004	FY 2005	FY 2006	FY 2007
Iron Bird	0	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

The Iron Bird ground test facility has been put on hold within the ABL program. The line for Iron Bird is listed here since it appears in the R-3, which provides the historical costs for this item.

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 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
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

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	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
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

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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. 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 High Energy Laser (HEL) segment
- Completion of flight testing of the Beam Control / Fire Control (BCFC) segment
- Completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- Successful demonstration of the ABL lethality against a boosting ballistic missile (shoot down)
- Flight testing of an ABL weapon system expanded 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.

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
1st ABL										
	C/CPAF	Boeing Defense & Space Group/ Seattle, WA	1,205,701	377,200	1/4Q	0	N/A	0	N/A	1,582,901
Infrastructure Improvement										
Contract	SS/Various	Multiple, i.e. Lockheed Martin/ Multiple, i.e. MD, CA	12,397	5,200	1/4Q	0	N/A	0	N/A	17,597
Technology Insertion										
Contract	SS/Various	Multiple, i.e. Northrop Grumman, Lockheed Martin/ Multiple, i.e. CA	23,805	1,600	1/4Q	0	N/A	0	N/A	25,405
Weapon System Development										
	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA	39,583	0	N/A	0	N/A	0	N/A	39,583
Iron Bird										
Contract	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA	8,505	0	N/A	0	N/A	0	N/A	8,505
Subtotal Product Development			1,289,991	384,000		0		0		1,673,991

Remarks

Prior year totals reflect post transfer of ABL from an Air Force program to an MDA program. Although the R-2A does not include funding for Weapon System Development FY 2004-2006, Weapon System Development is listed in the R-3 to provide the historical costs for this item. Although the R-2A does not include funding for Iron Bird FY 2004-2006, Iron Bird is listed in the R-3 to provide the historical costs for this item. An FY 2005 $4.25M Congressional Add is included for international cooperation for the 1st ABL.

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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
Government Activities										
Technical Support Costs	C/CPAF	Northrop Grumman/ Kirtland AFB/Various	33,074	17,700	1/4Q	0	N/A	0	N/A	50,774
Technical Support Costs	MIPR	Aerospace/ Kirtland AFB	2,803	1,500	1/4Q	0	N/A	0	N/A	4,303
Technical Support Costs	MIPR	Tecolote Research/ Kirtland AFB	4,485	2,400	1/4Q	0	N/A	0	N/A	6,885
Technical Support Costs	MIPR	MITRE/ Kirtland AFB	934	500	1/4Q	0	N/A	0	N/A	1,434
Government and Other Support Costs	C/FP	ABLSPO/ Kirtland AFB, Various	0	300	1/4Q	0	N/A	0	N/A	300
Government and Other Support Costs	MIPR	AFRL/ TX, CA, Various	2,474	540	1/4Q	0	N/A	0	N/A	3,014
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	1,145	250	1/4Q	0	N/A	0	N/A	1,395
Government and Other Support Costs	MIPR	UDRI/ OH	1,782	389	1/4Q	0	N/A	0	N/A	2,171
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	2,080	454	1/4Q	0	N/A	0	N/A	2,534
Government and Other Support Costs	MIPR	NAVAIR/ CA	641	140	1/4Q	0	N/A	0	N/A	781
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	1,145	250	1/4Q	0	N/A	0	N/A	1,395
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	2,300	502	1/4Q	0	N/A	0	N/A	2,802

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: **0603883C Ballistic Missile Defense Boost 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
Government and Other Support Costs	C/FP	ABL SPO/ Kirtland AFB	916	200	1/4Q	0	N/A	0	N/A	1,116
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB, MA, Various	2,061	450	1/4Q	0	N/A	0	N/A	2,511
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	4,581	1,000	1/4Q	0	N/A	0	N/A	5,581
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	5,955	1,300	1/4Q	0	N/A	0	N/A	7,255
Government and Other Support Costs	MIPR	ACC/ VA	2,291	500	1/4Q	0	N/A	0	N/A	2,791
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB, Various	252	55	1/4Q	0	N/A	0	N/A	307
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	266	58	1/4Q	0	N/A	0	N/A	324
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	907	198	1/4Q	0	N/A	0	N/A	1,105
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	5,103	1,114	1/4Q	0	N/A	0	N/A	6,217
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	1,374	300	1/4Q	0	N/A	0	N/A	1,674
Subtotal Support Costs			76,569	30,100		0		0		106,669

