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Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	0	0	27,666	35,093	46,849	56,183	133,617	157,117
0207 MD Space Exp Center	0	0	5,000	10,000	30,000	30,000	30,000	30,000
0516 NFIRE	0	0	11,871	8,980	0	0	0	0
0517 Space Test Bed	0	0	10,000	15,000	15,000	25,000	101,000	124,000
0602 Program-Wide Support	0	0	795	1,113	1,849	1,183	2,617	3,117

Note: The Agency has consolidated funding for non-STSS space activities executed by the Space Center of Excellence in this Program Element:

- Missile Defense Space Experimentation Center (MDSEC) - Initial funds made available in the STSS PE (0603693C) Project 0812, to begin laying ground work for standup of this center

- Near Field Infrared Experiment - In FY07, funded in the STSS PE (0603693C) and Advanced Technology PE (0603175C); in FY06 in PE 0603175C; and in FY05 in PE 0603884C

A. Mission Description and Budget Item Justification

A.1 System Element Description

The Ballistic Missile Defense System Space Program will conduct a variety of space efforts to collect data and assess the utility of space systems -- and to assess the technical risk and viability of developing additional space layer capabilities.

The Near Field Infrared Experiment (NFIRE) technology effort will collect high and low resolution images of a boosting rocket to improve our understanding of exhaust plume phenomenology and plume-to-rocket body discrimination.

The Space Applications Center of Excellence will stand up and operate the Missile Defense Space Experimentation Center (MDSEC) to provide a place for MDA Space Layer elements to conduct flight experiments, test algorithms, and conduct concept exploration. There will be annual operating expenses for the MDSEC which will provide overhead functions that include security, configuration management, engineering support, and logistics support for all participants within the MDSEC.

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<p>MDSEC The MDSEC will provide a centralized facility from which to explore new space data algorithms, and from which to operate MDA R&D satellites such as the Block 2006 STSS and NFIRE satellites.</p> <p>One of the major developments within the MDSEC is the MDSEC Interchange System (MIS) which will provide a common architecture for the storage of MDA space data, the retrieval and playback of data, data mining, and algorithm development and testing. Interfaces between the MIS and the various sources of data (STSS, External Sensors Lab, NFIRE, STSS Surrogate Testbed and Defense Support Program) are a key component that will allow the MIS to be a central repository for MDA Space data.</p> <p>The MDSEC Space Layer activities will include such things as near real-time infrared (IR) tracking experiments, IR sensor cueing, algorithm assessments, demonstrations of space sensor contributions to boost phase typing, system level discrimination and hit assessment, clutter mitigation, and innovative concept exploration.</p> <p>NFIRE The Near Field Infrared Experiment (NFIRE) technology effort project completes the program to collect near field phenomenology data for use in plume to hardbody handover algorithms for KEI and other interceptor programs.</p> <p>We will use this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms for boost phase interceptors. A secondary objective of the experiment is to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment will include three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. NFIRE will carry a Laser Communication Terminal, to conduct communication experiments with the German Terra SAR-X satellite. These experiments will test low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the Ballistic Missile Defense System. The laser communication experiments will be conducted on a non-interference basis with the other MDA missions. The NFIRE satellite will be operated from the Missile Defense Space Experimentation Center (MDSEC) by the MDA Space Applications Center of Excellence. Data products will be utilized by multiple programs to improve missile engagement performance.</p> <p>Space Test Bed The Space Test Bed is being explored as a potential solution to enhance BMDS capability in the future. Space systems have advantages over terrestrial based systems through increased access to ballistic missile targets, independent of adversary country size and threat trajectory. We believe that a mix of terrestrial and space-basing offers the most effective global defense against ballistic missiles.</p>		

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<p>Near term funding for the space testbed program will be used to refine concepts and prepare to conduct focused experiments demonstrating the viability of the concepts.</p> <p><u>A.2 System Element Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS)</u></p> <p>Under the management of the Space Applications Center of Excellence, this Ballistic Missile Defense Space System program element will plan, conduct and integrate multiple ground and space-dependent tests, demonstrations, and experiments that provide capability improvements, reduce developmental cycle times and/or improve integrated BMDS performance. Programs/projects include the Space Test Bed, the Near Field Infrared Experiment (NFIRE), and the Missile Defense Space Experimentation Center (MDSEC). In FY06, the NFIRE program was transferred from the Kinetic Energy Interceptor program element (PE 0603886C) to the Advanced Technology program element (PE 0603175C). In FY07, MDA has moved the NFIRE program and all associated funding into this program element.</p> <p>MDSEC is a collaborative experimentation environment for all BMDS elements that rely on, experiment with, or seek to improve the BMDS capability by utilizing space-based, systems-derived data.</p> <p>Programs currently interacting within the MDSEC activity are: STSS, NFIRE, External Sensors Laboratory (ESL), Project HERCULES, CONUS Kinetic Energy Interceptor (CKEI), C2BMC and others.</p> <p><u>A.3 Major System Element Goals</u></p> <p>Near Field Infrared Experiment (NFIRE)</p> <ul style="list-style-type: none">• Launch the Near Field Infrared Experiment satellite• Conduct multiple data collection missions against ground, air, space and ballistic missile targets• Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments• Use the data to validate the models and simulations that are fundamental to developing the navigation, guidance and control, and endgame homing algorithms, as well as laser communication proof of concept <p>Missile Defense Space Experimentation Center (MDSEC)</p> <ul style="list-style-type: none">• Develop and Install MIS• Conduct experiments to test algorithm validity for MD Space Systems• Provide robust access to MDA space data for the BMDS community		

