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Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	384,935	388,830	506,840	506,352	509,984	506,717	512,582
0701 Command and Control, Battle Management and Communications (C2BMC) Block 2004	152,217	65,524	53,526	292	0	0	0
0801 Command and Control, Battle Management and Communications (C2BMC) Block 2006	26,791	136,282	176,735	102,687	56,703	283	0
0901 Command and Control, Battle Management and Communications (C2BMC) Block 2008	6,122	5,576	33,645	158,764	179,883	106,889	64,310
0001 Command and Control, Battle Management and Communications (C2BMC) Block 2010	0	0	0	1,247	35,393	161,466	206,404
0802 Hercules Block 2006	22,730	19,645	0	0	0	0	0
0902 Hercules Block 2008	58,798	38,179	0	0	0	0	0
0002 Hercules Block 2010	0	6,304	0	0	0	0	0
0505 Hercules	0	0	50,562	50,881	50,319	50,071	50,856
0703 Joint Warfighter Support Block 2004	37,844	0	0	0	0	0	0
0803 Joint Warfighter Support Block 2006	0	31,044	53,350	0	0	0	0
0903 Joint Warfighter Support Block 2008	0	0	0	49,687	50,912	0	0
0003 Joint Warfighter Support Block 2010	0	0	0	0	0	52,322	55,519
0204 Joint National Integration Center (JNIC)	71,631	75,728	99,461	106,611	107,560	109,325	110,581
0817 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2006	0	0	22,500	0	0	0	0
0917 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2008	0	0	0	13,800	11,100	0	0
0017 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2010	0	0	0	0	0	9,300	9,600
0602 Program-Wide Support	8,802	10,548	17,061	22,383	18,114	17,061	15,312

Note: Beginning in FY07, Concurrent Test and Operations (CTO) Distributed Multi-Echelon Training System (DMETS) efforts, previously included in Projects 0803, 0903, and 0003 within the BMDS Training area, are addressed in dedicated CTO-DMETS Projects 0817 (Block 2006), 0917 (Block 2008) and 0017 (Block 2010).

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A. Mission Description and Budget Item Justification

Intelligence sources indicate the ballistic missile threat to the United States, its Friends and Allies consists of a progressive attack of short, medium, intermediate-range (SRBMs, MRBMs, IRBMs) and long-range ballistic missiles (LRBMs). Potential adversaries can use such an attack to initiate a great amount of situational confusion resulting in either a delayed response or, at worst, defense paralysis due to overlap of existing command structures and individual capabilities of existing and future Ballistic Missile Defense (BMD) weapon systems. To protect U.S. cities, population, and territory, as well as our deployed forces and other critical assets from this growing threat requires an integrated, layered defense. BMD Products program element efforts provide the glue that binds constituent BMD elements together into such a defense.

BMD Products program element efforts enable coordinated, real-time decision-making by Warfighters and leaders across the globe up to and including the Secretary of Defense and the President of the United States. This program element consists of five complementary mission essential projects with efforts spanning Blocks 2004, 2006, 2008, and 2010. These programs are Command and Control, Battle Management, and Communications (C2BMC), Project Hercules, Joint Warfighter Support Program, Concurrent Test & Operations Distributed Multi-Echelon Training System (CTO-DMETS), and the Joint National Integration Center.

COMMAND AND CONTROL, BATTLE MANAGEMENT, AND COMMUNICATIONS (C2BMC)

C2BMC Program Description: The backbone of an integrated, layered missile defense is global Command, Control, Battle Management, and Communications (C2BMC) that spans the existing US Combatant Command structure and allows the warfighter to orchestrate and optimize United States ballistic missile defense (BMD) response on a worldwide level. As such, the C2BMC program is a force multiplier, without which the BMD System (BMDS) would require many more sensors and interceptors to achieve equivalent protection from ballistic missile threats to our homeland, friends and allies.

The C2BMC Program uses spiral development (incremental development, test, and fielding) to produce the hardware and software required to provide a system-wide integrated BMD capability. As C2BMC products mature they are engineered and integrated into either of two major fielded Spirals in each two year BMDS Block.

To provide BMDS operations, the C2BMC program delivers Spiral hardware and software capabilities to Combatant Commands and national command authorities. Hardware capabilities consist of Enterprise Workstations Stations (warfighter display monitors and access to C2BMC planner, situation awareness and battle manager capabilities), servers, processors, and communications racks and equipment, situational awareness web browsers, and video distribution equipment. Software capabilities evolve through the four C2BMC product lines: BMD Planner, Situation

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<p>Awareness, Battle Management, and Networks. Delivered Spirals enable progressively increased abilities to plan ballistic missile defense, see the battle unfold on common situational awareness displays, control -in real-time- sensors worldwide, and optimally pair them with BMD weapons systems (such as Ground Based Missile Defense, Theater High Altitude Air Defense, Patriot, and Aegis BMD) across a global-grid communications network to defeat an adversary's attack.</p> <p>C2BMC Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The C2BMC program contributes to the Ballistic Missile Defense System (BMDS) by delivering:</p> <ul style="list-style-type: none">• deliberate and collaborative planning and analysis capability among all Combatant Commands (COCOMs) and their service components so that warfighters have the capability to explore the effectiveness of potential BMD courses of action;• clear, accurate, and consistent display of the BMD battlespace (situational awareness) to warfighters at the tactical, operational, and strategic levels of command permitting key decision makers the ability to render command and control decisions of global importance in real time• a network tying together sensors and weapons systems via the Global Integrated Fire Control/Battle Management to enable system-wide detection, tracking, and decision tools for optimal engagement of ballistic missile threats across all flight regimes. <p>C2BMC enables improved system performance of all BMDS elements by improving missile detection, tracking, discrimination, and network distribution of threat information and provides the Warfighter the ability to: rapidly identify and concurrently track multiple ballistic missile threats; dynamically adjust BMD system resources to engage multiple ballistic missile threats in the BMD kill zone through all phases of flight; and, globally direct engagement against multiple ballistic missile threats in any area of responsibility, at any time.</p> <p>The C2BMC program further contributes to an integrated, layered Ballistic Missile Defense by synergistically planning and operating complementary existing and new theater and strategic ballistic missile defense weapon systems across theaters and continents for the highest probability of defeating threats of any type and range; these systems include Patriot, Theater High Altitude Area Defense (THAAD), Ground-based Midcourse Defense (GMD), and Aegis BMD, and sensors such as the Forward Based X-Band Radar - Transportable (FBX-T), Sea-Based X-Band Radar (SBX), and Space-Based Infrared System (SBIRS).</p> <p>C2BMC Major Program Goals:</p> <p>Block 2004 (Initial Defense Against Rogue Threat)</p> <ul style="list-style-type: none">• Basic Deliberative/Crisis Action Planning• Common Situational Awareness at Combatant Commands (COCOMs) and National Military Command Center (NMCC)		

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<ul style="list-style-type: none">• Redundant communication paths and connections to Ground Based Missile Defense (GMD) System and Aegis Ballistic Missile Defense (BMD)• Initial Sensor Management of Forward Based X-Band Radar - Transportable (FBX-T) Redundant communications.		
Block 2006 (Integrated Defense Against Rogue Threat)		
<ul style="list-style-type: none">• Improved system reliability and availability• Initial fielding of Global Integrated Fire Control (GIFC) capability at an Air Operations Center - founded on dependable, trustworthy software development• Continued fielding of enhanced situational awareness and command and control at COCOM Headquarters		
Block 2008 (Coordinated Defense Against Medium Size Raids and Asymmetric Threat)		
<ul style="list-style-type: none">• Fully integrated Planner and Situation Awareness displays with integrated intelligence information and defended asset priority schemes• Initial type interfaces between weapons and sensors compatible with DoD network-centric service-oriented architecture• GIFC coordination and optimization of increased Launch-on and Engage-on networked capability		
Block 2010 (Mature and Expand Integrated Layered BMD)		
<ul style="list-style-type: none">• Incorporate new sensors and weapons systems into a global, integrated C2BMC network• Command and Control decision aids to re-direct coordinated engagements• BMDS system level discrimination for boost/early ascent and expanded engagement coordination to include intelligence projections		
PROJECT HERCULES		
<p>Project Hercules Program Description: Project Hercules is a national effort to develop robust, physics-based detection, tracking, and discrimination algorithms to counter known/expected and unknown/unexpected missiles with planned or unplanned countermeasures in all phases of their flight. These algorithms improve sensor and weapon element discrimination, improve integration of sensor data within C2BMC, and expand integrated battle management capability.</p>		
<p>Project Hercules develops advanced discrimination and tracking concepts into prototype software (algorithms) that improves the capability of the BMDS C2BMC, sensor, and weapon elements. Hercules then transitions algorithms to BMDS elements for integration and provides technical assistance during the algorithm integration. These algorithms support existing BMDS Engagement Sequence Groups and enable new Engagement Sequence Groups.</p>		

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<p>Hercules projects include boost-phase engagement algorithms, discrimination algorithms for forward based sensors, discrimination algorithms and architectures for midcourse sensors, countermeasure mitigation algorithms, terminal discrimination algorithms, and an integrating Decision Architecture concept that provides advanced decision theory for BMDS C2BMC data fusion and global integrated fire control.</p> <p>Project Hercules Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): Project Hercules contributes to the BMDS by conceiving and maturing technical concepts into prototype software (algorithms) and then transitioning these algorithms to all relevant BMDS elements, thus enabling improved BMDS system element performance. Project Hercules further provides technical assistance during the integration of the algorithms into the element component to insure that knowledge gained during the development process also assists the integration process. Hercules focuses on algorithms that improve missile detection, tracking and discrimination and algorithms that support global integrated fire control (GIFC).</p> <p>Additionally, Project Hercules generates advanced ballistic missile threat signatures [Threat Data Packages (TDPs)] for use in its algorithm development to enable better advanced threat representation across the BMDS.</p> <p>Project Hercules also contributes to the BMDS by developing non-intrusive real-time test capability on BMDS sensors to collect data and demonstrate the performance of Hercules algorithms during actual BMDS flight tests. This capability is called the BMDS Fusion Toolbox (BFT) which is used to support the MDA Battle management Command and Control program test efforts.</p> <p>Project Hercules also contributes with the development of the forward based discrimination algorithms being integrated by the MDA Sensors program into the BMDS Deployable X-Band Radar (FBX-T)</p> <p>Project Hercules Major Program Goals:</p> <ul style="list-style-type: none">• Develop and support integration of algorithms that expand the capability of or enable currently identified Engagement Sequence Groups (ESGs).• Develop and support integration of algorithms that enable BMDS elements to meet capability identified in the BMDS Test Bed System Specification or in the element specific specifications. Examples of algorithms for element enhancement include C2BMC Global Integrated Fire Control, Space Tracking and Surveillance System (STSS) tracking algorithms and AEGIS discrimination concepts.• Develop new concepts that enable the definition of new ESGs. Examples of new capability include feature hand-over and clutter mitigation.• Assess algorithm needs and begin development of concepts that support emerging technology, such as Multiple Kill Vehicle (MKV) and Discrimination Augmentation Devices (DADs).		

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JOINT WARFIGHTER SUPPORT PROGRAM		
<p>As a part of the total Ballistic Missile Defense System (BMDS), the Joint Warfighter Support Program (JWSP) is critical to enable Warfighters to work with MDA to define, test, deploy and employ new missile defense Block capabilities; maintain proficiency with current Block capabilities; and provide feedback to the MDA BMDS development process. The JWSP consists of a core set of consistent processes, tailored to the new BMDS capabilities to be deployed in each Block. The JWSP is divided into two-year Blocks to match the evolutionary capability Blocks of the BMDS. The JWSP builds COCOM proficiency in fielded missile defense capabilities, and provides critical operational level feedback directly to MDA development efforts. The JWSP consists of seven primary processes, tailored in scope to the current BMDS Block capabilities as they transition, or near transition to the user.</p> <ul style="list-style-type: none">• BMDS Exercise and Wargames• Concepts & Plans required to address evolving, emerging and projected Ballistic Missile technology (both defensive and threat oriented).• BMDS Transition and Logistics planning and development.• Direct support to the Geographic Combatant Commanders (GCCs).• BMDS Sustainment & Operations coordination and control through the Missile Defense Operations Center (MOC)• BMDS Training development for the warfighters• BMDS System Manager <p>Ballistic Missile Defense System Manager. Block 2006 will see numerous BMDS capabilities and or asset quantity increases during the FY06-2007 time-frame. These capabilities will be added to each JWSP activity to ensure the Joint Warfighter is properly trained to employ and integrate these capabilities to address the evolving Ballistic Missile threat environments. Among the planned increase scope of the BMDS Block capabilities that will be addressed by the JWSP are:</p> <ul style="list-style-type: none">• Increased numbers of Ground-Base Interceptors at Fort Greely.• Upgraded Early Warning Radar at Thule, Greenland.• Additional Forward Based X-Band Radar.• Additional SM-3 sea-based interceptors and upgraded Aegis cruisers and destroyers.• Theater High Altitude Area Defense (THAAD) interceptors• Expanded Link-16 data engagement data sharing between THAAD, PATRIOT, and AEGIS BMDS Elements.		

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<ul style="list-style-type: none"> • Implications from the expanded Engagement Sequence Group scope, as new elements and capability is added. • Expanded upgrades to the BMDS C2BMC planning capabilities. <p>The JWSP ensures the warfighter and the developer are working together to establish coordinated warfighter and developer system definition, warfighter input to BMDS development and product improvement, required logistics support, and new capability/sustainment training support. It therefore enables the effective introduction of new BMDS capabilities and sustainment, and improved operations of BMDS capabilities previously fielded</p> <p>Joint Warfighter Support Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS) : The Joint Warfighter Support Program contributes to the BMDS by providing the means to integrate the Combatant Commands (COCOMs), the Services, and the Joint Chief of Staff inputs into the plans and processes necessary to define, develop, test, field, operate, and sustain operational BMDS Block capabilities. Further, it enhances warfighter efficiency and the overall effectiveness of the BMDS by building COCOM proficiency in fielded missile defense capabilities, by preparing the COCOMs for near-term Block delivery enhancements and by providing the means for operational level feedback to MDA developers. Additionally, the JWSP provides the only means for the COCOMs to rehearse for and validate all aspects of their BMD missions with both fielded and emerging capabilities.</p> <p>Joint Warfighter Support Program Major Goals:</p> <ul style="list-style-type: none"> • Develop and maintain system level BMDS Training and Education activities not currently performed by the Services • Produce Concepts and Plans that examine evolving and predicted BMDS capabilities to ensure the BMDS keeps pace with the evolving technical and strategic environment • Conduct Exercises and Wargames for current and emerging BMDS capabilities that allow user training and feedback to the developer • Create, develop and coordinate BMDS-wide Integrated Logistics Support policies and procedures for each new BMDS Block • Provide direct support to the Geographic Combatant Commanders (GCCs) to ensure warfighter participation in applicable exercises, wargaming and training activities • Provide Ballistic Missile Defense System Manager functions, to ensure proper integration of BMDS capabilities within the Services and Warfighting components. These activities include: <ul style="list-style-type: none"> ○ Prepare BMDS transfer/transition plans ○ Prepare and update BMDS Activation Plans and Emergency Activation Plan annexes ○ Prepare and update Integrated Service Support Agreements ○ Perform BMDS Operations & Support monitoring and reporting through the MDA Operations Center (MOC) and BMDS Watch Officers. 		

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JOINT NATIONAL INTEGRATION CENTER (JNIC)		
<p>Joint National Integration Center (JNIC) Program Description: The JNIC is MDA's field operating activity in Colorado Springs, CO. It is both a facility and an organization that supports the execution of Agency missions related to the development and test of the BMDS, and that system's operation by designated COCOMs. The JNIC consists of a highly secure research and development complex and a mission support facility located within a military installation (Schriever AFB) that is adjacent to USNORTHCOM and NORAD.</p> <p>As a facility supporting MDA efforts, the JNIC hosts and supports the Ground-based Midcourse Defense (GMD)'s Mission Control Center Facility (MCCF) that is utilized for both flight and distributed ground tests; the C2BMC's Integration and Test Centers (BITCs) and Experimentation Laboratories (X-Labs); the Space Tracking and Surveillance System (STSS)'s Missile Defense Space Experimentation Center (MDSEC); the Targets & Countermeasure's JNIC Target Operations Center (JTOC); and the Enterprise Network Operations and Support Center for the Agency's Chief Information Officer (CIO). For the COCOMs, the JNIC provides infrastructure support for USNORTHCOM's C2BMC Support Center (NCSC); USSTRATCOM's Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD); and the Missile Defense Element manned by the 100th Missile Defense Brigade.</p> <p>As an organization, the JNIC directly supports the execution of the Joint Warfighter Support Program, the Combined Test Force, and MDA's BMDS modeling and simulation effort to develop applications vital to BMDS wargaming and system testing. The JNIC provides mission critical system technical capabilities and subject matter expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and quickly deliver the capabilities required for Engagement Sequence Group (ESG) execution and homeland defense.</p> <p>The JNIC also provides assured worldwide secure communications connectivity, network health and status monitoring, mission critical restoral capability, and technical expertise for all MDA directed activities and events performed on-site. Additionally, the JNIC functions (within MDA's capabilities-based acquisition strategy) as the only system-level integration and interoperability facility for BMDS fire control; and it provides the physical interface between the developers and the COCOMs.</p> <p>Joint National Integration Center (JNIC) Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The JNIC contributes to the BMDS by directly supporting the concept of Concurrent Test and Operations for the BMDS. The JNIC accomplishes this by providing both MDA-level technical/horizontal integration and BMDS-level operational integration.</p>		

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The JNIC provides MDA-level technical/horizontal integration by: developing and operating the models and simulations used to support missile defense planning seminars, wargames, exercises, tests, and analyses; planning and executing the only end-to-end operator-in-the-loop/element-in-the-loop missile defense wargames in support of the Joint Warfighter Support Program; supporting BMDS Engagement Sequence Group (ESG) testing and analysis by operating the Test Execution Control (TEC) for distributed BMDS ground tests as part of the Combined Test Force (CTF)-JNIC; and, providing network operations and information assurance for all on-site integration activities.

The JNIC provides BMDS-level operational integration by: integrating and sustaining the enabling infrastructure, services, and processes that support the operation of designated elements of the BMDS and resident COCOM operations and/or support centers; operating the MDA Technical Support Center (MTSC), which provides technical support for the BMDS Watch Officers (BWOs), BMDS Safety Officers (BSOs), and Information Assurance Officers in their efforts to monitor and assess the health and status of the networks and elements that impact BMDS test and operations; operating the Joint Early Warning Laboratory (JEWL) for anomaly resolution; and supporting the Intelligence Support Center (ISC) for critical situational awareness intelligence on worldwide ballistic missile developments that could affect the development and/or operation of the BMDS.

Joint National Integration Center (JNIC) Major Program Goals:

- Provide the capabilities and services necessary to support the horizontal integration of on-site activities
- Ensure around the clock support and restoral of designated on-site operational activities
- Improve integration/interface with designated COCOM missile defense activities; host/support the headquarters and operations center for USSTRATCOM's Joint Functional Component Command - Integrated Missile Defense (JFCC-IMD)
- Achieve cost effectiveness and efficiencies through the leveraging of existing JNIC infrastructure, services, processes, and expertise to support assigned missions
- Maintain the reliability, availability, and maintainability of mission critical systems

CONCURRENT TEST AND OPERATIONS-DISTRIBUTED MULTI-ECHELON TRAINING SYSTEM (CTO-DMETS)

CTO-DMETS Program Description: The CTO-DMETS consists of live, virtual and constructive training environments for proficiency training, operator certification, wargames and exercises, and Tactics, Techniques and Procedures (TTPs) development, review, testing and revision. The CTO-DMETS will create a wargame-like environment for units to gain training task coverage and achieve other learning objectives by presenting standardized, technically accurate threat scenarios and other problems, faults, and situations that elicit the performance of individual and collective tasks. As MDA continues to develop the BMDS to defend the United States, deployed forces, friends and allies, the spiral development of CTO-

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DMETS will keep pace in meeting the continuing need to effectively train the crews, elements, staffs and commanders who execute the evolving BMDS mission.