Remarks

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

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: **0603883C Ballistic Missile Defense Boost 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
Government Activities										
Integrated Test Force	MIPR	AFFTC/ Edwards AFB	34,000	24,900	1/4Q	0	N/A	0	N/A	58,900
LFT&E-Lethality Baseline Tests	Various	Various/ Various	23,546	4,300	1/4Q	0	N/A	0	N/A	27,846
Target - Test Instrumentation	MIPR	Various/ Various	39,276	14,600	1/4Q	0	N/A	0	N/A	53,876
Subtotal Test and Evaluation			96,822	43,800		0		0		140,622

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 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			1,463,382	457,900		0		0		1,921,282

Remarks

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

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: **0603883C Ballistic Missile Defense Boost 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																																
Initiate integration of BCFC into 1st ABL				▲																												
First Light					▲																											
First Flight with BCFC system					▲																											
Passive LP System Readiness and Flight Tests							△																									
Complete Link-16 testing								△																								
Complete laser module tests in laser SIL								△																								

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: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Testing Milestones								
Initiate integration of BCFC into 1st ABL	4Q							
First Light		1Q						
First Flight with BCFC system		1Q						
Passive LP System Readiness and Flight Tests		3Q						
Complete Link-16 testing		4Q						
Complete laser module tests in laser SIL		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: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0810 Airborne Laser (ABL) Block 2006	0	0	464,867	629,761	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

ABL's high-payoff boost defense capability is essential for the envisioned BMDS - an integrated, layered defense against threats of all ranges, in all phases of flight. Destroying ballistic missiles in the boost phase means threats can be negated long before they have an opportunity to deploy reentry vehicles, submunitions, or countermeasures, and debris from successful engagements can be precluded from affecting protected areas and assets. As a result, adding ABL to the BMDS significantly increases the overall defensive capability by reducing the amount of targets faced by successive defenders and addressing certain threats they cannot counter. Further increasing the robustness of the BMDS is ABL's sensor capability that can enhance the performance of other elements. Plus, the unique and revolutionary aspect of ABL's mobility and directed energy weapon add up to a weapon system that creates a panoply of additional complexities for those trying to develop or employ missile threats. 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. Finally, it will reinitiate studies and establish the capabilities baseline for an advanced (robust, supportable, and producible) 2nd ABL weapon system.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
1st ABL	0	0	387,267	492,126
RDT&E Articles (Quantity)	0	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.

FY 2006 Planned Program:

- Conduct LP system ground test and flight tests
- Continue phased implementation of MDA-BMDS security compliance
- Begin laser SIL disassembly and parts refurbishment
- Conduct any necessary aircraft structural modifications

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: **0603883C Ballistic Missile Defense Boost Defense Segment**

FY 2007 Planned Program:

- Continue laser SIL disassembly and parts refurbishment
- Initiate integration of the laser into the 1st ABL weapon system
- Conduct any necessary aircraft structural modifications, Beam Control Fire Control (BCFC) upgrades and rework
- Initiate Service Life Extension Program, activities include; aircraft (engine wear and other maintenance), laser (valves and other plumbing, turbo pumps, gas generators, tanks), BCFC (processors/cards, steering mirrors, illuminator diodes), BMC4I (processors/cards, Infrared Search and Track (IRST) components, Active Ranging System (ARS) components)
- Initiate purchase of deployable ground support equipment and 1st ABL spares
- Complete implementation of MDA-BMDS security practices
- Initiate core standards trade studies and Mission Assurance Implementation Plan (MAIP)
- Initiate ground testing of fully integrated weapon system

	FY 2004	FY 2005	FY 2006	FY 2007
2nd ABL	0	0	0	15,800
RDT&E Articles (Quantity)	0	0	0	0

Capture and maintain baseline for 1st ABL weapon system to support definition of an advanced 2nd ABL weapon system test bed through trade studies and data collection and analysis efforts to guide incorporation of lessons learned from laser SIL and BCFC test and integration activities. Conduct trade studies to bound extent of 2nd ABL advancements and establish capabilities baseline.