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A.4 Major Events Schedule and Description

Major Event	Project	Timeframe	Description
Contract Activity			
Near Field Infrared Experiment			
TSP Delivery	0516	3Q FY 2006	
Ground Segment Readiness Review #1	0516	4Q FY 2006	
SV Integration and Test	0516	4Q FY 2006 - 2Q FY 2007	
Ground Segment Readiness Review #2	0516	1Q FY 2007	
LCT Delivery	0516	1Q FY 2007	
Launch	0516	3Q FY 2007	
On Orbit Operations	0516	3Q FY 2007 - 3Q FY 2009	
Missile Target Flight Test 2A	0516	4Q FY 2007	
Missile Target Flight Test 2B	0516	1Q FY 2008	
Laser Comm Terminal Operations	0516	1Q FY 2008 - 3Q FY 2008	
MDSEC			
MDSEC Interchange System (MIS)	0207	1Q FY 2007 - 4Q FY 2013	
Space-based IR Contributions	0207	1Q FY 2008 - 4Q FY 2008	

B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007 PB)	0	0	45,300	150,600
Current President's Budget (FY 2008 PB)	0	0	27,666	35,093
Total Adjustments	0	0	-17,634	-115,507
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	0	0
SBIR/STTR Transfer	0	0	0	0
Adjustments to Budget Years	0	0	-17,634	-115,507

FY08 decrease of \$17.634 million and FY09 decrease of \$115.507 million reflects MDA programmatic changes.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603895C BMD System Space Program				
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0207 MD Space Exp Center	0	0	5,000	10,000	30,000	30,000	30,000	30,000
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Space Applications Center of Excellence will stand up and operate the Missile Defense Space Experimentation Center (MDSEC) to provide a place for MDA Space Layer elements to conduct flight experiments, test algorithms, and conduct concept exploration. There will be annual operating expenses for the MDSEC which will provide overhead functions that include security, configuration management, engineering support, and logistics support for all participants within the MDSEC.

One of the major developments within the MDSEC is the MDSEC Interchange System (MIS) which will provide a common architecture for the storage of MDA space data, the retrieval and playback of data, data mining, and algorithm development and testing. Interfaces between the MIS and the various sources of data (STSS, External Sensors Lab, NFIRE, STSS Surrogate Testbed and Defense Support Program) is a key component that will allow the MIS to be a central repository for MDA Space data.

The MDSEC Space Layer activities will include things such things as near real-time infrared (IR) and IR tracking experiments, IR sensor cueing, algorithm assessments, demonstrations of space sensor contributions to boost phase typing, system level discrimination and hit assessment, clutter mitigation, and innovative concept exploration.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
MDSEC	0	0	5,000	10,000
RDT&E Articles (Quantity)	0	0	0	0

The MDSEC will provide a centralized physical and virtual structure for MDA Space Layer elements to conduct flight experiments, test algorithms and concept exploration. Initial activities were begun with the STSS Ground Segment (See PE 0603893C) in FY06 and FY07 to capture the requirements and extent of the MDSEC mission at the Joint National Integration Center at Schriever AFB CO

FY08 Planned Program

- Engineer and install a MIS that will
 - Establish access to STSS data

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- Provide for the exchange of archived and real-time data and data products from established and future BMDS programs
- Establish MIS connectivity to X-Lab, MDA C-Net, BMDS elements and external users
- Integrate new MDSEC stakeholders, physically and virtually
 - Support demonstration and development of Project Hercules algorithms
 - Support KEI proof-of-concept experiments
- Expand infrastructure support to MDSEC stakeholders
- Evolve MDSEC security to accommodate changes

FY09 Planned Program

- Continue establishment of MIS
 - Install and demonstrate initial capability
 - Enhance capability and connectivity
- Demonstrate space-based IR sensor contributions to BMDS performance
 - Identify X-Lab/MDSEC experiments to illustrate space sensor contributions
- Expand MDSEC to support the development of a ground testbed
- Conduct IR-IR Tracking Experiment Study
- Support system development of boost phase operational capability