CTO-DMETS Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): CTO-DMETS contributes to the BMDS by tying geographically dispersed forces together without the need to co-locate those forces at a central training facility, thus providing both cost savings for the exercise conduct and the added advantage of training how and where the operators would conduct a real-world event.

CTO-DMETS Major Program Goals:

- Provide a training venue separate from the operational system that imitates the operational environment with high fidelity
- Enable the warfighter to train where he fights
- Provide a scaleable system such that training can be conducted encompassing the entire BMDS (National Military Command Center (NMCC) to the Theater), or down to a single COCOM
- Support the development and evaluation of Tactics, Techniques, and Procedures (TTPs) at the BMDS level.

A.4 Major Events Schedule and Description

Major Event	Project	Timeframe	Description
Flight Test			
Hercules			
Conduct Real-time flight events	0902	1Q FY 2006	
Conduct Real-time flight events	0902	2Q FY 2006	
Conduct Real-time flight events	0902	3Q FY 2006	
Conduct Real-time flight events	0902	4Q FY 2006	
Critical Design Review			
Hercules			
Conduct CaT and ATT reviews	0802	1Q FY 2006	
Conduct CaT and ATT reviews	0802	2Q FY 2006	
Conduct CaT and ATT reviews	0802	3Q FY 2006	
Conduct CaT and ATT reviews	0802	4Q FY 2006	
Conduct CaT and ATT reviews	0505	1Q FY 2007	• Conduct at least four (4) ATT and CaT algorithm technical reviews
Conduct CaT and ATT reviews	0505	2Q FY 2007	• Conduct at least four (4) ATT and CaT algorithm technical reviews
Conduct CaT and ATT reviews	0505	3Q FY 2007	• Conduct at least four (4) ATT and CaT algorithm technical reviews
Conduct CaT and ATT reviews	0505	4Q FY 2007	• Conduct at least four (4) ATT and CaT algorithm technical reviews
Other			

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Major Event	Project	Timeframe	Description
C2BMC Element			
Spiral 4.4 Cycle 2 Testing	0701	2Q FY 2005 - 3Q FY 2005	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 4.4 Cycle 5 Testing	0701	3Q FY 2005 - 4Q FY 2005	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 4.5 Cycle 2 Testing	0701	3Q FY 2005 - 2Q FY 2006	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 4.5 Cycle 5 Testing	0701	1Q FY 2006 - 3Q FY 2006	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 6.1 Cycle 2 Testing	0801	2Q FY 2006 - 3Q FY 2006	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 6.2 Cycle 2 Testing	0801	1Q FY 2007 - 2Q FY 2007	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 6.2 Cycle 5 Testing	0801	2Q FY 2007 - 3Q FY 2007	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 6.4 Cycle 2 Testing	0801	3Q FY 2007 - 4Q FY 2007	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 6.4 Cycle 5 Testing	0801	1Q FY 2008 - 2Q FY 2008	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 8.2 Cycle 2 Testing	0901	3Q FY 2008 - 4Q FY 2008	<ul style="list-style-type: none"> • Simulation - Based Verification
Spiral 8.2 Cycle 5 Testing	0901	4Q FY 2008 - 1Q FY 2009	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 8.4 Cycle 2 Testing	0901	3Q FY 2009 - 4Q FY 2009	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 8.4 Cycle 5 Testing	0901	4Q FY 2009 - 1Q FY 2010	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 10.2 Cycle 2 Testing	0001	3Q FY 2010 - 4Q FY 2010	<ul style="list-style-type: none"> • Simulation-Based Verification
Spiral 10.2 Cycle 5 Testing	0001	4Q FY 2010 - 1Q FY 2011	<ul style="list-style-type: none"> • Site Activation Testing
Spiral 10.4 Cycle 2 Testing	0001	3Q FY 2011 - 4Q FY 2011	<ul style="list-style-type: none"> • Simulation-Based Verification
Hercules			
Integration of algorithms to GMD	0505	1Q FY 2007 - 4Q FY 2007	<ul style="list-style-type: none"> • Support integration of Hercules algorithms that support the Target Designation Concept Description that will improve the GMD system capability in the presence of countermeasures. • These algorithms include discrimination, target handover and kill vehicle enhancement algorithms.

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B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006 PB)	383,830	455,152	509,982
Current President's Budget (FY 2007 PB)	384,935	388,830	506,840
Total Adjustments	1,105	-66,322	-3,142
Congressional Specific Program Adjustments	0	-60,500	0
Congressional Undistributed Adjustments	0	-5,822	0
Reprogrammings	7,152	0	0
SBIR/STTR Transfer	-6,047	0	0
Adjustments to Budget Years	0	0	-3,142

The FY05 budget request for Ballistic Missile Defense Products was increased by \$1.105M from FY06 PB to FY07 PB. This was a result of \$6.047M reduction for the SBIR/STTR Transfer and a \$7.152M increase in support of Reprogrammings based on Agency priorities.

The FY06 budget request for Ballistic Missile Defense Products was reduced by \$66.322M from FY06 PB to FY07 PB. This was a result of a \$60.5M reduction for Congressional Specific Program Adjustments; \$30M for C2BMC National Team Unjustified Program Growth; \$25M for Joint Warfighter Unjustified Program Growth; and \$5.5M for Hercules Premature Request for Block 2010. The FY06 budget request was also reduced by \$5.822M as a result of Congressional Undistributed Adjustments.

The FY07 budget request was reduced by \$3.142M from FY06 PB to FY07 PB includes adjustments to accommodate current MDA priorities and achieve overhead/infrastructure reductions.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0701 Command and Control, Battle Management and Communications (C2BMC) Block 2004	152,217	65,524	53,526	292	0	0	0
RDT&E Articles Qty	9	2	0	0	0	0	0

Note: RDT&E Articles: FY05 - Spiral 4.4; 3 Full C2BMC Suites; 2 Web Browsers; 3 Laptop Planners. FY06 - Spiral 4.5; Forward Based X-Band Radar-Transportable (FBX-T) C2BMC Shelter/Equipment (Communications Node)

A. Mission Description and Budget Item Justification

In collaboration with the Missile Defense Agency's Systems Engineering and Integration defined Ballistic Missile Defense System (BMDS) architectures and system specifications, the Command and Control, Battle Management, and Communications (C2BMC) program provides the warfighter the capability of planning the Ballistic Missile Defense (BMD) fight while concurrently: tracking potential ballistic missile threats; directing weapons to engage via a distributed network; and, pairing appropriate sensor with the appropriate weapon system to defeat ballistic missile threats at any range, in any phase of flight, in all theaters, and with coalition partners. The C2BMC Program delivers continually increasing capabilities via hardware, software, and operations and sustainment support in two-year Blocks.

The Block 2004 C2BMC Program delivers the rudimentary foundation for integrated, layered defense for initial defense against a rogue threat or accidental ballistic missile launch. Block goals are to deliver:

- Basic deliberative/crisis action planning capability
- Common situational awareness capability/displays at the Combatant Commands (COCOMS) and National Military Command Center (NMCC)
- Initial sensor management of the Forward Based X-Band Radar - Transportable (FBX-T)
- Redundant communication/data paths and connections to Ground Based Missile Defense (GMD) and Aegis BMD
- Engagement Sequence Groups (ESG) involving Ground Based Interceptor (GBI), Standard Missile 3 (SM-3), Cobra Dane Upgraded Early Warning Radar, SPY-1 Sensor, and FBX-T.

C2BMC ELEMENT

The C2BMC Element includes program management and the hardware/software engineering necessary to accomplish Block objectives by balancing the development of its four product lines: Situational Awareness, BMD Planner, Battle Management, and Network. This approach ensures that mature capabilities can be integrated and incrementally delivered to the warfighter. Multiple incremental deliveries, or Spirals, are planned in Block

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<p>2004. Each spiral represents an improvement in capability and functionality over the previous spiral. The delivery of these Spirals includes the software, hardware, network connectivity, and operations and sustainment support needed to operate an integrated BMDS. The capability delivered in the Spirals enables BMDS ESGs by providing the proper interfaces, planning and coordination to allow the System elements and components to work together effectively. The C2BMC Element also includes development and post analysis support for BMDS-level wargames and tests of fielded Spirals.</p> <p>The BMD Planner and Situational Awareness architecture is based on several design features emphasizing scalability and interoperability. The architecture is designed to utilize an open system approach. This approach also provides an evolution path for technology upgrades. This architecture is also designed to be scalable and utilizes a multi-vendor enterprise. The BMD Planner emphasizes planning for both theater and global missile defense through all planning phases: deliberate, crisis and execution. It will provide the capability to coordinate with all weapon system elements in a collaborative fashion. This type of coherent planning will result in BMD for the full range and complexity of ballistic missile threats. To ensure that the full C2BMC capability is realized by all weapon system elements, the architecture will migrate in future Blocks to a network-centric (vice point to point) planner to ensure both vertical and horizontal collaboration. Block 2004 development includes the following BMD Planner and Situational Awareness capabilities: basic force level BMD planning capability; planning load robustness that protects against incomplete/inaccurate planning data; initial external Extensible Machine Language (XML) interface with Air and Missile Defense Work Station (AMDWS) planner; sensor management display (FBX-T Sensor), Integrated Ballistic Missile Picture (IBMP), BMDS Summary Screen (SS), and Executive Displays (displays all BMDS track and status data). Situational Awareness capability is further enhanced with the introduction of initial Protection Capability (PROCAP) which allows the operator to visually see status and capabilities of BMD assets, and integrates missile warning and missile defense information eliminating the need for the operator to mentally merge data. Remote situational awareness is also provided to the United Kingdom.</p> <p>Battle Management comprises the decisions and actions executed in direct response to the activities of enemy forces. In Block 2004, the battle management portion of C2BMC is focused at the Combatant Commands (COCOMs) Headquarters and develops and delivers FBX-T Sensor Management including Operational State Control, Sensor Tasking (cue), and Resource Management increasing the effectiveness of the radar system within the BMDS. In addition, track data management capability is improved to include forwarding of FBX-T tracks to Ground Based Missile Defense Fire Control (GFC) via fiber and satellite and to Aegis BMD via Link 16 using the Air Defense System Integrator (ADSI), and track filtering and launch event association improving the battlespace depiction and targeting information for BMDS weapon systems.</p> <p>The Network Communications portion of C2BMC ensures all components of the BMDS are operating on the BMD network. The intent is to develop and deliver products that provide robust connectivity to quickly and unambiguously share information across the global BMD and with external users. Effective networking will rely on an interconnection of a variety of platforms and capabilities. In Block 2004, network capability is delivered</p>		

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<p>to enable AEGIS and GMD ESGs, Joint Range Extension to convert Satellite Communications (SATCOM) formatted messages to land line messages to interface with the rest of the BMDS, initial network monitoring and management, Communications Network Equipment (CNE) auto-failover to prevent system outages, network operations and security center (NOSC) at the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD) in Colorado Springs, CO for remote monitoring of the network, and support of dual redundant suites.</p> <p>As the C2BMC products mature they are engineered and integrated into fielded Spirals. The C2BMC element uses spiral development (incremental development, test, and fielding) to produce the software required to provide a system-wide integrated BMD capability. The key test event for development is completion of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins integration testing with other BMDS elements. Block 2004 matured products are integrated in Spirals 4.1 through 4.5 and delivered to the field for concurrent developmental testing and operational use in conjunction with the schedules and guidance of MDA's Responsible Test organization/Responsible Engineering Organization (REO/RTO). Completion of Cycle 5 testing, Site Activation Testing, signals delivery of fully functioning operational software. Spirals 4.1 and 4.2 provided infrastructure (including the development environment and initial message and track processing) and deliberate and dynamic planning (including planning tools and additional message processing and collaborative tools). Spiral 4.3 focused on developing the Initial Defensive Operations (IDO) capability, and is updated with Spiral 4.4 which incorporates high priority user fixes. Block 2004 is completed with the development and delivery of Spiral 4.5, which aligns with the GMD Block 4B configuration.</p> <p>SITE ACTIVATION</p> <p>The C2BMC program delivers both Spiral software and operational hardware/capabilities to the Combatant Commands at NORTHCOM, STRATCOM and PACOM, and within the National Capital Region to provide BMDS operations. Hardware/capabilities consist of Enterprise Workstations Stations (warfighter display monitors and access to C2BMC planner, situation awareness and battle manager capabilities), servers, processors, and communications racks and equipment (up to 8 racks of equipment per C2BMC suite in Block 2004), situational awareness web browsers, and video distribution equipment. Additionally, Block 2004 site activation includes the procurement and deployment of a C2BMC FBX-T shelter (with 9 racks of equipment) in Japan, as well as extending situational awareness screens to the United Kingdom. These international deployments enable BMDS global reach.</p> <p>INTEGRATION AND TEST ENVIRONMENT</p> <p>The C2BMC Program developed and maintains an Element Test Environment at the Joint National Integration Center (JNIC) on Schriever AFB, CO for software integration testing and verification, system exercises, and operational support. The JNIC hosts four C2BMC integration and testing</p>		

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centers (BITC), and the C2BMC-Experimental Laboratory (C2BMC X-Lab). Capabilities and functions located at the JNIC supporting the development of the BMDS C2BMC include: integration and test of C2BMC software Spirals; C2BMC experimentation supported by broad area announcements for independently developed software which may have application in the BMDS; wargaming and BMDS-level ground and flight tests; and C2BMC operations and maintenance, licenses and upgrades for the BITC and C2BMC-X laboratories. The use of these facilities is essential to testing the integration of C2BMC products with other BMDS elements and to enable the warfighter to make input into their use.

OPERATIONS AND SUPPORT

C2BMC Program Operations and Support consists of On-Site Support, Help Desk activities, and hardware/software maintenance. On-Site Support provides: Assistance to the System Administrator (Assigned by the site (e.g. Component Commands), with the general operational support of the C2BMC system; Integration of the C2BMC support processes into the site's support regimen; Daily network operations and security support for the C2BMC system as part of a transition plan; and prime contractor "Over-the-shoulder" support to users when requested, or alternatively, via the Help Desk. The Help Desk is located in Colorado Springs, CO and provides: Technical support to onsite personnel and to the C2BMC end-user; Review of hardware/software problems and coordination of Commercial Off-the-Shelf (COTS) developer/vendor service calls; Trouble ticket work-off; Tracking and implementing documented escalation procedures; Collecting of metrics; and, Maintenance of the Help Desk website. Maintenance of the C2BMC includes both software and hardware maintenance and sustaining engineering. Sustaining engineering consists of network and development engineering in support of system anomalies. Operations and Support also includes the procurement of communications lines from the Defense Information Service Agency (DISA), as well as fielding and maintaining, Communications Nodal Equipment (CNE), to include the Joint Range Extension (JRE) equipment, which enables a global network grid.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
C2BMC Element	101,376	24,612	3,010
RDT&E Articles (Quantity)	1	1	0

The C2BMC Element accomplishes Block 2004 objectives by balancing the development of four principle product lines -- Situational Awareness, Planner, Battle Management, and Network -- so that mature capabilities can be integrated and incrementally delivered to the warfighter via Spirals. Block 2004 includes infrastructure development, testing activity, and development support of fielded hardware and software.

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FY05 Accomplishments: FY05 RDT&E Articles: Spiral 4.4		
<ul style="list-style-type: none">Delivered, through Cycle 5 Fielding and Test, Spiral 4.4 (RDT&E Article) providing high priority fixes to Spiral 4.3 based on warfighter feedback and operational experienceCompleted Spiral 4.5 Cycle 2, Simulation Based Verification Testing		
FY06 Planned Program: FY06 RDT&E Articles: Spiral 4.5		
<ul style="list-style-type: none">Deliver Spiral 4.5 (RDT&E article) providing:<ul style="list-style-type: none">Situational Awareness<ul style="list-style-type: none">Forward Based X-Band Radar - Transportable (FBX-T) Sensor Management DisplayFBX-T added to Integrated Ballistic Missile Picture (IBMP), Summary Screen (SS), and Executive ScreensProtection Capability (PROCAP) DisplayMissile Warning/Missile Defense Integrated DisplaySituational Awareness to United KingdomBallistic Missile Defense (BMD) Planner<ul style="list-style-type: none">Improved User InterfacePerformance EnhancementsBattle Management<ul style="list-style-type: none">FBX-T Sensor Control/MonitorSensor Tasking for FBX-TTrack Forwarding FBX-T data to Ground-based Midcourse Defense (GMD) Fire Control/Ground Based Interceptor (GFC/GBI)Track Forwarding FBX-T data via Link 16 Reporting Responsibility (R2) messagesNetwork<ul style="list-style-type: none">Communications Nodal Equipment (CNE) Auto FailoverMove of the Network Operations and Security Center (NOSC) to Joint Functional Component Command - Integrated Missile Defense (JFCC-IMD) at the Joint National Integration Center (JNIC)Remote connectivity of situational awareness to the United Kingdom		

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- Link 16 messages to Aegis and other Link-16 enabled and connected systems via Air Defense System Integrator (ADSI)
 - Conduct Block 2004 Functional and Physical Configuration Audit
 - Identify system anomalies and, concurrently with the user, prepare System Modification Reports (SMR)
 - Design, Develop, and test fixes to resolve System Modification Requests (SMR's)
 - Support BMDS-level tests and post analyses involving Spiral 4.5

FY07 Planned Program

- Design, develop, and test fixes to resolve SMRs
- Support BMDS-level tests and post analyses involving Spiral 4.5

	FY 2005	FY 2006	FY 2007
C2BMC Site Activation	9,100	8,505	0
RDT&E Articles (Quantity)	8	1	0

Site Activation efforts address fielding of the C2BMC capabilities (both full and remote suite configurations), Communications Gateways, and Web Browser based C2BMC nodes. This activity consists of two primary tasks. The first task includes planning for and installing C2BMC Components and completing required site surveys, and preparing Site Activation Plans and Site Installation Documents. The second task is to provide activation support, including equipment procurement, staging and inventory control.

FY05 Accomplishments:

FY05 RDT&E Articles: 3 Full C2BMC Suites, 2 Web Browser, 3 Laptop Planners

- Installed second full STRATCOM Suite (RDT&E Article)
- Installed second full NORTHCOM Suite (RDT&E Article)
- Installed first full PACOM Suite (RDT&E Article)
- Installed National Capital Region Browser (RDT&E Article)
- Provided BMDS Situational Awareness capability to the United Kingdom
- Delivered FBX-T C2BMC capability/shelter (Communications Node) to Vandenberg AFB for FBX-T testing
- Installed 14th Air Force Web Browser (RDT&E Article)
- Provided CENTCOM, JFCC-IMD, and 7th Fleet Laptop Planners (RDT&E Articles)

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FY06 Planned Program
 FY06 RDT&E Article: FBX-T C2BMC Shelter/Equipment (Communications Node)

- Deliver and Install FBX-T C2BMC Shelter/Equipment (Communications Node) in Japan (RDT&E Article)
- Field Air Defense System Integrator (ADSI) enabling passage of BMD threat tracks to via Link 16

	FY 2005	FY 2006	FY 2007
Integration and Test Environment	24,670	0	0
RDT&E Articles (Quantity)	0	0	0

The Joint National Integration Center (JNIC) is host to four C2BMC Integration and Testing Centers (BITC) and the C2BMC-Experimental Laboratory (C2BMC X-Lab). The following capabilities and functions located at the JNIC support the MDNTB(I)'s development of the BMDS C2BMC Element: Integrate and test of C2BMC software Spiraling deliveries from the Development Team to the Integration & Test (I&T) team; C2BMC experimentation supported by Broad Area Announcements for independently developed software which may have applications in the BMDS; C2BMC support of BMDS level wargames, ground tests, and flight tests; C2BMC Operations & Maintenance, Licenses and Upgrades for the BITC and C2BMC-X laboratories.