FY 2007 Planned Program:

- Trade studies to determine 2nd aircraft system performance capabilities
- Initiate design for 2nd ABL weapon system

	FY 2004	FY 2005	FY 2006	FY 2007
Infrastructure Improvement	0	0	5,200	9,800
RDT&E Articles (Quantity)	0	0	0	0

Conduct investments to enhance the ABL specific industrial base with the focus on large optics, optical coatings and targeted manufacturing shortfalls for 2nd ABL weapon system 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: 0603883C Ballistic Missile Defense Boost Defense Segment

FY 2006 Planned Program:

- Continue optics fabrication and sustainment efforts
- Continue to improve Electron Bombarded Charged Couple Device (EBCCD) camera manufacturing yields and processes
- Continue development of oxy fluoride glass for bulkhead windows
- Continue optical coatings process and chamber control improvements

FY 2007 Planned Program:

- Continue optics fabrication and sustainment efforts
- Continue to improve EBCCD camera manufacturing yields and processes
- Develop EBCCD replacement prototype
- Continue optical coatings process and chamber control improvements
- Develop oxy fluoride bulkhead windows prototype

	FY 2004	FY 2005	FY 2006	FY 2007
Technology Insertion	0	0	1,600	7,400
RDT&E Articles (Quantity)	0	0	0	0

Develop promising technologies for incorporation in 2nd ABL weapon system test bed or future ABL blocks. Efforts will focus on technologies that will improve ABL lethality, reliability, and maintainability to improve ABL's contribution to the BMDS.

FY 2006 Planned Program:

- Continue program to increase high energy laser power, efficiency, and operational regime
- Continue efforts to reduce optical jitter and improve beam control performance
- Increase wavefront control performance via steering mirror enhancements

FY 2007 Planned Program:

- Continue program to increase high energy laser power, efficiency, and operational regime
- Continue efforts to reduce optical jitter and improve beam control performance
- Develop ARS components to improve performance

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: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007
Government Activities	0	0	70,800	104,635
RDT&E Articles (Quantity)	0	0	0	0

The Block 2006 government 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, targets, Atmospheric Decision Aid (ADA) support to ABL flight testing, ITF environmental activities, modeling and simulation efforts for BMDS integration, logistics, contractor personnel support (Analysis and Analytical Services, System Engineering Technical Assistance, Federally Funded Research Development Center), and System Program Office (SPO) administrative operating support.

FY 2006 Planned Program:

- Continue program office operations for managing execution of the ABL program
- Continue development and application of modeling and simulation tools to support ABL testing and BMDS integration
- Continue lethality analysis of current and projected threat missiles
- Support BMDS engineering, test planning, and test execution
- Provide diagnostics and targets to support ABL flight testing
- Support ground test activities for increased operations tempo at Edwards AFB

FY 2007 Planned Program:

- Continue program office operations for managing execution of the ABL program
- Continue development and application of modeling and simulation tools to support ABL testing and BMDS integration
- Provide atmospheric decision aid test support to ABL
- Continue lethality analysis of current and projected threat missiles
- Provide diagnostics and targets which will support later ABL flight testing
- Continue ground test activities for increased operations tempo at Edwards AFB

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: 0603883C Ballistic Missile Defense Boost 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 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
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: **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. In FY07, 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. A decision will be made as to whether the ABL Block 2006 program will continue with the existing prime contract, or move to a new contract. The ABL Block 2006 effort will learn from the ABL Block 2004 accomplishments 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. Finally, it will reinitiate studies and establish the capabilities baseline for an advanced (robust, supportable, and producible) 2nd ABL weapon system.