C. Other Program Funding Summary

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657

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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603895C BMD System Space Program				

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603893C Space Tracking & Surveillance System	220,048	322,220	331,525	347,811	412,623	501,197	778,067	981,424	3,894,915
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

D. Acquisition Strategy

All functions and operations of the MDSEC are currently financed through a 10-year Joint National Integration Center Research and Development (JRD) Contract. The annual operating expenses are in the process of being consolidated one centralized delivery order on the JRD contract which will include core capabilities (labor and hardware) that are performed in the MDSEC and will support all of the MDSEC participants. One of the key efforts of the MDSEC is the MDSEC Interchange System (MIS). It will allow various entities to access space data and provide for the collaboration of efforts to further the Ballistic Missile Defense mission. The JRD contract was initiated to start the requirements assessment and design process begun in FY06 and continued in FY07 under the STSS Ground Segment element. It will continue this assessment and design process and begin a phased implementation phase over the next 2 - 3 years. As more stakeholders are introduced to the MDSEC, more Space Layer activities are expected. The next few years will be focused on demonstration of space-based IR sensor contributions to the BMDS beginning with near real-time radar IR and IR-IR tracking experiments using STSS data.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
MDSEC										
Subtotal Product Development			0	0		0		0		0

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
MDSEC										
JNIC Research and Development Contractor	CPAF	JNIC/CO	0	0	N/A	5,000	2Q	10,000	2Q	15,000
Subtotal Management Services			0	0		5,000		10,000		15,000

Remarks

Project Total Cost			0	0		5,000		10,000		15,000
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603895C BMD System Space Program				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MDSEC								
MDSEC Interchange System (MIS)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Security			1Q-4Q					
Radar-IR Tracking Experiment			1Q-2Q					
Space-based IR Contributions			1Q-4Q					
IR-IR Tracking Experiment				1Q-2Q				
Expand MDSEC Facility for Ground Testbed				1Q-4Q	1Q-4Q			

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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0516 NFIRE	0	0	11,871	8,980	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0
<p><i>Note: FY 2007 Funding for the NFIRE Program is split between the Advance Technology Program Element 0603175C and STSS Program Element 0603893C. Because the NFIRE launch will take place in FY 2007, the RDT&E article (1) will be documented in PE 0603893C.</i></p> <p><i>For FY08, this PE will provide funding for On-Orbit data collection and analysis for the Primary NFIRE Satellite as well as for the Laser Communications Terminal</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The Near Field Infrared Experiment (NFIRE) technology effort will collect high and low resolution images of a boosting rocket to improve our understanding of exhaust plume phenomenology and plume-to-rocket body discrimination. We will use this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms for boost phase interceptors. A secondary objective of the experiment is to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment will include three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. Targets of opportunity may include aircraft flights, space launches and missile tests at a viewing distance of 100 to 1000 kilometers. Dedicated fly-bys are high resolution observations of a dedicated target vehicle at a range of less than 10 kilometers. Ground observations may include bright burning events such as forest fires, volcanoes, and static tests of rocket engines. In addition to the plume data collections, NFIRE will carry a Laser Communication Terminal, to conduct communication experiments with the German Terra SAR-X satellite. These experiments will test low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the Ballistic Missile Defense System. The laser communication experiments will be conducted on a non-interference basis with the other MDA missions. The NFIRE satellite will be operated from the Missile Defense Space Experimentation Center (MDSEC) by the MDA Space Applications Center of Excellence. Data products will be utilized by multiple programs to improve missile engagement performance.</p>								

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B. Accomplishments/Planned Program				
	FY 2006	FY 2007	FY 2008	FY 2009
NFIRE	0	0	11,871	8,980
RDT&E Articles (Quantity)	0	0	0	0

Note: FY06 Accomplishments are written in the Program Element 0603175C. FY07 Planned Program activities are captured in the STSS Program Element 0603893C; Cost Categories (R3) and Schedules (R4) are included in PE 0603893C as well. In FY07, funding is split between STSS PE 0603893C and BMD Technology PE 0603175C

- FY08 Planned Program
- Launch Missile Target Flight Test 2B
 - Continue On-Orbit Operations at the MDSEC
 - Continue data collection and analysis on position/orientation of Missile 2A and Missile 2B relative to their exhaust plume in order to be able to predict future position and velocity of missile body as well as assess the impact of the earth, earth limb, and space backgrounds
 - Conduct laser communications experiments to assess the viability of the technology for use by the BMDS and STSS Follow-on

- FY09 Planned Program
- Continue On-Orbit Operations at the MDSEC to support data collection and analysis until satellite degradation