FY05 Accomplishments:

- Spiral 4.4 and Spiral 4.5 Cycle 3, Integration testing
- Upgraded Test Environment and the C2BMC Test Article Simulation Environment
- Continued support in development of C2BMC Concept of Operations
- Upgraded Communication Network Equipment (CNE) for BITC Lab Spiral 4.3
- Continued full schedule of C2BMC-X Events and Experimentation
- Began build-out of BITC-4 to increase testing capacity
- Added new Communications and Connectivity, C4I Tools
- Completed C2BMC-X Events and Experimentation including support of:
 - Integrated Missile Defense War Games 04-2, 04-3 and 04-4
 - EUCOM Exercise
 - Integrated Ground Test 5 and 6
 - Missile Defense Integration Exercise 05a
 - Distributed Ground Test 1 and 2

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	FY 2005	FY 2006	FY 2007
Operations and Support	17,071	32,407	50,516
RDT&E Articles (Quantity)	0	0	0
<p>Operations and Support procedures are in place for all fielded Block 2004 hardware and software. Maintenance agreements were established, spares were procured and delivered to each site. At each location an agreement in the form of a site installation plan was drafted and approved to outline roles and responsibilities of all stakeholders. A follow-on engineering site implementation document was developed to lay out the details for activating the site.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Established on-site support team at PACOM • Provided on-site C2BMC operations and sustainment support of Fielded Sites at STRATCOM and NORTHCOM • Maintained Help Desk at JNIC • Provided C2BMC Operator training • Updated Integrated Logistic Support Plan (ILSP) and Contractor Logistics Support Plan (CLSP) • Initiated movement of Network Operations and Security Center from STRATCOM to JFCC-IMD • Provided communications circuits for fielded C2BMC locations • Provided sustaining engineering support for fielded hardware and software • Identified and addressed data latency issues <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Establish on-site support for FBX-T C2BMC shelter/capability and communications in Japan • Continue on-site C2BMC Support of Fielded Sites (NORTHCOM, STRATCOM, PACOM, JNIC, National Capital Region) for Block 2004 fielded capabilities • Continue to maintain Help Desk at JNIC for Block 2004 fielded capabilities • Continue C2BMC Operator training for Block 2004 fielded capabilities • Continue Support of Network Operations Security Center at JFCC-IMD • Continue to provide and support communications circuits for fielded C2BMC locations • Continue to provided sustaining engineering support for Block 2004 fielded hardware and software 			

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FY07 Planned Program:

- Continue on-site C2BMC Support of Fielded Sites for Block 2004 fielded hardware and software
- Continue to maintain Help Desk at JNIC for Block 2004 fielded capabilities
- Continue C2BMC Operator training for Block 2004 fielded capabilities
- Continue to provide and support communications circuits for fielded C2BMC locations
- Continue to provided sustaining engineering support for fielded hardware and software

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703

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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

The Command and Control Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge-based funding through the use of two-year capability blocks. The Missile Defense National Team C2BMC (Industry) (MDNTB(I)) led by Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transactions Agreement. They are charged with the development, fielding and operations and sustainment support of the C2BMC prototype. They perform development and testing of C2BMC products in Arlington VA, Huntsville AL, and Colorado Springs CO and provide on-site operations and maintenance support, as well as Defense Information Systems Agency (DISA), for fielded C2BMC capabilities in Nebraska, Colorado, Hawaii, Virginia and Japan. C2BMC Program Office government, Federally Funded Research Development Center/University Affiliated Research Centers (FFRDC/UARC), and Scientific Engineering and Technical Assistance (SETA) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

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I. Product Development Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
C2BMC Element								
C2BMC HW/SW Development, I&T	SS/CPAF	MDNTB(I)/ Col. Springs, Co	26,293	8,122	1/2Q	993	1Q	35,408
C2BMC HW/SW Development, I&T	SS/CPAF	MDNTB(I)/ Huntsville, AL	8,022	1,231	1/2Q	151	1Q	9,404
C2BMC Product Engineering & Development	SS/CPAF	MDNTB(I)/ Arlington, VA	41,548	15,259	1/2Q	1,866	1Q	58,673
EW/CEW; GCCS; JDP; JRE; ISC2; SBIRS-DSP; PATRIOT-JTAGS		Services, DISA, Agencies/ Various	50,609	0	N/A	0	N/A	50,609
Federally Funded Research Development Center	SS/CPAF	MITRE, IDA, ORNL, MIT/LL/ Washington, DC	13,419	0	N/A	0	N/A	13,419
Scientific Engineering and Technical Assistance	SS/CPFF	Sparta/CSC/ MDA HQ, Arlington, VA	12,369	0	N/A	0	N/A	12,369
Scientific Engineering and Technical Assistance	SS/CPFF	Booze Allen Hamilton/ MDA HQ, Arlington, VA	737	0	N/A	0	N/A	737
C2BMC Site Activation								
Suites and Comms Gateways	SS/CPAF	MDNTB(I)/ Various COCOMS	23,044	8,505	1/2Q	0	N/A	31,549
Integration and Test Environment								
Integration & Test	C/FFP	Northrop Grumman Mission Sys/ Colorado Springs, CO	33,790	0	N/A	0	N/A	33,790

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Lab Development	SS/CPAF	MDNTB(I)/ Washington, DC	8,030	0	N/A	0	N/A	8,030
Operations and Support								
Unit Personnel, Cont System Improv, Sustaining Suppt	SS/CPAF	MDNTB(I)	16,848	23,962	1/2Q	41,780	1Q	82,590
Indirect Support	MIPR	Various COCOMS	9,965	3,645	1/2Q	3,715	1Q	17,325
Unit Operations - Circuit Costs	MIPR	DISA	0	4,800	2Q	5,021	1Q	9,821
Subtotal Product Development			244,674	65,524		53,526		363724

Remarks

II. Support Costs Cost (\$ in Thousands)

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

Remarks

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

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

Remarks

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C2BMC Element																												
Spiral 4.4 Development	▲																											
Spiral 4.4 Cycle 2 Testing		▲																										
Spiral 4.4 Cycle 5 Testing			▲																									
Spiral 4.5 Development	▲																											
Spiral 4.5 Cycle 2 Testing			▲		▲																							
Spiral 4.5 Cycle 5 Testing					▲																							
Block 2004 F/PCA					▲																							
Site Activation																												
NORTHCOM - Full C2BMC Suite Installed		▲																										
BMDS Situational Awareness Capability to the UK			▲																									
STRATCOM - Full C2BMC Suite Installed			▲																									
FBX-T #1 C2BMC Shelter/Vandenberg AFB				▲																								
Installed National Capital Region Browser				▲																								
PACOM - Full C2BMC Suite Installed				▲																								
Deliver and Install FBX-T #1 Shelter to Japan								▲																				
Operation & Sustainment																												
Block 04 O&S	▲				▲				▲																			
Legend																												
▲ Significant Event (complete) ★ Milestone Decision (complete) ◆ Element Test (complete) ▼ System Level Test (complete) ▲ Complete Activity														▲ Significant Event (planned) ☆ Milestone Decision (planned) ◇ Element Test (planned) ▼ System Level Test (planned) ▲ Planned Activity														

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
C2BMC Element							
Spiral 4.4 Development	1Q-2Q						
Spiral 4.4 Cycle 2 Testing	2Q-3Q						
Spiral 4.4 Cycle 5 Testing	3Q-4Q						
Spiral 4.5 Development	1Q-4Q						
Spiral 4.5 Cycle 2 Testing	3Q-4Q	1Q-2Q					
Spiral 4.5 Cycle 5 Testing		1Q-3Q					
Block 2004 F/PCA		1Q-2Q					
Site Activation							
NORTHCOM - Full C2BMC Suite Installed	2Q						
Provided 7th Fleet Laptop Planner	2Q						
BMDS Situational Awareness Capability to the UK	3Q						
NCR - Web Browser Installed	3Q						
STRATCOM - Full C2BMC Suite Installed	3Q						
FBX-T #1 C2BMC Shelter/Vandenberg AFB	4Q						
Installed National Capital Region Browser	4Q						
PACOM - Full C2BMC Suite Installed	4Q						
Provided CENTCOM and JFCC-IMD Laptop Planner	4Q						
Deliver and Install FBX-T #1 Shelter to Japan		2Q					
Operation & Sustainment							
Block 04 O&S	1Q-4Q	1Q-4Q	1Q-4Q				

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0801 Command and Control, Battle Management and Communications (C2BMC) Block 2006	26,791	136,282	176,735	102,687	56,703	283	0
RDT&E Articles Qty	0	8	7	1	0	0	0

Note: RDT&E Articles: FY06 - 3 Web Browsers; 2 Enterprise Workstations (EWS); 1 Communications Node; 2 C2BMC Laptop Planners. FY07 - Spiral 6.2; 1 Full C2BMC Suite; 1 Communications Node; 3 Upgraded C2BMC Suites; GIFC at PACOM FY08 - Spiral 6.4

A. Mission Description and Budget Item Justification

In collaboration with the Missile Defense Agency's Systems Engineering and Integration defined architectures and system specifications, the Command and Control, Battle Management and Communications (C2BMC) Program will provide the warfighter the capability to systematically plan the fight (Ballistic Missile Defense [BMD] Planner), see it unfold (Situation Awareness), and dynamically direct/adjust BMD networked (Network) sensors and weapons (Battle Management) to engage and defeat ballistic missile threats at any range, in any phase, in all theaters. The C2BMC products will provide the warfighter the capability to optimize ballistic missile defense from a global level by combining the best sensor information with the most efficient weapon from complimentary weapons systems, which, individually, provide only limited area protection.

Today, the center of gravity for C2BMC is at the Combatant Command (COCOM) Headquarters, where BMD mission planning and situational awareness is focused. All processing is performed at STRATCOM, NORTHCOM, and PACOM, and users of the system are either collocated with, or directly connected to the equipment suites at these COCOMs. As the system evolves from Block 2004 through Block 2006 to Block 2008, the center of gravity will shift from the COCOMs to the Air Operations Centers (AOCs) and supporting Service Components, where real-time automated battle management will be introduced and deployed. Development of this Area of Operational Responsibility (AOR)-centric enterprise architecture will allow C2BMC workload to be focused on the Battle in front of the Warfighter, through the deployment of Global Integrated Fire Control(GIFC)/Advanced Battle Management (ABM) functions within the Area Air Defense Commander's staff while also providing global situational awareness at the COCOM Headquarters. Together, these separate capabilities enable integrated support of prioritized theater, regional, and homeland defense missions. To accomplish this shift in the center of gravity and meet the C2BMC mission objective of any sensor, any weapon, any threat, in any phase of flight, the C2BMC program of work in Block 2006 includes concentrated effort on developing complimentary C2BMC system capabilities (global BMD planning and situational awareness at the COCOM Headquarters and GIFC, based on dependable, trusted software at the AOC) for initial deployment by the end of the Block.

In Block 2006, the C2BMC program will deliver to the warfighters the foundation for an integrated, layered defense against a rogue threat or accidental ballistic missile launch. Block goals are to deliver:

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<ul style="list-style-type: none">• Improved C2BMC system reliability and availability• Initial GIFC capability at the Air Operations Center - founded on dependable, trustworthy software development• Enhanced situational awareness and command and control at the COCOM headquarters• High availability, redundant communications• Engagement Sequence Groups (ESG) that involve the Ground Based Missile Defense Interceptor, Aegis BMD, Standard Missile 3 (SM-3) and Army/Navy/Surfaced phased array system (AN/SPY-1) Radar, Terminal High Altitude Area Defense (THAAD) Interceptors, Forward Based X-Band Radar - Transportable (FBX-T), and Space Based Infrared Sensor (SBIRS) <p>C2BMC ELEMENT</p> <p>The C2BMC Element accomplishes Block objectives by designing, developing, and delivering enhanced and new capabilities from its four product lines: BMD Planner, Situational Awareness, GIFC/Battle Manager, and the BMDS Network. Two major deliveries, or Spirals, are planned in Block 2006. Each spiral, 6.2 and 6.4, represents an improvement in capability and functionality over their predecessor spiral. The delivery of these Spirals includes the software, and the hardware and network connectivity, needed to operate an integrated BMDS. The C2BMC Element also includes development support and post analysis for BMDS-level wargames and tests with fielded Spirals.</p> <p>The BMD Planner and Situational Awareness (SA) architecture is based on several design features emphasizing flexibility and interoperability. The architecture is designed to utilize an open system approach. This approach also provides an evolution path for technology upgrades. The BMD Planner emphasizes planning as you will fight. This includes planning for both theater and global missile defense through all planning phases: deliberate, crisis and execution. The BMD Planner will provide strategic and theater commanders with the capability to build, analyze and coordinate global layered defense designs across all levels of command, from strategic to operational down to tactical weapon systems in a specific theater and across multiple Combatant Commands with all weapon system elements in an integrated, layered fashion. This type of coherent planning will result in BMD for the full range and complexity of ballistic missile threats. Situational Awareness emphasizes a common, Single Integrated Ballistic Missile Picture (IBMP) from the President down to Operational Level of Command. It provides the decision makers at all levels of command the capability to direct weapon release authority for certain weapon platforms to engage, provides the health of the overall BMDS system and its ability to engage on multiple ranges of threats. Block 2006 BMD Planner enhancements include reengineering the Priority Defense Accession List from the Spiral 4.5 Planner to improve efficiency and usability, and, providing the ability to create planning sequels and branches, as well as planning merge and unmerge functions to improve warfighter ability to create or improve positioning of BMD assets. Situational Awareness improvements include executive summary screen enhancements to include GIFC situational awareness interaction with COCOM Headquarters, additional critical</p>		

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battlespace information, and, improved ability to organize and manage information for the National Military Command Center (NMCC) and senior civilian leadership.		

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Battle Management, consisting of the Global Integrated Fire Control (GIFC) for the Air Operations Center (AOC) or service component, provides the user the ability to dynamically adjust BMD sensors and weapon systems to meet real-time threats. GIFC focuses on both the theater battle and the strategic battle and, in the Block 2006 timeframe, allows the warfighter to optimally use the FBX-T in conjunction with Aegis BMD in the PACOM area of Operations. GIFC, based on advanced battle management software development exhibits highly predictable system behavior, is fault -tolerant of runtime errors, and provides trustworthy battle-management operations. The GIFC will receive sensor information from land, sea, and air sensors and commit land-, sea-, and air-based weapon systems to fire at identified targets. The GIFC, based on dependable and trusted software development, offers the following benefits: (1) predictable battle management behavior for those weapon systems and sensors interfaced, (2) rapid insertion of new or updated capabilities due to component-based software engineering, (3) software that meets real-time deadlines in the BMD battlespace and (4) automated test oracles and continuous test processes that increase specification testing coverage, reduce software coding rework, and streamline element integration and fielding. By the end of Block 2006, the GIFC will provide FBX-T resource management, evaluate/merge tracks from FBX-T, SPY-1, and a single source early warning sensors, and provide weapons system - target assignment for high probability of defeating ballistic missile threats.

The Network Communications portion of C2BMC ensures that communications and networking are not the limiting factor in fielding or operation of the BMDS. The intent is to develop products that provide robust, high availability connectivity to quickly and unambiguously share information across the global BMDS consisting of multiple Sensors and, Weapon Systems and Command and Control nodes, as well as external users. Effective networking management and operations will rely on the ability to manage, coordinate and integrate a wide variety of equipment platforms, interfaces with other DoD communications systems and existing/evolving information standards and capabilities. In Block 2006 the Network aspect of C2BMC will: provide initial Network Centric Enterprise Services (NCES) capabilities, starting with centralized detailed network performance monitoring and cryptographic device management, which will evolve to full Quality of Service (QoS) network monitor to ensure messages and communications are properly routed to avoid bottlenecks. Network development also includes development and fielding of a Parallel Staging Network (PSN) which allows new software Spirals to be developed, tested, and operationally checked out on fielded communications and C2BMC equipment prior to switching over operational use. The PSN assures the operator higher availability of the operational system while continuing development on the parallel system. Once the warfighter accepts the developmental system, with new spiral software, as being operationally ready, it is switched over to operational use and old operational software is turned over to development for the next generation of software. This capability enables concurrent operations and test and seamless transition of new C2BMC capabilities to the warfighter.

As the C2BMC products mature they are engineered and integrated into fielded Spirals. The C2BMC element uses spiral development (incremental development, test, and fielding) to deliver the hardware and software required to provide a system-wide integrated BMD capability. The key test event for development is completion of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins

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<p>integration testing with other BMDS elements. Block 2006 matured products are integrated in Spirals 6.2 and 6.4 then delivered to the field for concurrent development testing and operational use in conjunction with Responsible Test Organization (RTO), Responsible Engineering Organization (REO), and Aegis BMD and Ground-based Midcourse Defense (GMD) schedules and guidance. Completion of Cycle 5 testing, Site Activation Testing, signals delivery of fully functioning operational software. Spiral 6.2 is the initial delivery of Block 2006 capability with the primary focus on improved reliability and availability. Spiral 6.4 delivers complete Block 2006 capability with a focus on the initial fielding of a Global Integrated Fire Control (GIFC) at the PACOM AOC.</p> <p>SITE ACTIVATION</p> <p>In addition to Block 2006 spiral software, fielding capability also includes installation and activation of C2BMC capabilities at United States Forces Korea (USFK), United States Forces Japan (USFJ), EUCOM, Cheyenne Mountain Operations Center (CMOC), and PACOM Air Operations Center, as well as equipment upgrades at STRATCOM, NORTHCOM and PACOM. Additionally, PACOM will receive a second C2BMC equipment suite. C2BMC fielding at these locations results in improved capability of the BMDS to meet global threats.</p> <p>INTEGRATION AND TEST ENVIRONMENT</p> <p>The C2BMC Program developed and maintains an Element Test Environment at the Joint National Integration Center (JNIC) on Schriever AFB, CO for software integration, testing and verification, system exercises, and operational support. The JNIC hosts four C2BMC Spiral integration and testing laboratories (BITC), and the C2BMC-Experimental Laboratory (C2BMC-X). Capabilities and functions located at the JNIC supporting the development of the BMDS C2BMC include: integration and test of C2BMC software Spirals; C2BMC experimentation supported by broad area announcements for independently developed software which may have application in the BMDS; participation in BMDS wargames and ground and flight tests; and, C2BMC operations and maintenance, licenses and upgrades for the BITC and C2BMC-X laboratories. The use of these facilities is essential to testing the integration of C2BMC products with other BMDS elements and involving the warfighter in fleshing out operational techniques and issues.</p> <p>OPERATIONS AND SUPPORT</p> <p>C2BMC Program Operations and Support consists of On-Site Support, Help Desk activities, and hardware/software maintenance. On-Site Support provides: Assistance to the System Administrator (Assigned by the site (e.g. Component Commands), with the general operational support of the C2BMC system; Integration of the C2BMC support processes into the site's support regimen; Daily network operations and security support for the</p>		

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C2BMC system as part of a transition plan; Prime contractor “Over-the-shoulder” support to users when requested, or alternatively, when they contact the Help Desk. The Help Desk is located in Colorado Springs, CO and provides: Technical support to onsite personnel and to the C2BMC end-user; Review of hardware/software problems and coordination of Commercial Off-the-Shelf (COTS) developer/vendor service calls; Trouble ticket work-off; Tracking and implementing documented escalation procedures; Collecting of metrics; and, Maintenance of the Help Desk website. Maintenance of the C2BMC includes both software and hardware maintenance and sustaining engineering. Sustaining engineering consists of network and development engineering in support of system anomalies. Operations and Support also includes the procurement of communications lines from the Defense Information Service Agency (DISA), as well as fielding and maintaining, Communications Nodal Equipment (CNE), to include the Joint Range Extension (JRE) equipment, which enables a global network grid.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
C2BMC Element	26,791	118,345	148,764
RDT&E Articles (Quantity)	0	0	1

The C2BMC Element accomplishes block objectives by balancing the development of the four principle product lines (Situational Awareness, Ballistic Missile Defense (BMD) Planner, Global Integrated Fire Control (GIFC)/Battle Management, and Network) so that mature capabilities can be integrated and incrementally delivered to the warfighter. Two incremental deliveries, or Spirals, are planned in Block 2006.