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: **0603883C Ballistic Missile Defense Boost 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
1st ABL										
	C/CPAF	Boeing Defense &Space Group/ Seattle, WA	0	0	N/A	387,267	1/4Q	492,126	1/4Q	879,393
2nd ABL										
	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA	0	0	N/A	0	1/4Q	15,800	1/4Q	15,800
Infrastructure Improvement										
Contract	SS/Various	Multiple, i.e. Lockheed Martin/ Multiple, i.e. MD, CA	0	0	N/A	5,200	1/4Q	9,800	1/4Q	15,000
Technology Insertion										
Contract	SS/Various	Multiple, i.e. Northrop Grumman, Lockheed Martin/ Multiple, i.e. CA	0	0	N/A	1,600	1/4Q	7,400	1/4Q	9,000
Subtotal Product Development			0	0		394,067		525,126		919,193

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: **0603883C Ballistic Missile Defense Boost 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
Government Activities										
Technical Support Costs	C/CPAF	Northrop Grumman/ Kirtland AFB, Various	0	0	N/A	20,200	1/4Q	25,000	1/4Q	45,200
Technical Support Costs	MIPR	Aerospace/ Kirtland AFB	0	0	N/A	1,650	1/4Q	1,700	1/4Q	3,350
Technical Support Costs	MIPR	Tecolote Research/ Kirtland AFB	0	0	N/A	2,550	1/4Q	2,700	1/4Q	5,250
Technical Support Costs	MIPR	MITRE/ Kirtland AFB	0	0	N/A	700	1/4Q	800	1/4Q	1,500
Government and Other Support Costs	C/FP	ABL SPO/ Kirtland AFB	0	0	N/A	330	1/4Q	347	1/4Q	677
Government and Other Support Costs	MIPR	AFRL / TX, CA, Various	0	0	N/A	594	1/4Q	624	1/4Q	1,218
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	0	0	N/A	275	1/4Q	289	1/4Q	564
Government and Other Support Costs	MIPR	UDRI/ OH	0	0	N/A	428	1/4Q	449	1/4Q	877
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	0	0	N/A	499	1/4Q	524	1/4Q	1,023
Government and Other Support Costs	MIPR	NAVAIR/ CA	0	0	N/A	154	1/4Q	162	1/4Q	316
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	0	0	N/A	275	1/4Q	289	1/4Q	564
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB	0	0	N/A	552	1/4Q	580	1/4Q	1,132

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: 0603883C Ballistic Missile Defense Boost 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
Government and Other Support Costs	C/FP	ABL SPO/ Kirtland AFB	0	0	N/A	220	1/4Q	231	1/4Q	451
Government and Other Support Costs	MIPR	AFRL/ Kirtland AFB, MA, Various	0	0	N/A	495	1/4Q	520	1/4Q	1,015
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	0	0	N/A	1,100	1/4Q	1,155	1/4Q	2,255
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	0	0	N/A	1,430	1/4Q	1,502	1/4Q	2,932
Government and Other Support Costs	MIPR	ACC/ VA	0	0	N/A	550	1/4Q	578	1/4Q	1,128
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB, Various	0	0	N/A	61	1/4Q	64	1/4Q	125
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	0	0	N/A	64	1/4Q	67	1/4Q	131
Government and Other Support Costs	MIPR	ABL SPO/ Kirtland AFB	0	0	N/A	218	1/4Q	229	1/4Q	447
Government and Other Support Costs	Various	ABL SPO/ Kirtland AFB	0	0	N/A	1,455	1/4Q	1,525	1/4Q	2,980
Subtotal Support Costs			0	0		33,800		39,335		73,135

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: **0603883C Ballistic Missile Defense Boost 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
Government Activities										
Integrated Test Force	MIPR	AFFTC/ Edwards AFB	0	0	N/A	15,200	1/4Q	17,800	1/4Q	33,000
LFT&E-Lethality Baseline Tests	Various	Various/ Various	0	0	N/A	4,300	1/4Q	17,900	1/4Q	22,200
Target-Test Instrumentation	MIPR	Various/ Various	0	0	N/A	17,500	1/4Q	29,600	1/4Q	47,100
Subtotal Test and Evaluation			0	0		37,000		65,300		102,300