C. Other Program Funding Summary									
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657

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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603893C Space Tracking & Surveillance System	220,048	322,220	331,525	347,811	412,623	501,197	778,067	981,424	3,894,915
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis								Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603895C BMD System Space Program					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
NFIRE										
Subtotal Test and Evaluation			0	0		0		0		0
Remarks										

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
NFIRE										
JNIC Research and Development Contractor (JRDC)	CPAF	JNIC/ CO	0	0	N/A	11,871	2Q	8,980	2Q	20,851
Subtotal Management Services			0	0		11,871		8,980		20,851

Remarks

Project Total Cost			0	0		11,871		8,980		20,851
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Remarks

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

Date
February 2007

APPROPRIATION/BUDGET ACTIVITY

R-1 NOMENCLATURE

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

0603895C BMD System Space Program

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Near Field Infrared Experiment																																
TSP Delivery			▲																													
SV Integration and Test			▲	—	▲	△																										
Ground Segment Readiness Review #1			▲																													
Ground Segment Readiness Review #2				▲																												
LCT Delivery				▲																												
Launch						△																										
Missile Target Flight Test 2A							△																									
Missile Target Flight Test 2B								△																								
Laser Comm Terminal Operations								△	—	△																						
On Orbit Operations							△	—	△	—	△																					

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603895C BMD System Space Program				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Near Field Infrared Experiment								
TSP Delivery	3Q							
SV Integration and Test	4Q	1Q-2Q						
Ground Segment Readiness Review #1	4Q							
Ground Segment Readiness Review #2		1Q						
LCT Delivery		1Q						
Launch		3Q						
Missile Target Flight Test 2A		4Q						
Missile Target Flight Test 2B			1Q					
Laser Comm Terminal Operations			1Q-3Q					
On Orbit Operations		3Q-4Q	1Q-4Q	1Q-3Q				

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0517 Space Test Bed	0	0	10,000	15,000	15,000	25,000	101,000	124,000
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Space Test Bed is being explored as a potential solution to enhance BMDS capability in the future. Space systems have advantages over terrestrial based systems through increased access to ballistic missile targets, independent of adversary country size and threat trajectory. We believe that a mix of terrestrial and space-basing offers the most effective global defense against ballistic missiles.

Near term funding for the space testbed program will be used to refine concepts and prepare to conduct focused experiments demonstrating the viability of the concepts.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Space Test Bed Proof of Concept	0	0	10,000	15,000
RDT&E Articles (Quantity)	0	0	0	0

FY08 Planned Program

- Initiate formal steps for potential integration into the BMDS architecture
- Mature planning for early Proof of Concept component demonstrations
- Draft operation concepts in the context of a multi-layer architecture
- Identify Proof of Concept vendor sources for demo components and subassemblies
- Develop multi-year technology and risk reduction investment plan
- Begin development of Proof of Concept Master Program Phasing Schedule
- Identify Proof of Concept long lead items
- Mature options for acquisition strategy

FY09 Planned Program

- Mature approach toward integration into the BMDS architecture
- Begin Proof of Concept procurement and execution of component demonstrations
- Continue maturation of Space Basing program plan

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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- Identify BMDS capability off-ramps and key external program dependencies
- Mature the Operational Concept; continue coordination with C2BMC
- Begin advanced activities to develop acquisition strategy

C. Other Program Funding Summary

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603893C Space Tracking & Surveillance System	220,048	322,220	331,525	347,811	412,623	501,197	778,067	981,424	3,894,915
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Justification								Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603895C BMD System Space Program					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										
Remarks										

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Justification							Date February 2007			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603895C BMD System Space Program					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Space Test Bed Proof of Concept										
Planning and Analysis	Various	Various	0	0	N/A	10,000	1Q			10,000
Proof of Concept Operations	Various	Various	0	0	N/A	0	N/A	15,000	1Q	15,000
Subtotal Management Services			0	0		10,000		15,000		25,000
Remarks										
Project Total Cost			0	0		10,000		15,000		25,000

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Missile Defense Agency (MDA) Exhibit R-4A RDT&E Project Justification						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603895C BMD System Space Program				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Space Test Bed								
Planning and Analysis			1Q-4Q	1Q-2Q				
Proof of Concept Operations				1Q-4Q	1Q-4Q			
Component Demonstrations					3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603895C BMD System Space Program
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0602 Program-Wide Support	0	0	795	1,113	1,849	1,183	2,617	3,117
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 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 2006	FY 2007	FY 2008	FY 2009
Civilian Salaries and Support	0	0	795	1,113
RDT&E Articles (Quantity)	0	0	0	0

See Section A: Mission Description and Budget Item Justification

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification							Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603895C BMD System Space Program				
C. Other Program Funding Summary									
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PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
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PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947