FY05 Accomplishments:

- Approved Spiral 6.1 (A minor maintenance spiral which will be incorporated into Spiral 6.2) and Spiral 6.2 Content Agreement
- Completed GIFC/Advance Battle Management Increment 0 as proof of concept for dependable, trustworthy software development process
- Began Spiral 6.1 and 6.2 design and development
- Began Spiral 6.4 definition

FY06 Planned Program:

- Complete GIFC/Advanced Battle Management Increment 1
- Approve Spiral 6.4 Content Agreement
- Begin Spiral 6.4 design and engineering development
- Complete Spiral 6.1 Development and Cycle 2 (Simulation Based Verification) Testing
- Conduct Spiral 6.2 Verification Readiness Review (VRR)
- Begin Spiral 6.2 Software Development

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FY07 Planned Program: FY07 RDT&E Articles: Spiral 6.2		
<ul style="list-style-type: none">• Deliver Spiral 6.2 (RDT&E article) with the following capabilities:<ul style="list-style-type: none">○ BMD Planner<ul style="list-style-type: none">▪ Reengineer Priority Defense Accession List (PDAL) from Spiral 4.5▪ Planning sequels and branches▪ Plan merge/unmerge○ Battle Management<ul style="list-style-type: none">▪ Forward Based X-Band Radar - Transportable (FBX-T) Sensor Management▪ Limited Cross-Network Correlation (includes FBX-T)○ Situation Awareness<ul style="list-style-type: none">▪ Executive Summary Screen Enhancements▪ Initial use of Multi-Hypothesis Correlator (MHC)/BMDS Launch Event Association -Global Vision (BLEA-GV)○ Network<ul style="list-style-type: none">▪ Auto CNE Failover▪ Synchronized Data between Combatant Commands (COCOMs) (includes Operations Capability or OPSCAP)▪ Initial Network Quality of Service (QoS)▪ AEGIS Extremely High Frequency (EHF), United States Forces Japan (USFJ), United States Forces Korea (USFK) Connectivity▪ Initial Network Centric Enterprise System (NCES)• Begin engineering and complete Cycle 2 (Simulation Based Verification) of Spiral 6.4 with focus on reliability and availability, GIFC and BMDS System Specification capabilities.<ul style="list-style-type: none">○ Spiral 6.4 capabilities include:<ul style="list-style-type: none">▪ BMD Planner<ul style="list-style-type: none">➢ Use of PDAL for planner information▪ Situational Awareness<ul style="list-style-type: none">➢ GIFC Situation Awareness interaction with COCOM BMD Planner and Situational Awareness Suites▪ Global Integrated Fire Control/Battle Management<ul style="list-style-type: none">➢ Deliver Increments 1 and 2➢ Initial GIFC at PACOM Air Operations Center (AOC)		

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- FBX-T CR-1/CR-2 Interface Capability
- Limited sensor netting
- Weapons/Target pairing with Aegis BMD
- Weapons/Target handover with GMD Fire Control
- Network
 - Full Quality of Service Network Monitoring
 - Improved system monitoring
 - Improved message handling reliability, throughput with degraded network

	FY 2005	FY 2006	FY 2007
Site Activation	0	2,816	27,971
RDT&E Articles (Quantity)	0	8	6

Block 2006 Site Activation efforts will continue to address the fielding and upgrade of all C2BMC associated hardware and software (Suites, Enterprise Workstations (EWS), Web Browsers, and Communications Equipment) which enable the warfighter to plan, see, and manage the ballistic missile defense battle.

FY06 Planned Program:
 FY06 RDT&E Articles: 3 Web Browsers, 2 EWS, 1 Communications Node; 2 C2BMC Laptop Planners

- USFK, USFJ and EUCOM Web Browsers (RDT&E Articles)
- PACOM and CMOC AOC Enterprise Work Stations (RDT&E Articles)
- Communications Node (routers, crypto, communications equipment) for EHF and DCSC in Hawaii (RDT&E Article)
- EUCOM and JFCC-IMD Laptop Planners (RDT&E Articles)

FY07 Planned Program:
 FY07 RDT&E Articles: Full C2BMC Suite, 3 Upgraded C2BMC Suites, 1 Communications Node, GIFC at PACOM

- PACOM second full C2BMC equipment suite (RDT&E Article)
- C2BMC suite, gateway, and remote workstation upgrades (increased capacity processors) at STRATCOM, PACOM and NORTHCOM (RDT&E Articles)

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<ul style="list-style-type: none"> • Second Communications Node (routers, crypto, communications equipment) in Japan (RDT&E Article) • GIFC hardware at PACOM AOC (RDT&E Article) 			
	FY 2005	FY 2006	FY 2007
Integration and Test Environment	0	15,121	0
RDT&E Articles (Quantity)	0	0	0
<p>Block 2006 will see the Joint National Integration Center (JNIC) continue providing the capabilities and functions which support development of the BMDS C2BMC Element: Integrate and test of C2BMC software Spiral deliveries; C2BMC experimentation supported by Broad Area Announcements for independently developed software which may have applications in the BMDS; support conduct of BMDS level wargames and ground and flight tests; C2BMC Operations & Maintenance, Licenses; and, Upgrades for the BITC and C2BMC-X laboratories.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Complete BITC-4 build-out to increase BMDS level and systems integration test capacity • Support continued Block 04 BMDS-level tests, wargames, and exercises <ul style="list-style-type: none"> ○ Missile Defense Integration Exercises (MDIE) GT 04-1a, GT 04-1b, GT 04-2b ○ Integrated Missile Defense War Games (IMD WG) 04-5 ○ Distributed Ground Test (DGT) GT 04-2a, ○ GMD Flight Test FTG-2 ○ Aegis Flight Test FTM 04-3 ○ Patriot Flight Test PAC 2 GEM ATM-46 • C2BMC-X Events and Experimentation for Block 06 including support of : <ul style="list-style-type: none"> ○ Integrated Missile Defense War Games (IMD WG) 06-1, and 06-2 ○ Integrated Ground Test (IGT) 06-1 Distributed Ground Test (DGT) DGT 06-1 ○ GMD Flight Test FTG-3 ○ Aegis Flight Test FTM 06-1 ○ Patriot Flight Test PAC 2 GEM P6-4 ○ 6.2 Cycle 3 Testing • Upgrade Test Environment and the C2BMC Test Article Simulation Environment • Continue support of C2BMC Concept of Operations • Upgrade Communication Network Equipment (CNE) for C2BMC Integration and Test Center (BITC) Lab Spiral 6.2 			

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- Continue C2BMC-X Events and Experimentation

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

The Command and Control, Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge-based funding through the use of two-year capability blocks. The Missile Defense National Team C2BMC (Industry) (MDNTB(I)) led by Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transactions Agreement. They are charged with the development, fielding and operations and sustainment support of the C2BMC prototype. They perform development and testing of C2BMC products in Arlington VA, Huntsville AL, and Colorado Springs CO and provide on-site operations and maintenance support for fielded C2BMC capabilities in Nebraska, Colorado, Hawaii, Virginia, Florida, Germany and Japan. C2BMC element government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Scientific Engineering and Technical Assistance (SETA) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
C2BMC Element								
C2BMC HW/SW Development/I&T	SS/CPAF	MDNTB/ Colorado Springs, CO	24,696	22,081	1/2Q	36,008	1Q	82,785
C2BMC HW/SW Development/I&T	SS/CPAF	MDNTB/ Huntsville, CO	15,403	3,346	1/2Q	5,456	1Q	24,205
C2BMC Product Engineering & Development	SS/CPAF	MDNTB/ Arlington, VA	23,967	43,565	1/2Q	67,651	1Q	135,183
EW/CEW; GCCS; JDP; JRE; ISC2; ECPs	Various	Services, DISA, Agencies/ Various	3,776	24,882	1/2Q	20,358	1Q	49,016
Federally Funded Research Development Centers	SS/CPAF	MITRE, IDA, ORNL, MIT/LL/ Washington, DC	5,766	11,271	1/2Q	8,982	1Q	26,019
Scientific Engineering Technical Assistance	SS/CPFF	Sparta/CSC/ Arlington, VA	1,166	0	N/A	0	N/A	1,166
Scientific Engineering Technical Assistance	SS/FFP	Sparta/ Arlington, VA	4,544	12,720	1/2Q	9,829	1Q	27,093
Scientific Engineering Technical Assistance	SS/FFP	Booze Allen Hamilton/ MDA HQ, Arlington, VA	0	480	2Q	480	2Q	960
Site Activation								
Suites and Comms Gateways	SS/CPAF	MDNTB(I)/ Various COCOMS	0	2,816	1/2Q	27,971	1Q	30,787
Integration and Test Environment								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Integration & Test Personnel	C/FFP	IDA,SRS Technologies/ Colorado Springs, CO	0	1,550	1/2Q	0	N/A	1,550
Integration & Test	C/FFP	Northrop Grumman Mission Sys/ Colorado Springs, CO	0	13,571	1/2Q	0	N/A	13,571
Subtotal Product Development			79,318	136,282		176,735		392335

Remarks

II. Support Costs Cost (\$ in Thousands)

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

Remarks

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

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

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			79,318	136,282		176,735		392,335
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Remarks

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

Date
February 2006

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C2BMC Element																												
Spiral 6.1 and 6.2 Content Agreement			★																									
Spiral 6.1 Development	▲	▲	▲	▲	▲	▲	▲																					
Spiral 6.1 Cycle 2 Testing								▲	▲																			
Spiral 6.2 Development	▲	▲	▲	▲	▲	▲	▲	▲	▲																			
Spiral 6.2 Cycle 2 Testing													▲	▲														
Spiral 6.2 Cycle 5 Testing																												
Spiral 6.4 Content Agreement																												
Spiral 6.4 Development			▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲														
Spiral 6.4 Cycle 2 Testing																												
Spiral 6.4 Cycle 5 Testing																												
Spiral 6.4 Ship Readiness Review																												
GIFC Increment 0	▲	▲	▲	▲																								
GIFC Increment 1																												
GIFC Increment 2																												

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-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Site Activation																												
EUCOM Web Browser					△																							
USFK and USFJ Web Browsers					△																							
PACOM and CMOC AOC Enterprise Work Stations												△																
C2BMC suite upgrades at STRATCOM, PACOM, NORTHCOM																△												
GIFC Hardware at PACOM AOC																△												
Second full C2BMC suite installed at PACOM																△												
Operation & Sustainment																												
Block 06 O&S																												

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 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
C2BMC Element							
Spiral 6.1 and 6.2 Content Agreement	3Q						
Spiral 6.1 Development	1Q-4Q	1Q-2Q					
Spiral 6.1 Cycle 2 Testing		2Q-3Q					
Spiral 6.2 Development	1Q-4Q	1Q-4Q					
Spiral 6.2 Cycle 2 Testing			1Q-2Q				
Spiral 6.2 Cycle 5 Testing			2Q-3Q				
Spiral 6.4 Content Agreement		3Q					
Spiral 6.4 Development	3Q-4Q	1Q-4Q	1Q-3Q				
Spiral 6.4 Cycle 2 Testing			3Q-4Q				
Spiral 6.4 Cycle 5 Testing				1Q-2Q			
Spiral 6.4 Ship Readiness Review				1Q			
Block 2006 System Requirement Review	1Q						
Block 2006 F/PCA				1Q-2Q			
GIFC Increment 0	1Q-4Q						
GIFC Increment 1		1Q-4Q					
GIFC Increment 2			1Q-4Q				
Site Activation							
EUCOM Web Browser		2Q					
EUCOM and JFCC-IMD Laptop Planners		2Q					
USFK and USFJ Web Browsers		2Q					
C2BMC Communications Node in Hawaii		4Q					
PACOM and CMOC AOC Enterprise Work Stations		4Q					
C2BMC suite upgrades at STRATCOM, PACOM, NORTHCOM			4Q				
GIFC Hardware at PACOM AOC			4Q				
Second full C2BMC suite installed at PACOM			4Q				
C2BMC							
Block 06 Contract Award		2Q					
Operation & Sustainment							
Block 06 O&S				1Q-4Q	1Q-4Q		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0901 Command and Control, Battle Management and Communications (C2BMC) Block 2008	6,122	5,576	33,645	158,764	179,883	106,889	64,310
RDT&E Articles Qty	0	0	0	5	5	0	0

Note: RDT&E Articles: FY08 - Spiral 8.2; 1 Full C2BMC Suite; 3 Upgraded C2BMC Suites. FY09 - Spiral 8.4; 1 Full C2BC Suite; 3 Upgraded C2BMC Suites

A. Mission Description and Budget Item Justification

In collaboration with MDA Systems Engineering and Integration defined architectures and system specifications, the Command and Control, Battle Management and Communications (C2BMC) Program will provide the warfighter the capability to plan the Ballistic Missile Defense (BMD) fight while concurrently: tracking all potential ballistic missile threats, directing weapons to engage on a distributed network and pairing any sensor with any shooter to defeat ballistic missile threats at any range, in any phase, in all theaters, with coalition partners increase capabilities via hardware, software, and operations and sustainment support in two-year blocks.

The C2BMC Block 2008 program enables a coordinated BMD against medium size raids and asymmetric threats (as would occur from non-traditional threat trajectories from the south or ship-based). Specific Block goals are to deliver:

- Enhanced system reliability and availability
- Fully integrated planner and situational awareness displays with integrated intelligence information and defended asset priority schemes
- Initial type interfaces between weapons and sensors compatible with DoD network-centric service-oriented architecture
- Global Integrated Fire Control (GIFC) coordination and optimization of increased Launch-on and Engage-on networked capability
- Communication capability supporting Internet Protocol Version 6 (IPv6) which will extend BMDS mission success by providing information management and quality of service to the individual user
- Expanded C2BMC, hence BMDS, global coverage with activation of EUCOM and CENTCOM C2BMC capability

C2BMC ELEMENT

The C2BMC Element accomplishes block objectives by demonstrating and operationalizing advancements in four product lines -- Situational Awareness, BMD Planner, GIFC/Battle Manager, and BMDS Network -- so that mature capabilities can be integrated and incrementally delivered to the warfighter. Two software Spirals are delivered in Block 2008. The delivery of these Spiral includes the software, and the hardware and network connectivity, needed to operate an integrated BMDS that consists of a greater number of radars and tactical weapon systems. The hardware and

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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software in Block 2008 will allow network sharing of target data to enable launch/engage on sensors that are not organic to the individual weapon system, but rather belong to the BMDS network as a system. The capability delivered in this spiral will enable BMDS Block 2008 engagement sequences by delivering the key interfaces, planning, and coordination to allow System Elements and components to work together more effectively by extending the range and reach of the weapon systems.

The Block 2008 BMD Planner and Situational Awareness product lines continue the development of a flexible, interoperable and open system architecture. BMD Planner enhancements include a network centric planner with Joint Defense Planner (JDP)-JDP Engineering for Defense Analysis (JEDA) re-architecting, tactical planner enhancements for Ground-based Midcourse Defense (GMD), integrated intelligence information, and defended asset priority schemes that expand the warfighter's ability to optimize BMDS asset lay-downs. Situational Awareness consists of offensive/defensive integration (ODI), consequence management, and weapon flyout displays, further enabling the warfighter to see the evolution of threats and quickly make decisions.

In Block 2008, a fully capable GIFC is deployed to PACOM and EUCOM areas of operation. These GIFC capabilities will build on the system-level track information work from Block 2006 and focus upon the weapon-system assignment capability that will pair identified ballistic missile threats to available BMD weapon systems by the end of the Block. GIFC will provide the capability to network radar and space sensors to provide fused track information that is based upon observed track features, and the capability to task all BMD radars to track assigned tracks to support the capabilities to launch-on and engage-on remote track information. The GIFC will build weapon-system assignment capability that will be either fully automated with human override or provide assignment recommendations to a warfighter for his selection, as established in the BMD planning function. To accomplish weapon-system assignment, the GIFC will incorporate the rules of engagement, shot doctrine, weapon-system authorities, prioritized defended asset list, weapon-system health and status, ballistic missile threat trajectory, range, altitude, other engagements, and inventory leveling to develop an optimized weapon-system assignment. Given the challenge of defending the battlespace for all types of ballistic missiles in all phases of flight, the GIFC includes development of weapon-system assignment software as real-time software to handle a large number of concurrent engagements.

The BMDS Network product features a more redundant high availability network with diverse paths and increased communications support to the BMDS elements to include added sensors and weapons to the overall BMDS. Capabilities such as dynamic real-time network management and monitoring will enable the warfighter to monitor the connection to BMDS weapons and anticipate and remedy any issues as they occur, vice having to wait for a human in the loop to report a problem up the chain and push a correction back down. Additionally, an expanded network centric (worldwide connectivity of separately developed sensors and weapon systems) capability supporting Internet Protocol Version 6 (IPv6) will extend BMDS mission success by providing information management and quality of service to the individual user.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>As C2BMC products mature they are engineered and integrated into fielded Spirals. The C2BMC element uses spiral development (incremental development, test, and fielding) to produce the software required to provide a system-wide integrated BMD capability. The key test event for development is completion of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins integration testing with other BMDS elements. Block 2008 matured products are integrated in Spirals 8.2 and 8.4, and delivered to the field for concurrent development testing and operational use in conjunction with Responsible Test Organization and Responsible Engineering Organization schedules and guidelines. Completion of Cycle 5 testing, Site Activation Testing, signals delivery of fully functioning operational software.</p> <p>SITE ACTIVATION</p> <p>C2BMC capabilities (hardware and software) will be deployed to EUCCOM and CENTCOM with existing sites receiving upgrades as needed. Deployment to these combatant commands continues to expand BMDS on a global scale providing increased protection to the U.S., Friends, and Allies.</p> <p>OPERATIONS AND SUPPORT</p> <p>C2BMC Program Operations and Support consists of On-Site Support, Help Desk activities, and hardware/software maintenance. On-Site Support provides: Assistance to the System Administrator (Assigned by the site (e.g. Component Commands), with the general operational support of the C2BMC system; Integration of the C2BMC support processes into the site's support regimen; Daily network operations; security support for the C2BMC system as part of a transition plan; and, Prime contractor "Over-the-shoulder" support to users when requested, or alternatively, contact the Help Desk. The Help Desk is located in Colorado Springs, CO. The help desk provides: Technical support to onsite personnel and to the C2BMC end-user; Review of hardware/software problems and coordination of Commercial Off-the-Shelf (COTS) developer/vendor service calls; Trouble ticket work-off; Tracking and implementing documented escalation procedures; Collecting of metrics; and, Maintenance of the Help Desk website. Maintenance of the C2BMC includes both software and hardware maintenance and sustaining engineering. Sustaining engineering consists of network and development engineering in support of system anomalies. Operations and Support also includes the procurement of communications lines from the Defense Information Service Agency (DISA), as well as fielding and maintaining, Communications Nodal Equipment (CNE), to include the Joint Range Extension (JRE) equipment, which enables a global network grid.</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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<u>B. Accomplishments/Planned Program</u>			
	FY 2005	FY 2006	FY 2007
C2BMC Element	6,122	5,576	33,645
RDT&E Articles (Quantity)	0	0	0

The C2BMC Element accomplishes block objectives by balancing the development of the four principle product lines (BMD Planner, Situational Awareness, Global Integrated Fire Control (GIFC)/Battle Management, and Network) so that mature capabilities can be integrated and incrementally delivered to the warfighter via Spirals. Two Spirals are planned in Block 2008.