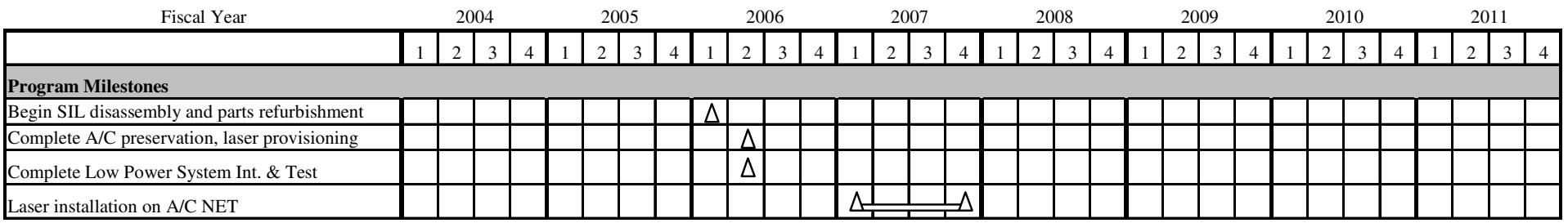
Remarks

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			0	0		464,867		629,761		1,094,628

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: **0603883C Ballistic Missile Defense Boost 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: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Program Milestones								
Begin SIL disassembly and parts refurbishment			1Q					
Complete A/C preservation, laser provisioning			2Q					
Complete Low Power System Int. & Test			2Q					
Laser installation on A/C NET				1Q-4Q				
A/C structural mods/BCFC upgrades NET				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: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0910 Airborne Laser (ABL) Block 2008	0	0	0	0	601,294	669,120	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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, as well as the trades studies and capability baseline efforts for defining the 2nd ABL weapon system. The Block 2008 effort provides for enhancement of BMDS integration and the initiation of ground support. The Block 2008 program also transitions the 2nd ABL effort from trade studies to design activities and initiates the acquisition of the 2nd Boeing 747 airframe (the green aircraft).

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 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
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

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: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
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 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, as well as the trades studies and capability baseline efforts for defining the 2nd ABL weapon system. The Block 2008 effort provides for enhancement of BMDS integration and the initiation of ground support. The Block 2008 program also continues trade studies and then transitions emphasis to design to design activities and initiates the acquisition of the 2nd Boeing 747 airframe (the green aircraft).

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: **0603883C Ballistic Missile Defense Boost 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																																
Continue Ground and Flight Tests																																

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: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Testing Milestones								
Continue Ground and Flight Tests					1Q-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: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2004	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	0	791,930	1,163,040
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 effort moves the focus of ABL activity to the 2nd ABL weapon system test bed. This test bed addresses performance enhancements and life cycle cost considerations that will ensure a robust, supportable and producible capability. The effort will complete the design activities; obtain delivery and start modifications of the green aircraft, and initiate fabrication of weapon components. ABL-specific technology maturation and infrastructure improvement also continues.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Funding in this Project is not programmed until FY 2010.	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 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
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

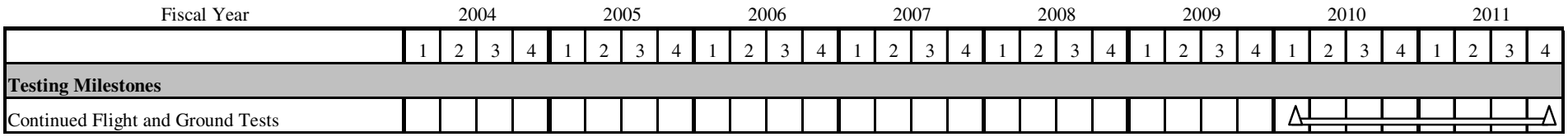
Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
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 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 effort moves the focus of ABL activity to the 2nd ABL weapon system test bed. This test bed addresses performance enhancements and life cycle cost considerations that will ensure a robust, supportable and producible capability. The effort will complete the design activities; obtain delivery and start modifications of the 2nd Boeing 747 airframe (the green aircraft), and initiate fabrication of weapon components. ABL-specific technology maturation and infrastructure improvement also continues.

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: **0603883C Ballistic Missile Defense Boost 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: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Testing Milestones								
Continued Flight and Ground Tests							1Q-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: **0603883C Ballistic Missile Defense Boost 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	12,779	18,279	18,996	18,967	19,499	21,687	19,500	20,142
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	12,779	18,279	18,996	18,967
RDT&E Articles (Quantity)	0	0	0	0

See Section A: Mission Description and Budget Item Justification

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
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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: **0603883C Ballistic Missile Defense Boost Defense Segment**

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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