FY05 Planned Program:

- Block 2008 Capabilities defined
- Identified risk areas

FY06 Planned Program:

- Continued identification of risk areas
- Continued definition of potential capabilities

FY07 Planned Program:

- Continued identification of risk areas and risk reduction activity
- Begin identification of interfaces to support defense of friends and allies
- Begin initial systems definition and systems engineering of Block 2008 product line capabilities, including:
 - Situational Awareness
 - Redundant capability, including both data and hardware
 - Improved displays and display options which also enable enhanced battlespace coordination and deconfliction
 - Advanced consequence management displays
 - Offense/Defense Integration (ODI) displays
 - BMD Planner
 - Joint Defense Planner-BMD Engine for Defense Analysis (JDP-JEDA) re-architect
 - Integrated air and missile defense planning information
 - Element status on planner displays
 - Tactical planner enhancements for Ground-based Midcourse Defense GMD

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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- Consolidated planner ensuring data from various elements is available immediately to the operator
- Global Integrated Fire Control
 - Sensor Management of BMDS radars
 - Expanded weapon-system coordination/direction with BMD priority scheme
- Network
 - Develop strategies to migrate to Internet Protocol Version 6 (IPV 6) with no impact to operational capability
 - Define and develop requirements by user for classification and accountability of information
 - Design and develop architecture to support new Command and Control nodes, sensors, and weapon systems

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
C2BMC Element								
C2BMC HW/SW Development/I&T	SS/CPAF	MDNTB/ Colorado Springs, CO	2,081	1,524	1/2Q	8,981	1Q	12,586
C2BMC HW/SW Development/I&T	SS/CPAF	MDNTB/ Huntsville, AL	551	231	1/2Q	1,361	1Q	2,143
C2BMC Product Engineering & Development	SS/CPAF	MDNTB/ Arlington, VA	3,490	3,821	1/2Q	16,872	1Q	24,183
EW/CEW; GCCS; JDP; JRE; ISC2; ECPs	Various	Services, DISA, Agencies/ Various	0	0	N/A	0	N/A	
Federally Funded Research Development Centers	SS/CPAF	MITRE, IDA, ORNL, MIT/LL/ Washington, DC	687	0	N/A	2,994	1Q	3,681
Scientific Engineering and Technical Assistance	SS/CPFF	Sparta/CSC/ Arlington, VA	0	0	N/A	3,437	1Q	3,437
Subtotal Product Development			6,809	5,576		33,645		46030

Remarks

II. Support Costs Cost (\$ in Thousands)

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

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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III. Test and Evaluation Cost (\$ in Thousands)

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

Remarks

IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			6,809	5,576		33,645		46,030
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011										
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
C2BMC Element																																			
Spiral 8.2 Content Agreement												▲																							
Spiral 8.2 Development									▲	—	—	—	▲																						
Spiral 8.2 Cycle 2 Testing													▲	—	▲																				
Spiral 8.2 Cycle 5 Testing															▲	—	▲																		
Spiral 8.4 Content Agreement															▲																				
Spiral 8.4 Development													▲	—	—	—	▲																		
Spiral 8.4 Cycle 2 Testing																			▲	—	▲														
Spiral 8.4 Cycle 5 Testing																					▲	—	▲												
GIFC Increment 3													▲	—	—	▲																			
GIFC Increment 4																	▲	—	—	—	▲														
Site Activation																																			
Full C2BMC Suite Installed - COCOM Site																▲								▲											
Operation & Sustainment																																			
Block 08 O&S																									▲	—	—	—	▲						

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
C2BMC Element							
Spiral 8.2 VRR				1Q			
Block 2008 BMDSS		4Q					
Block 2008 ECR		4Q					
Block 2008 SRR			1Q				
Block 2008 F/PCA						1Q	
Spiral 8.2 Content Agreement			4Q				
Spiral 8.2 Development			2Q-4Q	1Q-3Q			
Spiral 8.2 Cycle 2 Testing				3Q-4Q			
Spiral 8.2 Cycle 5 Testing				4Q	1Q		
Spiral 8.4 Content Agreement				4Q			
Spiral 8.4 Development				2Q-4Q	1Q-2Q		
Spiral 8.4 Cycle 2 Testing					3Q-4Q		
Spiral 8.4 Cycle 5 Testing					4Q	1Q	
GIFC Increment 3				1Q-4Q			
GIFC Increment 4				4Q	1Q-4Q		
Site Activation							
Upgrade Three C2BMC Sites				3Q-4Q	3Q-4Q		
Full C2BMC Suite Installed - COCOM Site				4Q	4Q		
Operation & Sustainment							
Block 08 O&S						1Q-4Q	1Q-4Q

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0001 Command and Control, Battle Management and Communications (C2BMC) Block 2010	0	0	0	1,247	35,393	161,466	206,404
RDT&E Articles Qty	0	0	0	0	0	5	5

Note: RDT&E Articles: FY10 - Spiral 10.2; 1 Full C2BMC Suites; 3 Upgraded Suites. FY11 - Spiral 10.4; 1 Full C2BMC Suites; 3 Upgraded Suites.

A. Mission Description and Budget Item Justification

In collaboration with MDA Systems Engineering and Integration defined architecture and system specifications, the Command and Control, Battle Management, and Communications (C2BMC) Element will provide the warfighter the capability to plan the Ballistic Missile Defense (BMD) fight while concurrently: tracking all potential ballistic missile threats, directing weapons to engage on a distributed network and paring any sensor with any shooter to defeat ballistic missile threats at any range, in any phase of flight, in all theaters, with coalition partners. The objective of Block 2010 is to continue maturing and expanding BMD System level C2BMC. Block goals are to deliver:

- Capability to easily and quickly incorporate new sensors and weapons systems into a global, integrated C2BMC network
- Command and control decision aids to re-direct coordinated engagements
- BMDS system level discrimination for boost/early ascent and expanded engagement coordination to include intelligence projections
- Continued BMDS global expansion with additional C2BMC deployed locations

C2BMC ELEMENT

The C2BMC Element accomplishes block objectives by balancing the development of its four product lines -- Situational Awareness, BMD Planner, Global Interface Fire Control (GIFC), and Network -- so that mature capabilities can be integrated and incrementally delivered to the warfighter. Two deliveries, or Spirals, are planned in each two-year BMDS Block. Each spiral represents an improvement in capability and functionality over the previous spiral. The delivery of these Spirals includes software, and the hardware and network connectivity, needed to operate an integrated BMDS. The capability delivered in the Spirals enables BMDS Engagement Sequence Groups (ESGs) by providing the proper interfaces, planning and coordination to allow the system elements and components to work together effectively. The C2BMC Element also includes development support and post analysis for BMDS-level wargames and tests with fielded Spirals.

Situational Awareness, BMD Planner, GIFC, and Network will all be enhanced to include additional BMDS sensors and weapons. The C2BMC GIFC evolves to a mature real time battle management system fully utilizing the growing network of BMDS sensors and weapons, including direct

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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feed of space based detections and tracking to improve the timeliness of weapon delivery and incorporating BMDS level discrimination for target boost/early ascent and expanded engagement coordination to include intelligence projections. The BMD Planner and Situation Awareness functions are also matured, supporting operators in rapid battle plan adjustments with incorporation of improved wargaming/modeling tools to improve “what-if” assessments of the battlespace; and, command and control decision aids to re-direct coordinated engagements. Block 2010 Network capabilities continue to expand and are integrated with evolving DOD global grid capabilities. Capability to defend against an asymmetric threat is expanded from Block 2008 through greater coordination with newly established command and control sites and sensor installations. C2BMC Sites are activated to incorporate additional sensors and weapons targeting the asymmetric threat.

As C2BMC products mature they are engineered and integrated in to fielded Spirals. The C2BMC element uses spiral development (incremental development, test, and fielding) to produce the software required to provide a system-wide integrated BMD capability. The key test event for development is completion of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins integration testing with other BMDS elements. Block 2010 matured products are integrated in 10.2 and 10.4 and delivered to the field for concurrent development testing and operational use in conjunction with Responsible Test Organization and Responsible Engineering Organization schedules and guidelines. Completion of Cycle 5 testing, Site Activation Testing, signals delivery of fully functioning operational software.

SITE ACTIVATION

In addition to Block 2010 spiral software, fielding capability also includes installation and activation of C2BMC Suites at Air Operations Centers and Combatant Command sites, as well as upgrades at previously activated sites. The suites consist of monitors, C2BMC server racks and C2BMC communications racks. The activation of these sites will result in improved BMDS capability to meet global threats.

OPERATIONS AND SUPPORT

C2BMC Program Operations and Support consists of On-Site Support, Help Desk activities, and hardware/software maintenance. On-Site Support provides: Assistance to the System Administrator (Assigned by the site (e.g. Component Commands), with the general operational support of the C2BMC system; Integration of the C2BMC support processes into the site's support regimen; Daily network operations and security support for the C2BMC system as part of a transition plan; and, Prime contractor “Over-the-shoulder” support to users when requested, or alternatively, when they contact the Help Desk. The Help Desk is located in Colorado Springs, CO. The help desk provides: Technical support to onsite personnel and to the C2BMC end-user; Review of hardware/software problems and coordination of Commercial Off-the-Shelf (COTS) developer/vendor service calls; Trouble ticket work-off Tracking and implementing documented escalation procedures; Collecting of metrics; Maintenance of the Help Desk

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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website. Maintenance of the C2BMC includes both software and hardware maintenance and sustaining engineering. Sustaining engineering consists of network and development engineering in support of system anomalies. Operations and Support also includes the procurement of communications lines from the Defense Information Service Agency (DISA), as well as fielding and maintaining, Communications Nodal Equipment (CNE), to include the Joint Range Extension (JRE) equipment, which enables a global network grid.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

The Command and Control Battle Management Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge-based funding through the use of two-year capability blocks. The Missile Defense National Team C2BMC (Industry) (MDNTB(I)) led by Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transactions Agreement. They are charged with the development, fielding and operations and sustainment support of the C2BMC prototype. They perform development and testing of C2BMC products in Arlington VA, Huntsville AL, and Colorado Springs CO and provide on-site operations and maintenance support for fielded C2BMC capabilities in Nebraska, Colorado, Hawaii, Virginia, Florida, Germany and Japan. C2BMC element government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Scientific Engineering and Technical Assistance (SETA) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
C2BMC Element							
Spiral 10.2 Content Agreement					3Q		
Spiral 10.2 Development					1Q-4Q	1Q-3Q	
Spiral 10.2 Cycle 2 Testing						3Q-4Q	
Spiral 10.2 Cycle 5 Testing						4Q	1Q
Spiral 10.2 VRR						1Q	
Spiral 10.4 Content Agreement						3Q	
Spiral 10.4 Development					2Q-4Q	1Q-4Q	1Q-4Q
Spiral 10.4 Cycle 2 Testing							3Q-4Q
Block 2010 BMDSS				4Q			
Block 2010 ECR				4Q			
Block 2010 SRR					1Q		
Block 2010 F/PCA						1Q	
GIFC Increment 5					4Q	1Q-4Q	
GIFC Increment 6						4Q	1Q-4Q
Site Activation							
Upgrade Three C2BMC Sites						3Q-4Q	3Q-4Q
Full C2BMC Suite Installed - Location TBD						4Q	4Q

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products			

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0802 Hercules Block 2006	22,730	19,645	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY07 funding for this project moves to Project 0505, Hercules.

A. Mission Description and Budget Item Justification

Hercules develops advanced discrimination and tracking concepts into prototype software (algorithms) that improves the capability of the BMDS C2BMC, sensor, and weapon elements. Hercules then transitions algorithms to BMDS elements for integration and provides technical assistance during the algorithm integration. These algorithms support existing BMDS Engagement Sequence Groups and enable new Engagement Sequence Groups.

In particular, Project 0802, Hercules Block 2006 supports near-term Hercules efforts to mature algorithms in support of Block 2006. This effort includes the development, digital and BMDS Fusion Toolbox testing of algorithms that provide forward based discrimination capability. These algorithms enable the FBX-T Mod Suite 1 Engagement Sequence Group. This effort supports tracking algorithm enhancements that support the Block 2006 C2BMC Situational Awareness display capability. This effort includes the initial prototype development of Decision Architecture components.

Hercules Project 0802 also supports technical algorithm reviews of these algorithms that provide an assessment of algorithm maturity and capability to the program manager. These reviews are called Algorithm-to-Test reviews (ATT) and Characterization and Transition Reviews (CaT).

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Project Hercules	22,730	19,645	0
RDT&E Articles (Quantity)	0	0	0

FY05 Accomplishments:

- Continued algorithm maturation of Forward Based Sensors RF Suite 1 Discrimination Algorithms in support of MDA Sensor program for integration of the algorithms into the BMDS Deployable X-Band Radar.
- Delivered developmental prototype Decision Architecture decision tool for evaluation in C2BMC.
- Conducted five CaT and ATT reviews.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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- Conducted real-time testing and demonstration of nine algorithms on eight BMDS flight events, including real-time testing of forward based radar algorithms, prototype Decision Architecture C2BM decision tool, and multi-radar track fusion concept.
- Conducted algorithm testing for C2BMC Block 2006 tracking algorithms.

FY06 Planned Program:

- Continue algorithm maturation of Hercules Forward Based Sensor Suite 1 algorithms.
- Continue development of Decision Architecture capability supporting Global Integrated Fire Control.
- Continue development and prototype evaluation of Decision Architecture decision tool.
- Conduct at least four ATT and CaT algorithm technical reviews.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Project Hercules follows MDA's capability-based acquisition strategy. This emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

Project Hercules activities are performed by subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), private industry including major defense contractors, Government laboratories, and System Engineering and Technical Assistance (SETA) contractors.

Battle manager, weapon, and sensor capability improvements will be transitioned into the future operational force structure by integrating the Hercules algorithms into BMDS components. BMDS component managers plan, budget, and procure the necessary hardware and software for deployed and sustained operational forces.

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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Boeing	CPAF	Arlington, VA	4,144	0	N/A	0	N/A	4,144
Lockheed Martin	CPFF	Sunnyvale, CA	4,111	0	N/A	0	N/A	4,111
Raytheon	CPFF	Boston, MA	5,231	5,000	N/A	0	N/A	10,231
Sparta	CPFF	Arlington, VA	10,889	5,239	N/A	0	N/A	16,128
Various	MIPR	Various	447	0	1Q	0	N/A	447
Office of Naval Research	MIPR	Arlington, VA	528	0	N/A	0	N/A	528
Massachusetts Institute of Technology/Lincoln Laboratory	FFRDC	Lexington, MA	8,528	7,406	1Q	0	N/A	15,934
Northrop Grumman	CPFF	Van Nuys, CA	3,047	2,000	N/A	0	N/A	5,047
Space and Missile Defense Command	MIPR	Various	2,913	0	1Q	0	N/A	2,913
Photon Research Associates	CPFF	Arlington, VA	1,000	0	N/A	0	N/A	1,000
Subtotal Product Development			40,838	19,645		0		60483

Remarks

II. Support Costs Cost (\$ in Thousands)

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

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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III. Test and Evaluation Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Space and Missile Defense Command	MIPR	Huntsville, AL	1,297	0	N/A	0	N/A	1,297
Air Force Research Lab - Eglin Air Force Base	MIPR	Eglin AFB, FL	990	0	N/A	0	N/A	990
Massachusetts Institute of Technology/Lincoln Laboratory	CPFF	Lexington, MA	9,019	0	N/A	0	N/A	9,019
Northrop Grumman	CPFF	Van Nuys, CA	5,987	0	N/A	0	N/A	5,987
Decibel Research	CPFF	Huntsville, AL	687	0	N/A	0	N/A	687
Joint National Integration Center	MIPR	Colorado Springs, CO	278	0	N/A	0	N/A	278
Subtotal Test and Evaluation			18,258	0		0		18258

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Variou	MIPR	Various	2,073	0	N/A	0	N/A	2,073
Space and Missile Defense Command	MIPR	Huntsville, AL	2,948	0	N/A	0	N/A	2,948
Subtotal Management Services			5,021	0		0		5021

Remarks

Project Total Cost			64,117	19,645		0		83,762
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Hercules																																
Conduct CaT and ATT reviews	▲	▲	▲	▲	▲	▲	▲	▲																								
Conduct real-time demonstration of algorithms	▲————▲																															
Conduct testing of C2BMC Tracking algorithms	▲————▲																															
Support SN Integration of FBS Suite 1	▲————▲				▲————▲																											
Deliver developmental Decision Architecture Protot		▲																														
Evaluate and Improve DA prototype					▲————▲																											
Legend																																
▲ Significant Event (complete) ★ Milestone Decision (complete) ◆ Element Test (complete) ▼ System Level Test (complete) ▲————▲ Complete Activity														▲ Significant Event (planned) ☆ Milestone Decision (planned) ◇ Element Test (planned) ▼ System Level Test (planned) ▲————▲ Planned Activity																		

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
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Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hercules							
Conduct CaT and ATT reviews	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q					
Conduct real-time demonstration of algorithms	1Q-4Q						
Conduct testing of C2BMC Tracking algorithms	1Q-4Q						
Support SN Integration of FBS Suite 1	1Q-4Q	1Q-3Q					
Deliver developmental Decision Architecture Protot	2Q						
Evaluate and Improve DA prototype		1Q-4Q					

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products			

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0902 Hercules Block 2008	58,798	38,179	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY07 funding for this project moves to Project 0505, Hercules.

A. Mission Description and Budget Item Justification

Hercules develops advanced discrimination and tracking concepts into prototype software (algorithms) that improves the capability of the BMDS C2BMC, sensor, and weapon elements. Hercules then transitions algorithms to BMDS elements for integration and provides technical assistance during the algorithm integration. These algorithms support existing BMDS Engagement Sequence Groups and enable new Engagement Sequence Groups.

In particular, Project 0902, Hercules Block 2008 supports near-term Hercules efforts to mature algorithms in support of Block 2008. More complex algorithms such as the Decision Architecture and counter-countermeasure efforts require multi-year development and rigorous testing to increase maturity sufficiently that there is minimal risk when an element integrates the algorithm into the BMDS.

Project 0902 supports the development of additional capability for forward based sensor discrimination, an initial capability to enhance sensor tracking and discrimination in the presence of radar degrading countermeasures, and additional capability for advanced multi-sensor fusion and resource management in the Decision Architecture. This effort also supports development of algorithms supporting Space Tracking and Surveillance System and Kinetic Energy Interceptor programs that will have developmental test capability in 2008-2009.

Project 0902 also supports technical algorithm reviews that provide an assessment of algorithm maturity and capability to the Hercules program manager. These reviews are called Algorithm-to-Test reviews (ATT) and Characterization and Transition Reviews (CaT).

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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B. Accomplishments/Planned Program			
	FY 2005	FY 2006	FY 2007
Project Hercules	58,798	38,179	0
RDT&E Articles (Quantity)	0	0	0

FY05 Accomplishments:

- Continued Decision Architecture development to enable multi-sensor discrimination fusion to support C2BMC Situational Awareness and Global Integrated Fire Control, and coordinated sensor and weapons management in support of C2BMC Global Integrated Fire Control. Completed several interim program milestones, including ATT and CaT reviews.
- Continued development of additional forward based discrimination algorithms to further enhance the capability of the FBX-T and SBX radars in support of the FBX-T and SBX Mod Hercules Suite 2 Engagement Sequence Groups.
- Continued development of core radar clutter mitigation efforts. Completed several interim program milestones, including technical review and ATT and CaT meetings.
- Continued development of target handover algorithms that enhance the capability of weapon systems to engage discriminated RVs in a countermeasure environment.
- Continued development of algorithms to improve kill vehicle and EO/IR surveillance sensor target detection of closely spaced objects.
- Continued development of tracking and discrimination algorithms to support Space Tracking and Surveillance System (STSS).
- Provided algorithm description and developmental test results to the MDA Battle Management Command and Control, Airborne Laser, STSS and GMD elements to support evaluation and subsequent integration planning.
- Conducted Project Hercules Kinetic Interceptor Integration Planning (PKIP) task to identify high priority Hercules algorithm development activities that will support initial Kinetic Energy Interceptor (KEI) capability.
- Developed initial operational simulation workbench to integrate and demonstrate Hercules algorithms that will support KEI.
- Upgraded BMDS Fusion Toolbox (BFT) to enable flight test demonstration of algorithms that can enhance the Cobra Dane radar.
- Conducted joint integration studies with Cobra Dane Program Office, EKV Program Office and AEGIS Program Office to identify Hercules algorithm contributions to these programs.
- Completed development of two Threat Data Packages (TDPs) to support algorithm development, and commenced effort on three additional threat data packages.
- Completed four (4) Special Data Packages (SDPs) that focus on specific target object signature properties required to mature Hercules algorithms.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	

FY06 Planned Program:

- Deliver prototype Decision Architecture capability to the C2BMC element. The overall Decision Architecture applies advanced decision theory for a real-time BMDS C2BM decision tool that integrates information from multiple sensors throughout a layered BMDS from Boost through Midcourse to provide decision aids in sensor resource allocation and weapon magazine management.
- Continue development and initiate transition of additional forward based discrimination algorithms to further enhance the capability of the FBX-T and SBX radars in support of the FBX-T and SBX Mod Hercules Suite 2 Engagement Sequence Groups.
- Transition initial forward based Passive Optics discrimination algorithms to the MDA Sensor program for concurrent development using the Airborne Infrared System (AIRS) capability.
- Continue development of Hercules algorithms that support the Target Designation Concept Description that will improve the GMD system capability in the presence of countermeasures. These algorithms include discrimination, target handover and kill vehicle enhancement algorithms.
- Support prototype development of radar clutter mitigation algorithms to increase algorithm maturity and confidence.
- Continue demonstration of Hercules algorithms in real-time flight events and support planning for future flight tests.
- Complete development of additional Threat Data Packages (TDPs) to support algorithm development, and provide updates to existing TDPs to include additional advanced threat countermeasures for algorithm development and testing.
- Complete additional Special Data Packages (SDPs) for Hercules algorithm development.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Project Hercules follows MDA's capability-based acquisition strategy. This emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

Project Hercules activities are performed by subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), private industry including major defense contractors, Government laboratories, and System Engineering and Technical Assistance (SETA) contractors.

Battle manager, weapon, and sensor capability improvements will be transitioned into the future operational force structure by integrating the Hercules algorithms into BMDS components. BMDS component managers plan, budget, and procure the necessary hardware and software for deployed and sustained operational forces.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Lockheed Martin	CPFF	Sunnyvale, CA	4,698	4,313	1Q	0	N/A	9,011
Raytheon	CPFF	Boston, MA	5,782	4,709	1Q	0	N/A	10,491
Sparta	CPFF	Arlington, VA	8,775	2,915	1Q	0	N/A	11,690
Various	MIPR	Various	1,731	1,245	1Q	0	N/A	2,976
Office of Naval Research	MIPR	Arlington, VA	590	600	1Q	0	N/A	1,190
Air Force Research Lab - Eglin Air Force Base	MIPR	Eglin AFB, FL	3,124	650	1Q	0	N/A	3,774
Photon Research Associates	CPFF	Arlington, VA	3,564	3,249	1Q	0	N/A	6,813
Massachusetts Institute of Technology/Lincoln Laboratory	CPFF	Lexington, MA	14,540	3,220	1Q	0	N/A	17,760
Northrop Grumman	CPFF	Van Nuys, CA	13,590	2,549	1Q	0	N/A	16,139
Space and Missile Defense Command	MIPR	Huntsville, AL	1,474	6,071	N/A	0	N/A	7,545
Subtotal Product Development			57,868	29,521		0		87389

Remarks

II. Support Costs Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Subtotal Support Costs			0	0		0		0

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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III. Test and Evaluation Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Air Force Research Lab - Eglin Air Force Base	MIPR	Eglin AFB, FL	1,398	1,000	1Q	0	N/A	2,398
Computer Sciences Corporation	CPFF	Fairfax, VA	1,019	858	1/2Q	0	N/A	1,877
Massachusetts Institute of Technology/Lincoln Laboratory	FFRDC	Lexington, MA	2,153	0	N/A	0	N/A	2,153
Decibel Research	MIPR	Huntsville, AL	851	800	1Q	0	N/A	1,651
Various	MIPR	Various	0	3,000	1/3Q	0	N/A	3,000
Subtotal Test and Evaluation			5,421	5,658		0		11079

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Computer Sciences Corporation	FFP	Fairfax, VA	1,334	1,000	1Q	0	N/A	2,334
Sparta	FFP	Arlington, VA	1,221	1,000	1Q	0	N/A	2,221
Various	MIPR	Various	929	0	N/A	0	N/A	929
Space and Missile Defense Command	MIPR	Huntsville, AL	1,854	1,000	1Q	0	N/A	2,854
Subtotal Management Services			5,338	3,000		0		8338

Remarks

Project Total Cost			68,627	38,179		0		106,806
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile																	Date February 2006															
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products																						
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Hercules																																
Deliver Threat Data Packages and Special Data Pack	▲	▲	▲	▲	▲	▲	▲	▲																								
Develop EO/IR detection of closely spaced objects	▲————▲				▲————▲																											
Develop STSS Tracking and discrimination	▲————▲				▲————▲																											
Develop algorithms for target handover	▲————▲																															
Develop algorithms to support boost intercept	▲————▲																															
Develop and integrate Decision Architecture GIFC	▲————▲				▲————▲																											
Develop core radar clutter mitigation effort	▲————▲				▲————▲																											
Develop follow-on FBS Suite (Suite 2)	▲————▲				▲————▲																											
Develop passive optics FBS algorithms	▲————▲				▲————▲																											
Interface with System Engineering and Elements	▲————▲				▲————▲																											
Upgrade BMDS Fusion Toolbox	▲————▲				▲————▲																											
Conduct Real-time flight events					▲	▲	▲	▲																								
Develop Algorithm for target designation CD					▲————▲																											
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 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hercules							
Deliver Threat Data Packages and Special Data Pack	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q					
Develop EO/IR detection of closely spaced objects	1Q-4Q	1Q-4Q					
Develop STSS Tracking and discrimination	1Q-4Q	1Q-4Q					
Develop algorithms for target handover	1Q-4Q						
Develop algorithms to support boost intercept	1Q-4Q						
Develop and integrate Decision Architecture GIFC	1Q-4Q	1Q-4Q					
Develop core radar clutter mitigation effort	1Q-4Q	1Q-4Q					
Develop follow-on FBS Suite (Suite 2)	1Q-4Q	1Q-4Q					
Develop passive optics FBS algorithms	1Q-4Q	1Q-4Q					
Interface with System Engineering and Elements	1Q-4Q	1Q-4Q					
Upgrade BMDS Fusion Toolbox	1Q-4Q	1Q-4Q					
Conduct Real-time flight events		1Q,2Q,3Q,4Q					
Develop Algorithm for target designation CD		1Q-4Q					

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0002 Hercules Block 2010	0	6,304	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY07 funding for this project moves to Project 0505, Hercules.

A. Mission Description and Budget Item Justification

Hercules develops advanced discrimination and tracking concepts into prototype software (algorithms) that improves the capability of the BMDS C2BMC, sensor, and weapon elements. Hercules then transitions algorithms to BMDS elements for integration and provides technical assistance during the algorithm integration. These algorithms support existing BMDS Engagement Sequence Groups and enable new Engagement Sequence Groups.

In particular, Project 0002, Hercules Block 2010 supports near-term Hercules efforts to mature algorithms in support of Block 2010. With algorithm development activity in 2006, Hercules will mature and develop capability for transition to Multiple Kill Vehicle (MKV) and Kinetic Energy Interceptor (KEI) programs in 2007-2009 to enhance the initial deployment capabilities of the MKV and KEI systems. This will support Engagement Sequence Groups that use the MKV and KEI systems. In particular, Hercules will develop target handover and assignment algorithms that leverages current Hercules algorithm development work in these areas.

Additionally, Hercules will develop algorithms in support of boost fire control, and integrate this effort with Hercules efforts that support the Global Integrated Fire Control. This also supports the initial spiral development of the Decision Architecture to include the new capability.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Project Hercules	0	6,304	0
RDT&E Articles (Quantity)	0	0	0

FY06 Planned Program:

- Support algorithm development efforts with an emphasis on MKV and KEI, and the spiral development of the Decision Architecture that integrates the capabilities of the new systems.
- Participate in BMDS flight tests using the BMDS Fusion Toolbox to support development of these algorithms.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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- Conduct technical and management reviews of the algorithm development process, to include an annual Program Review, development team reviews and peer group reviews.
- Develop Threat Data Packages required to develop discrimination and tracking algorithms to address advanced ballistic missile threats.
- Review capability of existing discrimination algorithms in conjunction with the use of other discrimination augmentation devices (DADS), and develop new algorithm capabilities that enhance the use of these DADS.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products				

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Project Hercules follows MDA's capability-based acquisition strategy. This emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

Project Hercules activities are performed by subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), private industry including major defense contractors, Government laboratories, and System Engineering and Technical Assistance (SETA) contractors.

Battle manager, weapon, and sensor capability improvements can be transitioned into the future operational force structure by integrating the Hercules algorithms into BMDS components. BMDS component managers plan, budget, and procure the necessary hardware and software for deployed and sustained operational forces.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Hercules	MIPR	Various	0	3,500	1Q	0	N/A	3,500
Subtotal Product Development			0	3,500		0		3500

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Hercules	MIPR	Various	0	1,389	1Q	0	N/A	1,389
Subtotal Support Costs			0	1,389		0		1389

Remarks

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

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Hercules	MIPR	Various	0	915	1Q	0	N/A	915
Subtotal Test and Evaluation			0	915		0		915

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Project Hercules								
Hercules	MIPR	Arlington, VA	0	500	1Q	0	N/A	500
Subtotal Management Services			0	500		0		500

Remarks

Project Total Cost			0	6,304		0		6,304
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Hercules																																
Algorithm support of DADS its effect on discrimina					▲	—	—	▲																								
Develop Decision Architecture Capability					▲	—	—	▲																								
Develop TDPs to support algorithm development					▲	—	—	▲																								
Develop algorithms for KEI					▲	—	—	▲																								
Develop algorithms for MKV					▲	—	—	▲																								
Program and development team reviews					▲	▲	▲	▲																								

Legend	
▲	Significant Event (complete)
★	Milestone Decision (complete)
◆	Element Test (complete)
▼	System Level Test (complete)
▲	Complete Activity
▲	Significant Event (planned)
★	Milestone Decision (planned)
◇	Element Test (planned)
▼	System Level Test (planned)
▲	Planned Activity

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hercules							
Algorithm support of DADS its effect on discrimina		1Q-4Q					
Develop Decision Architecture Capability		1Q-4Q					
Develop TDPs to support algorithm development		1Q-4Q					
Develop algorithms for KEI		1Q-4Q					
Develop algorithms for MKV		1Q-4Q					
Program and development team reviews		1Q,2Q,3Q,4Q					

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0505 Hercules	0	0	50,562	50,881	50,319	50,071	50,856
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Prior to FY07, funding for this project was previously contained in Projects 0802, 0902 and 0002.

A. Mission Description and Budget Item Justification

Hercules develops advanced discrimination and tracking concepts into prototype software (algorithms) that improves the capability of the BMDS C2BMC, sensor, and weapon elements. Hercules then transitions algorithms to BMDS elements for integration and provides technical assistance during the algorithm integration. These algorithms support existing BMDS Engagement Sequence Groups (ESG) and enable new Engagement Sequence Groups. In particular, Hercules develops algorithms that improve sensor and weapon element discrimination, improve integration of sensor data within C2BMC, and expand integrated battle management capability. This is a national effort to develop robust, physics-based detection, tracking, and discrimination algorithms to counter known/expected and unknown/unexpected missiles with planned or unplanned countermeasures in all phases of their flight.

Specific Hercules projects include boost-phase engagement algorithms, discrimination algorithms for forward based sensors, discrimination algorithms and architectures for midcourse sensors, countermeasure mitigation algorithms, terminal discrimination algorithms, and a Decision Architecture concept that provides advanced decision theory to integrate the individual sensor information for BMDS C2BMC data fusion and global integrated fire control.

Hercules has four major goals. These goals are the following:

- One, develop and support integration of algorithms that expand the capability of or enable currently identified Engagement Sequence groups. Currently five ESGs directly reference Hercules algorithms.
- Two, develop and support integration of algorithms that enable BMDS elements to meet capability identified in the BMDS Test Bed System Specification or in the element specific specifications. Examples of algorithms for element enhancement include C2BMC Global Integrated Fire Control, STSS tracking algorithms and AEGIS discrimination concepts.
- Three, develop new concepts that enable the definition of new ESGs. Examples of new capability include feature hand-over and clutter mitigation.
- Four, assess algorithm needs and begin development of concepts that support emerging technology, such as Multiple Kill Vehicle (MKV) and Discrimination Augmentation Devices (DADs).

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Starting in FY07, Project 0505 represents the entire Hercules development effort to mature algorithms for transition to BMDS elements. Hercules algorithm development typically takes several years with several phases of development. The phases are concept exploration, concept development and concept test. Hercules conducts both digital testing and flight testing of its algorithms as part of the development process. At any particular time, the Hercules portfolio contains algorithms that are in each phase of development. The algorithms that are in test support near-term capability for the BMDS, while algorithms in development and exploration meet the requirements of the next and future blocks.

For management purposes, Hercules consists of five main line items. The first line item, Engineering and Integration, aids the development and the transition efforts. The remaining four line items are algorithm development tasks focused on particular functions as described in the following sections.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Engineering and Integration	0	0	23,350
RDT&E Articles (Quantity)	0	0	0

Engineering and Integration aids all Hercules development, provides an independent test capability within Hercules, and performs system engineering functions with the BMDS elements to enable algorithm transition. Engineering and Integration contains the following: the threat engineering group that generates realistic simulated data for algorithm development. The threat engineering group provides the data to Hercules developers and BMDS elements in the form of Threat Data Packages (TDPs); the digital test group conducts capability testing of developed algorithms to verify algorithm robustness and identify functions that require improvement prior to integration in operational systems; the flight test group enables Hercules algorithm testing during flight events using the BMDS Fusion Toolbox (BFT); the integration and systems engineering group reviews technical progress of the algorithms, provides recommendations to the algorithm developers for improvements during the development process, and provides technical details to engineers in Missile Defense Agency (MDA) System Engineering and the elements to aid in system benefit analysis and integration of Hercules algorithms into the BMDS. Technical progress reviews occur at Algorithm-to-Test transition meetings (ATT) where developers present their algorithms and at Characterization and Transition meetings (CaT) where the test team presents results of digital testing.

FY07 Planned Program:

- Complete development of additional Threat Data Packages (TDPs) to support algorithm development.
- Provide updates to existing TDPs to include additional advanced threat countermeasures for algorithm development and testing.
- Participate in BMDS flight tests using the BFT to support algorithm development.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<ul style="list-style-type: none"> • Support planning for future flight tests. • Conduct digital characterization testing of algorithms. • Continue identification and discussion of potential new Engagement Sequence Groups with MDA System Engineering. • Conduct at least four ATT and CaT algorithm technical reviews. 			
	FY 2005	FY 2006	FY 2007
Decision Architecture	0	0	5,105
RDT&E Articles (Quantity)	0	0	0
<p>Decision Architecture applies advanced decision theory technology to improve real-time BMDS command, control, and battle management (C2BM) capability. The Decision Architecture concept describes a method to integrate individual sensors into a BMDS system with coordinated control of sensor and weapon assets. The Decision Architecture group within Hercules develops multi-sensor discrimination algorithms that use the output of other Hercules development efforts and uses advanced decision theory to develop resource management algorithms that coordinate the use of weapons and sensors. Multi-sensor discrimination permits target selection based on information gained from multiple sensors. Since sensors observe different characteristics of potential objects, this information combination provides a better picture of the missile engagement. The coordinated sensor and weapon management provides decision aids to the missile defense commander that will help insure that different sensors or weapons are engaging the same target objects. This capability will lead to better situational awareness, sensor resource allocation and weapon magazine management options for integration into the Global Integrated Fire Control.</p> <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Continue development and BFT flight test demonstration of Decision Architecture components. • Support the MDA Battle Management Command and Control program with integration of Decision Architecture capability into C2BMC. • Decision Architecture enhancements to include emerging capabilities, such as Multiple Kill Vehicles and DADs. • Extend the Decision Architecture to distributed operations. 			
	FY 2005	FY 2006	FY 2007
Forward Based Sensors	0	0	3,524
RDT&E Articles (Quantity)	0	0	0
<p>Forward Based Sensors (FBS) develops discrimination algorithms that take advantage of unique FBS observables to provide a robust discrimination solution. FBS develops algorithms for both radar sensors and electro-optical sensors. The initial Hercules radar discrimination algorithms enable the FBX-T Mod Hercules Suite 1 Engagement Sequence Group (ESG). Additional Hercules radar discrimination algorithms enable the FBX-T Mod</p>			

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Hercules Suite 2 and the SBX Mod Hercules Suite 1 and 2 ESGs. Hercules plans to work with the MDA Sensor program to integrate the initial passive optics algorithms into an airborne asset.

FY07 Planned Program:

- Support integration of additional forward based discrimination algorithms to further enhance the capability of the FBX-T and SBX radars in support of the FBX-T and SBX Mod Hercules Suite 2 Engagement Sequence Groups.
- Modify FBS algorithms for operation on AEGIS Spy-1 sensor.
- Support the MDA Sensor program with test and integration of initial forward based Passive Optics discrimination algorithms.

	FY 2005	FY 2006	FY 2007
Blue Team	0	0	12,677
RDT&E Articles (Quantity)	0	0	0

The Blue Team leads advanced algorithm development efforts over a range of technology areas. The Blue Team develops fire control, tracking, discrimination, and control algorithms with a primary focus on single sensor or kill vehicle applications, and track management among sensors and weapons. These algorithms support both surveillance sensors, like the Sea-Based X-Band radar, kill vehicles like the Exoatmospheric Kill Vehicle (EKV), THAAD kill vehicle or Multiple Kill Vehicle (MKV), and weapon systems like AEGIS and Kinetic Energy Interceptor (KEI). Blue Team efforts enabled the Battle Management Command and Control program to test demonstration of a Sensor Registration Monitoring capability in 2005 and supported the fielding of a track correlator that will enable FBX-T participation on Link-16.

FY07 Planned Program:

- Support engineering integration of algorithms that enable the Target Designation Concept Description that will improve the GMD system capability in the presence of countermeasures. These algorithms include discrimination, target handover and kill vehicle enhancement algorithms.
- Support AEGIS discrimination enhancements.
- Support tracking and discrimination algorithm transition and integration with Space Surveillance Tracking System.
- Review capability of existing discrimination algorithms in conjunction with the use of other discrimination augmentation devices (DADS), and develop new algorithm capabilities that enhance the use of these DADS.
- Continue algorithm development efforts for MKV and KEI.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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	FY 2005	FY 2006	FY 2007
Corporate Clutter Working Group	0	0	5,906
RDT&E Articles (Quantity)	0	0	0

The Corporate Clutter Working Group develops algorithms to mitigate the effects of threat countermeasures used to reduce the effectiveness of fielded and anticipated BMDS sensors used for enemy missile surveillance or engagement. In many cases, this is the only such effort within MDA. The algorithms support tracking and discrimination in the presence of the countermeasures.

FY07 Planned Program:

- Continue prototype development and flight test of radar sensor countermeasure Initial Mitigation Capability (IMC) algorithms.
- Support engineering planning for FY08/FY09 transition and integration of IMC.
- Continue development of electro-optical sensor counter-countermeasure algorithms.
- Develop enhancements to IMC.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
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PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
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PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Project Hercules follows MDA's capability-based acquisition strategy. This emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

Project Hercules activities are performed by subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), private industry including major defense contractors, Government laboratories, and System Engineering and Technical Assistance (SETA) contractors.

Battle manager, weapon, and sensor capability improvements can be transitioned into the future operational force structure by integrating the Hercules algorithms into BMDS components. BMDS component managers plan, budget, and procure the necessary hardware and software for deployed and sustained operational forces.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Decision Architecture								
Sparta	CPFF	Arlington, VA	0	0	N/A	4,105	1Q	4,105
Forward Based Sensors								
Hercules	MIPR	Arlington, Huntsville	0	0	N/A	3,524	1Q	3,524
Corporate Clutter Working Group								
Northrop Grumman	C/CPFF	Van Nuys, CA	0	0	N/A	5,906	1/2Q	5,906
Subtotal Product Development			0	0		13,535		13535

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Engineering and Integration								
Boeing	CPAF	Arlington, VA	0	0	N/A	2,000	1/3Q	2,000
Lockheed Martin	CPFF	Sunnyvale, CA	0	0	N/A	5,000	1/4Q	5,000
Raytheon	CPFF	Boston, MA	0	0	N/A	3,000	1/3Q	3,000
Sparta	CPFF	Arlington, VA	0	0	N/A	3,000	1/3Q	3,000
Massachusetts Institute of Technology/Lincoln Laboratory	FFRDC	Hanscom, AFB	0	0	N/A	6,000	1/3Q	6,000
Northrop Grumman	CPFF	Van Nuys, CA	0	0	N/A	3,000	1/3Q	3,000
Space and Missile Defense Command	MIPR	Various	0	0	N/A	1,350	1/3Q	1,350
Decision Architecture								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
Massachusetts Institute of Technology/Lincoln Laboratory	CPFF	Boston, MA	0	0	N/A	500	1Q	500
Blue Team								
Massachusetts Institute of Technology/Lincoln Laboratory	C/FFRDC		0	0	N/A	12,677	1/2Q	12,677
Subtotal Support Costs			0	0		36,527		36527

Remarks

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
Decision Architecture								
CSC-SETA	FFP	Fairfax, VA	0	0	N/A	500	1Q	500
Subtotal Management Services			0	0		500		500

Remarks

Project Total Cost			0	0		50,562		50,562
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Remarks Prior to FY07, funding for this project was previously contained in Projects 0802, 0902 and 0002.

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hercules																												
Algorithm Testing and Transition for STSS									▲	—	—	▲																
Conduct CaT and ATT reviews									▲	▲	▲	▲																
Cont. Discrimination Capability Integration C2BMC									▲	—	—	▲																
Continue BFT Flight Test demo									▲	—	—	▲																
Develop and Transition FBS algorithms									▲	—	—	▲																
Development of EO/SC algorithms									▲	—	—	▲																
Development of additional TDPs									▲	—	—	▲																
Development of algorithm to MKV									▲	—	—	▲																
Enhancement of algorithm to DADs									▲	—	—	▲																
Flight tests using BFT to support algorithm development									▲	—	—	▲																
Identify and discuss potential ESGs with SE									▲	—	—	▲																
Integration of DA capability GIFC									▲	—	—	▲																
Integration of FBS passive optics algorithms									▲	—	—	▲																
Integration of algorithms to GMD									▲	—	—	▲																
Prototype demonstration mitigation algorithms									▲	—	—	▲																
Support SN Integration of FBS Suite 1									▲	—	—	▲																
Support AEGIS discrimination enhancements									▲	—	—	▲																
Updates to existing TDPs									▲	—	—	▲																

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 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hercules							
Algorithm Testing and Transition for STSS			1Q-4Q				
Conduct CaT and ATT reviews			1Q,2Q,3Q,4Q				
Cont. Discrimination Capability Integration C2BMC			1Q-4Q				
Continue BFT Flight Test demo			1Q-4Q				
Develop and Transition FBS algorithms			1Q-4Q				
Development of EO/SC algorithms			1Q-4Q				
Development of additional TDPs			1Q-4Q				
Development of algorithm to MKV			1Q-4Q				
Enhancement of algorithm to DADs			1Q-4Q				
Flight tests using BFT to support algorithm development			1Q-4Q				
Identify and discuss potential ESGs with SE			1Q-4Q				
Integration of DA capability GIFC			1Q-4Q				
Integration of FBS passive optics algorithms			1Q-4Q				
Integration of algorithms to GMD			1Q-4Q				
Prototype demonstration mitigation algorithms			1Q-4Q				
Support SN Integration of FBS Suite 1			1Q-4Q				
Support AEGIS discrimination enhancements			1Q-4Q				
Updates to existing TDPs			1Q-4Q				

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE					
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603889C Ballistic Missile Defense Products					
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0703 Joint Warfighter Support Block 2004	37,844	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

As part of the total Ballistic Missile Defense System (BMDS), the Joint Warfighter Support Program (JWSP) is critical to enable Warfighters to work with MDA to define, test, deploy and employ new missile defense Block capabilities; maintain proficiency with current Block capabilities; and provide feedback to the MDA BMDS development process.

The JWSP consists of six core processes which are tailored to enable Block 04 BMDS capabilities transitioning to the user:

- Concepts and Plans that address emerging and future BMDS material capabilities and technologies
- BMDS-wide Integrated Logistics Support policies and procedures for the BMDS.
- “Above-Element” level Training and Education programs for the Joint Warfighters, and an ability to “Train As You Fight”.
- Geographical Combatant Commander (GCC) Support to enable Combatant Commander COCOM and Service participation in MDA BMDS development activities.
- BMDS Sustainment & Operations through the MDA Missile Defense Operations Center (MOC) and the BMDS Watch Officers.
- Exercises and Wargames to enable end-user mission training, qualification, certification and rehearsal of BMDS operations and provide feedback to MDA in the BMDS development process.

Block 2004 will see the fielding of several planned BMDS capabilities and/or asset quantity increases. These capabilities will be addressed in each JWSP activity to ensure the Joint Warfighter is properly trained to employ and integrate these capabilities and allow feedback to flow into MDA developmental efforts. Included in the planned Block 04 capabilities are:

- Sea Based X-Band Radar (SBX)
- Beale UEWR Forward Deployed X-Band Radar, Transportable (FBX-T) Aegis SPY-1 Radar, Long Range Surveillance and Track GBI interceptors
- PAC-3 interceptors
- Planning and Situational Awareness capabilities in Command, Control, Battle Management and Communications (C2BMC).

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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<u>B. Accomplishments/Planned Program</u>			
	FY 2005	FY 2006	FY 2007
Exercises and Wargames	26,339	0	0
RDT&E Articles (Quantity)	0	0	0

Exercises and Wargames enable end-user mission training, qualification, certification and rehearsal of BMDS operations, and strengthen user confidence in the current system and shape development of the future BMDS. By involving all participating COCOMs in building coherent missile defense plans and tactics, techniques and procedures for the near term BMDS, and then testing cohesive execution of those plans via high fidelity simulations, this effort optimizes BMDS operational effectiveness. It also leverages activities MDA system engineering events and interoperability tests by providing real-world training to operators. Finally, exercises and wargames create the conditions for continued, in-depth foreign and/or international participation in BMDS operations and development. Near-term efforts focus on increased integration of regional missile defense exercises into the Integrated Missile Defense War Game (IMD/WG) construct. The IMD/ WG series addresses the full spectrum of the Short-Range, Medium-Range, and Long-Range Ballistic Missile threats, from launch to impact, and involves the integrated planning and execution of all participating COCOMs with the goal of improving performance and validating BMDS capabilities. The program consists of events with specific objectives tailored to MDA developmental and interoperability testing and COCOM's operational and training needs.

FY05 Accomplishments:

Integrated Missile Defense War Game IMD/WG, in five increments:

- **IMD/WG - Exercise Juniper Cobra - Rehearsed EUCOM War Plan against Southwest Asia (SWA) Shorter-Range Ballistic Missile Threats.** Enabled early study of multi-layer defense (Patriot-Arrow) technical and operational issues in a Link-16/Joint Range Extension communications architecture in an air and missile defense environment, incorporating the Aegis SPY-1 Radar. The evaluation of Arrow and Patriot provided risk reduction for US multi-layer (Patriot-THAAD) CONOPS and technical issues.
- **IMD/WG - System Engineering-Simulation - Supported MDA Development Testing of BMDS Block 04/06 capabilities.** This effort also allowed COCOM development of BMDS Block 04 procedures/training.
- **IMD/WG - Planning Exercise - Supported MDA Development testing of the Command and Control, Battle Management and Communications (C2BMC) element.** Also supports COCOM planning for BMDS Block 04 and staff training for BMDS mission and utilization of C2BMC against Northeast Asia (NEA) threats. This exercise also supported an evaluation of C2BMC technical and operational interoperability.
- **IMD/WG - BMDS Exercise - Supported COCOM mission rehearsal / certification/ training in BMDS Block 04, for NEA potential threats.**
- **IMD/WG - Senior Leader Seminar - Reviewed results, accomplishments, lessons learned, and action items from the above described events.**
- **Completed Exercise Roving Sands with Theater High Altitude Area Defense (THAAD) assets.**

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<ul style="list-style-type: none"> Conducted the first BMDS Warfighter Conference to review activities in FY05 and to document lessons learned from all exercises and wargame events. 			
	FY 2005	FY 2006	FY 2007
Concepts and Plans	200	0	0
RDT&E Articles (Quantity)	0	0	0
<p>Concepts and Plans looks at evolving BMDS capabilities and addresses their impact on the Joint Warfighter's employment of the BMDS. By understanding emerging and future BMDS material capabilities and technologies, Joint Warfighters will be in a position to develop new, more effective employment constructs, Concepts of Operations (CONOPS) and tactics. This activity enables them, via low fidelity simulations and tabletop exercises to efficiently investigate alternative ways of operating the future BMDS. It also serves MDA as a prime vehicle for the Warfighter Involvement Process (WIP) which seeks user feedback and guidance to shape future Block development of the BMDS.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> Developed operational concepts and conducted feasibility studies for emerging BMDS capabilities, such as the Sea Based and Forward Based X-Band Deployable Radars. Publication of the BMDS Handbook 			
	FY 2005	FY 2006	FY 2007
BMDS Logistics	120	0	0
RDT&E Articles (Quantity)	0	0	0
<p>A pre-condition for an effective BMDS is having a solidly supported logistics system. The BMDS Logistics activity develops transition plans addressing Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) efforts to improve planning and predictability for Military departments and COCOMs. The plans include not only historical precedent, but also provide a forward look to the Services and COCOMs on what capabilities they may be getting, when they may be getting them, and what their support responsibilities may be. This activity also creates, develops, and coordinates BMDS-wide Integrated Logistics Support policies and procedures and provides funding to ensure that the requisite DOTMLPF will be in place to sustain the deployed BMDS Block capabilities.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> Developed BMDS logistic support polices, procedures and Inter Service Support Agreements to enable fielding and sustainment of the initial BMDS (e.g. the Upgraded Early Warning Radar at Eareckson Air Station on Shemya Island, Alaska). 			

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<ul style="list-style-type: none"> • Developed the BMDS Block 04 Activation Plan to guide COCOM and Service logistical readiness for the initial BMDS capability. • Developed BMDS Logistics Policies, Plans and Procedures and support capabilities and agreements to enable fielding and sustainment of the BMDS (e.g. Contractor Logistics Support contract modification for the BMDS when in an operational, vice developmental, status). • Led the Joint BMD community in a series of logistics reporting exercises. • Developed the Block 2004 Activation Plan to guide COCOM and Service logistical readiness for the initial BMDS capability. 			
	FY 2005	FY 2006	FY 2007
GCC Support	2,138	0	0
RDT&E Articles (Quantity)	0	0	0
<p>Geographical Combatant Commander (GCC) Support enables COCOM and Service participation in MDA activities such as wargames, exercises, table tops, flight tests, ground tests, resource planning meetings and other conferences and interchanges where securing user input is critical for an effective outcome. This activity also supports the Warfighter Involvement Process (WIP) by enabling operators, users, and other BMDS stakeholders to travel and participate in missile defense related exercises, tests, activities and other fora. User involvement ensures that MDA, the Joint Warfighters and Services will work together to define, field, and operationalize current BMDS capabilities and develop subsequent new Block capabilities in an efficient and effective manner.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Ensured that all relevant COCOMs participated in MDA activities related to their preparation for, employment and sustainment of the emergent BMDS capabilities. • Staffed the JWSP with highly qualified and productive contractor support personnel. 			
	FY 2005	FY 2006	FY 2007
Sustainment - MOC Operations	3,844	0	0
RDT&E Articles (Quantity)	0	0	0
<p>The MDA Operations Center (MOC), through the BMDS Watch Officer (BWO) in Colorado Springs, serves as the Agency's central node for monitoring BMDS operational activities providing the conduit for information flow between MDA and the Combatant Commanders. By facilitating communications between the MDA and operational activities, maintaining situational awareness on the status of the BMDS, and coordinating the activities required to return it to a specified status when necessary, the BWO and MOC help assure the BMDS is best configured to support operational and developmental requirements. The BWO and MOC also coordinate MDA's schedule requirements, ensuring BMDS asset availability</p>			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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for developmental, test, operational, and training activities. The BWO/MOC team also contributes to assuring that the operational BMDS is provided with timely and effective logistics support on an ongoing basis.

FY05 Accomplishments:

- Provided BMDS situational awareness and status to MDA and COCOM leadership.
- Scheduled BMDS asset availability for key BMDS ground testing, tracking/reporting on ballistic targets of opportunity, and participation in wargames/exercises/and unit level training efforts.
- Accomplished Operation Center equipment upgrades.
- Staffed the Operations Center with highly qualified and productive government civilian and contractor personnel.
- Established the operational community interface with U.S. Strategic Command's (STRATCOM's) Joint Functional Component Commander for Integrated Missile Defense (JFCC-IMD).

	FY 2005	FY 2006	FY 2007
BMDS Training	5,203	0	0
RDT&E Articles (Quantity)	0	0	0

BMDS Training focuses on maintaining, developing and providing “Above-Element” Training for the Joint Warfighters, Defense officials and the Services to provide stakeholders with critical knowledge on BMD capabilities and system operation. The end result is to provide BMDS operators, staffs and defense officials with a better understanding of the BMDS, enabling them to use that knowledge to achieve a more efficient and effective missile defense. Key activities include System-level educational courses, instructional capabilities within Service/Joint Schools and conducting education and training of select BMDS stakeholders, staffs and organizations on emerging BMDS Block deployment capabilities. An additional high priority demand of the Warfighting community is the ability to “Train As You Fight”. Part of this effort will produce a Distributed, Multi-Echelon, Training System (DMETS) to satisfy that need. The resulting virtual network will enable users across the globe at geographically separated BMDS warfighting nodes to routinely engage in missile defense exercises at their actual duty stations. The DMETS is thus both a training enabler and a cost saver by eliminating the need to transport and sustain BMDS forces at a centralized training venue.

FY05 Accomplishments:

- Procured equipment, including dedicated servers, for the Distributed Multi Echelon Education and Training System (DMETS) start-up.
- Established an interim DMETS capability that supported the Integrated Missile Defense wargame effort.
- Refined the definition and programmatic mechanism to continue the disciplined and timely development of the objective.
- Conducted system level BMDS education for selected National Command Authority and Combatant Command personnel and staffs.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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- Established initial BMD Training and Education Program facilities in Colorado Springs, CO.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products				

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Joint Warfighter Support will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks. JWSP will accomplish this through development and vetting of Operational Concepts through the Joint Theater Air and Missile Defense Office, the Combatant Commanders and the Services utilizing seminars, workshops, table tops, wargames and exercises, which also supports USSTRATCOM's Military Utility Assessment.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Exercises and Wargames								
IMD WG - JUNIPER COBRA	CPAF	JNIC/PEO AMSD/ Denver CO/Huntsville AL	1,404	0	N/A	0	N/A	1,404
IMD WG - System Engineering - Simulation	CPAF	JNIC/GM BOEING/PEO ASMD/ Denver CO/Huntsville AL	4,664	0	N/A	0	N/A	4,664
IMD WG - PLANEX	CPAF	JNIC/ Denver CO	1,400	0	N/A	0	N/A	1,400
IMD WG - Senior Leader Seminar	CPAF	JNIC/ Denver CO	457	0	N/A	0	N/A	457
Technical Support	CPAF	SPARTA/ Arlington, VA	8,897	0	N/A	0	N/A	8,897
Eareckson Security	MIPR	Eareckson AFB/ AS	3,632	0	N/A	0	N/A	3,632
Exercise Roving Sands	MIPR	PEO THAAD/ Arlington, VA	216	0	N/A	0	N/A	216
IMD WG - PLANEX	CPAF	JNIC/GMBOEING /PEOASMD/ Denver CO/Huntsville CO	5,672	0	N/A	0	N/A	5,672
Concepts and Plans								
Concept of Operations Studies	MIPR	THAAD/Huntsville AL	200	0	N/A	0	N/A	200
BMDS Logistics								
Develop Initial BMDS Logistics Support Policies	CPAF	JNIC/Denver CO	120	0	N/A	0	N/A	120

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
GCC Support								
Travel and Shipping Support For GCCs	MIPR	USPACOM/Camp Smith HI & USSTRATCOM/San Diego, CA	378	0	N/A	0	N/A	378
MDA Staff Travel	TM	MDA / Arlington, VA	462	0	N/A	0	N/A	462
MDA Staff Salaries	TM	MDA/ Arlington, VA	1,295	0	N/A	0	N/A	1,295
Sustainment - MOC Operations								
Sustainment & Operations - MOC	CPAF	JNIC/ Colorado Springs, CO	501	0	N/A	0	N/A	501
Technical Support	TM	SPARTA/ Rosslyn, VA	2,287	0	N/A	0	N/A	2,287
Sustainment & Operations	CPAF	JNIC/ Colorado Springs, CO	27	0	N/A	0	N/A	27
MOC Staff & Travel	TM	MDA/ Arlington, VA	1,029	0	N/A	0	N/A	1,029
BMDS Training								
Preliminary Distributed Multi-Echelon Training System Study	CPAF	JNIC/ Colorado Springs, CO	5,167	0	N/A	0	N/A	5,167
Initial BMDS Training Development	TM	MDA/ Arlington, VA	36	0	N/A	0	N/A	36
Subtotal Product Development			37,844	0		0		37844
Remarks								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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II. Support Costs Cost (\$ in Thousands)

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

Remarks

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			37,844	0		0		37,844
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BLOCK 2004																																
IMD WG - Juniper Cobra			▲																													
IMD WG - System Engineering Simulation			▲																													
IMD WG - Planning Exercise			▲																													
IMD WG - BMDS Exercise				▲																												
IMD WG - Senior Leader Seminar				▲																												
Legend																																
 Significant Event (complete)  Milestone Decision (complete)  Element Test (complete)  System Level Test (complete)  Complete Activity														 Significant Event (planned)  Milestone Decision (planned)  Element Test (planned)  System Level Test (planned)  Planned Activity																		

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2004							
IMD WG - Juniper Cobra	3Q						
IMD WG - System Engineering Simulation	3Q						
IMD WG - Planning Exercise	3Q						
IMD WG - BMDS Exercise	4Q						
IMD WG - Senior Leader Seminar	4Q						

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0803 Joint Warfighter Support Block 2006	0	31,044	53,350	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Starting in FY06 the Ballistic Missile Defense System Manager effort was transferred from Ballistic Midcourse Defense PE 0603882C (Project 0808) to Ballistic Missile Defense Products PE 0603889C (Project 0803).

A. Mission Description and Budget Item Justification

As part of the total Ballistic Missile Defense System (BMDS), the Joint Warfighter Support Program (JWSP) is critical to enable Warfighters to work with MDA to define, test, deploy and employ new missile defense Block capabilities; maintain proficiency with current Block capabilities; and provide feedback to the MDA BMDS development process. The JWSP consists of a core set of consistent processes, tailored to the new BMDS capabilities to be deployed in each Block. The JWSP is divided into two-year Blocks to match the evolutionary capability Blocks of the BMDS. The JWSP builds Combatant Commander (COCOM) proficiency in fielded missile defense capabilities, and provides critical operational level feedback directly to MDA development efforts. The JWSP consists of seven primary processes, tailored in scope to the current BMDS Block capabilities as they transition, or near transition, to the user.

- BMDS Exercises and Wargames.
- Concepts & Plans required to address evolving, emerging and projected Ballistic Missile technology (both defensive and threat oriented).
- BMDS Logistics Transition and Logistics Planning and Development.
- Geographic Combatant Commanders (GCCs) Support.
- BMDS Sustainment & Operations Coordination and Control through the Missile Defense Operations Center (MOC).
- BMDS Training Development for the Warfighters.
- Ballistic Missile Defense System Manager.

Block 2006 will see numerous BMDS capabilities and or asset quantity increases during the FY06-2007 time-frame. These capabilities will be added to each JWSP activity to ensure the Joint Warfighter is properly trained to employ and integrate these capabilities to address the evolving Ballistic Missile threat environments. Among the planned increase scope of the BMDS Block capabilities that will be addressed by the JWSP are:

- Increased numbers of Ground-Base Interceptors at Fort Greely.
- Upgraded Early Warning Radar at Thule, Greenland.
- Additional Forward Based X-Band Radar.

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- Additional SM-3 sea-based interceptors and upgraded Aegis cruisers and destroyers.
- Theater High Altitude Area Defense (THAAD) interceptors.
- Expanded Link-16 data engagement data sharing between THAAD, PATRIOT, and AEGIS BMDS Elements.
- Implications from the expanded Engagement Sequence Group scope, as new elements and capability is added.
- Expanded upgrades to the BMDS C2BMC planning capabilities.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Exercises and Wargames	0	19,115	32,789
RDT&E Articles (Quantity)	0	0	0

BMDS overlays are incorporated into Combatant Command Tier 1 Exercises to enable end-user mission rehearsal and sustainment training, qualification, certification of BMDS operations, and strengthen user confidence in the current system and shape development of the future BMDS. By involving participating COCOMs in building coherent missile defense plans and Tactics, Techniques and Procedures (TTPs) for the near term BMDS, and then testing cohesive execution of those plans via high fidelity simulations, this effort optimizes BMDS operational effectiveness. It also leverages activities MDA system engineering events and interoperability tests by providing real-world training to operators. Finally, exercises and wargames create the conditions for continued, in-depth foreign and/or international participation in BMDS operations and development. Near-term efforts focus on increased integration of regional exercises into a more global BMDS construct. The BMDS exercise and wargame overlays addresses the full spectrum of the Short-Range, Medium-Range, and Long-Range Ballistic Missile threats, from launch to impact, and involve the integrated planning and execution of all participating COCOMs with the goal of improving performance and validating BMDS capabilities.

FY06 Planned Program:

- BMDS overlay to Keen Edge 06. This will overlay a 5th Air Force, PACOM exercise with a Japanese theater exercise to support Northeast Asia (NEA) Warplan Rehearsal.
- Exercise Joint Project Optic Windmill IX - A semi-annual combined-joint U.S. European Command (EUCOM) missile defense exercise employing live forces and simulation to investigate interoperability and integration procedures/issues/technologies in addressing the short to medium range ballistic missile threats from South-West Asia (SWA).
- BMDS overlay to the North American Aerospace Defense Command (NORAD) Exercise Amalgam Phantom 06. This overlay will enable development of BMDS TTPs, war plans, and Concepts of Operations (CONOPS); and allow for insertion of new/emerging MDA developed BMDS capabilities, to include C2BMC soft ware builds, to be field tested by the joint Warfighter communities.

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<ul style="list-style-type: none">• BMDS Exercise Terminal Fury 07 will be planned and most preparatory work accomplished in FY06 with an early FY07 execution date. This exercise will to overlay U.S. Northern Command's (NORTHCOM's) Vigilant Shield 07 (VS07). Vigilant Shield and Terminal Fury will fully integrate Command, Control, Battle Management and Communications (C2BMC) fully into Exercise Terminal Fury 07 (TF07) as part of a JTF certification exercise. This exercise will fully integrate C2BMC from the National Capital Region through every COCOM (pending their participation) down to the regional fight as a Situation Awareness and Battle Manager; allow warfighters to interact with the FBX-T radar; obtain user feedback from the FBX-T on operator actions; and use C2BMC's Battle Manager to control 700+ Theater/Regional ballistic missile shots, a space launch vehicle and a missile with potential Strategic implications.• Distributed Exercises - Follow-on exercises to BMDS ground and flight tests allowing the operations community to develop new TTPs using the latest test and developmental system configurations. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Exercise Juniper Cobra 07 - A semi-annual combined-joint EUCOM missile defense exercise employing live forces and simulation to investigate interoperability and integration procedures/issues/technologies in addressing the ballistic missile threat from SWA. The exercise involves participation of live U.S. and host nation forces, in a multi-layered/Link 16/Joint Requirements Exercise environment. It also permits study of multi- system technical and operational issues for Block 2006/2008 capabilities.• BMDS overlay to NORAD Exercise Amalgam Phantom 07. This overlay will enable development of BMDS TTPs, war plans, and CONOPS; and allow for insertion of new/emerging MDA developed BMDS capabilities, to include C2BMC soft ware builds, to be field tested by the joint Warfighter communities.• BMDS overlay NORTHCOM Exercise Vigilant Shield 07, and PACOM Exercise Terminal Fury 07. Logically, Terminal Fury 07 final execution and 08 Planning will be accomplished here. This overlay will enable development of BMDS TTPs, war plans, and CONOPS, allow for testing and certifying warfighters, and permit analysis of the operation and the integration of C2BMC to control Ballistic Missile operations effectiveness. This Final exercise report will analyze the integration of C2BMC from the National Capital Region down to the regional fight as a Situation Awareness and Battle Manager; assess warfighters, interactions with the FBX-T radar, obtain document user feedback from the FBX-7 on operator actions, examine C2BMC's Battle Manager effectiveness to control BMDS operations, and will evaluate the integration and effectiveness of the C2BMC to provide effective BMDS Situation Awareness and Battle Management.• Distributed Exercises - Follow-on exercises to BMDS ground and flight tests allowing the operations community to develop new TTPs using the latest test and developmental system configurations.		

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	FY 2005	FY 2006	FY 2007
Concepts and Plans	0	648	1,805
RDT&E Articles (Quantity)	0	0	0
<p>Concepts and Plans looks at evolving BMDS capabilities and addresses their impact on the Joint Warfighter's employment of the BMDS. By understanding emerging and future BMDS material capabilities and technologies, Joint Warfighters will be in a position to develop new, more effective employment constructs, CONOPS and tactics. This activity enables them, via low fidelity simulations and tabletop exercises, to efficiently investigate alternative ways of operating the future BMDS. It also serves MDA as a prime vehicle for the Warfighter Involvement Process (WIP) which seeks user feedback and guidance to shape future Block development of the BMDS.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Conduct JNIC BMDS Exercise Planning throughout FY06 to integrate users, testers and exercise participants. • Conduct BMDS Table Top Exercises to intellectually wargame BMDS problems and systematically examine and analyze multiple, alternative, courses of action in support of emerging BMDS Block capabilities. • Conduct System Capability Reviews (Rock Drills) to demonstrate BMDS concepts and capabilities in new or evolving environments and situations, or as a Capability Demonstration, by looking at new ways to employ BMDS elements. • Conduct Studies and Analyses, as required, to examine emergent BMDS technology impacts on Joint Warfighter requirements for Block development efforts. • Work with the US Strategic Command (STRATCOM) to document, validate, and prioritize new Ballistic Missile Defense capabilities desired by the COCOMS, as well as enhancements to the characteristics of fielded capabilities in a new Warfighter Involvement Process (WIP). • Generate a BMDS prioritized capability list reflecting COCOM priorities for needed BMDS enhancements. • Generate BMDS modification requests reflecting COCOM priorities for modifications needed to existing systems or capabilities. <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Continue JNIC BMDS Exercise Planning throughout FY07 to integrate users, testers and exercise participants. • Continue BMDS Table Top Exercise(s) to intellectually wargame BMDS problems and systematically examine and analyze multiple, alternative, courses of action. Conduct System Capability Reviews (Rock Drills) to demonstrate BMDS concepts and capabilities in new or evolving environments and situations, or as a Capability Demonstration, by looking at new ways to employ BMDS elements. • Continue Studies and Analyses, as required, to examine emergent BMDS technology impacts on Joint Warfighter requirements for Block development efforts. 			

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<ul style="list-style-type: none"> Continue to work with the STRATCOM to document, validate, and prioritize new Ballistic Missile Defense capabilities desired by the COCOMS, as well as enhancements to the characteristics of fielded capabilities through the WIP. Update the annual BMDS prioritized capability list reflecting COCOM priorities for needed BMDS enhancements. Update or generate new BMDS modification requests reflecting COCOM priorities for modifications needed to existing systems or capabilities 			
	FY 2005	FY 2006	FY 2007
BMDS Logistics	0	1,087	959
RDT&E Articles (Quantity)	0	0	0
<p>A pre-condition for an effective BMDS is having a solidly supported logistics system. The BMDS Logistics activity develops transition plans addressing Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) and provides funding to improve planning and predictability for Military departments and COCOMs. The plans include not only historical precedent, but also provide a forward look to the Services and COCOMs on what capabilities they may be getting, when they may be getting them, and what their support responsibilities may be. This activity also creates, develops and coordinates BMDS-wide Integrated Logistics Support policies and procedures to ensure that the requisite DOTMLPF and associated funding will be in place to sustain the deployed BMDS Block capabilities.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> Plan BMDS-wide Integrated Logistics Support and Block contingency deployments for emerging Block capabilities. Support BMDS exercises and wargames with the Services and COCOMs through logistics overlays in order to evolve BMDS Block sustainment policies, directives and procedures and to keep pace with new BMDS Block capabilities. Update the BMDS Handbook to document new operational and technical characteristics for combatant commanders, staffs, operators, and other key personnel. <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> Update planned BMDS-wide Integrated Logistics Support and Block contingency. Continue to support BMDS exercises and wargames with the Services and COCOMs through logistics overlays to those exercises in order to evolve BMDS Block sustainment policies, directives and procedures and to keep pace with new BMDS Block capabilities. Update the BMDS Handbook to document new operational and technical characteristics for combatant commanders, staffs, operators, and other key personnel. 			

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	FY 2005	FY 2006	FY 2007
Geographic Combatant Commander (GCC) Support	0	2,638	2,947
RDT&E Articles (Quantity)	0	0	0
<p>Geographical Combatant Commander (GCC) Support enables COCOM and Service participation in MDA activities such as wargames, exercises, table tops, flight tests, ground tests, resource planning meetings and other conferences and interchanges where securing user input is critical for an effective outcome. This activity also supports the Warfighter Involvement Process (WIP) by enabling operators, users, and other BMDS stakeholders to travel and participate in missile defense related exercises, tests, activities and other fora. User involvement ensures that MDA, the Joint Warfighters and Services will work together to define, field, and operationalize current BMDS capabilities and develop subsequent new Block capabilities in an efficient and effective manner.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Support COCOM participation in MDA activities, such as wargames, exercises, table tops, and conferences. • Provide Headquarters staff functions to oversee all JWSP functions. <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Continue to support COCOM participation in MDA activities, such as wargames, exercises, table tops, and conferences. • Continue to provide Headquarters staff functions to oversee all JWSP functions. 			
	FY 2005	FY 2006	FY 2007
Sustainment & Operations - MOC	0	4,274	4,697
RDT&E Articles (Quantity)	0	0	0
<p>The MDA Operations Center (MOC), through the BMDS Watch Officer (BWO) in Colorado Springs, serves as the Agency's central node for monitoring BMDS operational activities, providing the conduit for information flow between MDA and the Combatant Commanders. By facilitating communications between the MDA and operational activities, maintaining situational awareness on the status of the BMDS, and coordinating the activities required to return it to a specified status when necessary, the BWO/MOC team helps assure the BMDS is best configured to support operational and developmental requirements. The BWO/MOC team also coordinates MDA's schedule requirements, ensuring BMDS asset availability for developmental, test, operational, and training activities. The BWO/MOC contributes to assuring that the operational BMDS is provided with timely and effective logistics support on an ongoing basis.</p>			

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FY06 Planned Program:

- Improve situational awareness and decision support tools.
- Streamline the BMDS scheduling/asset management process to deconflict operational and developmental BMDS activities by improving tools, process flows, and training for key users.
- Increase fidelity and technical detail in configuration specifications needed to support transition activities.
- Conduct initial and sustainment training, education, and qualification for watch personnel.
- Continue to man the MOC/BWO on a 7-day per week/24-hours per day/365 days a year basis.
- Replace or upgrade MOC/BWO equipment as required to keep pace with new BMDS Block capabilities.

FY07 Planned Program:

- Continue to man the MOC/BWO on a 7-day per week/24-hours per day/365 days a year basis.
- Conduct initial and sustainment training, education, and qualification for watch personnel.
- Replace or upgrade MOC equipment as required to keep pace with new BMDS Block capabilities.

	FY 2005	FY 2006	FY 2007
BMDS Training	0	2,882	5,153
RDT&E Articles (Quantity)	0	0	0

BMDS Training focuses on maintaining, developing and providing “Above-Element” Training for the Joint Warfighters, Defense officials and the Services to provide stakeholders with critical knowledge on BMD capabilities and system operation. The end result is to provide BMDS operators, staffs and defense officials with a better understanding of the BMDS, enabling them to use that knowledge to achieve a more efficient and effective missile defense. Key activities include System-level educational courses, instructional capabilities within Service/Joint Schools and conducting education and training of select BMDS stakeholders, staffs and organizations on emerging BMDS Block deployment capabilities. An additional high priority demand of the Warfighting community is the ability to “Train As You Fight.” Part of this effort will produce a Combined Test & Operations (CTO) Distributed, Multi-Echelon, Training System (CTO-DMETS) to satisfy that need. The resulting virtual network will enable users across the globe at geographically separated BMDS warfighting nodes to routinely engage in missile defense exercises at their actual duty stations. The CTO-DMETS is thus both a training enabler and a cost saver by eliminating the need to transport and sustain BMDS forces at a centralized training venue.

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FY06 Planned Program:

- Operate the BMDS Training Center and provide “Above Element” training for the Joint Warfighters, Defense Officials and Services.
- Provide Training Transition to the Services.
- Host a Training Conference
- Complete the design for CTO-DMETS dedicated network bandwidth. The CTO-DMETS network must parallel the operational network but remain separate (not mixing training and real data). In addition, it requires a network to support the coordinated Simulation/Stimulation function so that all players are able to see the same threat picture as it plays out. In FY06 the design for the CTO-DMETS network will be completed. As part of this activity existing networks will be examined in a trade study to determine their applicability to CTO-DMETS.
- Continue to provide Operations and Support (O&S) to daily warfighter training.
- Provide AGEIS Pier-side connection utilizing the Battle Force Tactical Trainer, the Joint Training & Experimentation Network migrating to the Advance Combat Simulator, theater exercise driving global exercise (e.g., Joint Project Optic Windmill IX), enhancement of the U. S. Pacific Command (PACOM) enclave and initial installation of a U.S. European Command (EUCOM) enclave.
- Conduct an annual worldwide Missile Defense Training and Education Conference in order to develop policy and strategies and updates for the BMDS.

FY07 Planned Program:

- Operate the BMDS Training Center and provide “Above Element” training for the Joint Warfighters, Defense Officials and Services.
- Provide Training Transition to the Services.
- Host a Training Conference
- CTO-DMETS activities will transition to Project 0817 beginning in FY07.

	FY 2005	FY 2006	FY 2007
Ballistic Missile Defense System Manager	0	400	5,000
RDT&E Articles (Quantity)	0	0	0

The BMD System Manager monitors and synchronizes all aspects of vertical/element oriented BMDS development, testing and evaluation, corrective actions, acquisition, materiel release, and fielding, to include direct interaction with the materiel developers, test community, combatant commands and the gaining command to ensure effective and efficient Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities integration with the Joint Warfighter is achieved.

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FY06 Planned Program:

- Update BMDS user technical requirements documentation based on program changes, engineering change packages and design reviews.
- Maintain a BMDS Operations and Integration Center to support Ground Based Missile Defense (GMD) element spiral development and integration into the BMDS through each Block capability upgrade.
- Monitor current and emerging threats to ground based elements of the BMDS.

FY07 Planned Program:

- Provide user laboratory operations to assess, develop and validate BMDS operational procedures and TTPs, and to provide BMDS exercise data analysis.
- Update BMDS user technical requirements documentation based on program changes, engineering change packages and design reviews.
- Maintain a BMDS Operations and Integration Center to support GMD spiral development and integration into the BMDS through each Block capability upgrade.
- Continue to monitor current and emerging threats to the ground based elements of the BMDS.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749

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

D. Acquisition Strategy

Joint Warfighter Support will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks. The JWSP accomplishes this by development and vetting of Operational Concepts through the Joint Theater Air and Missile Defense Office, the Joint National Integration Center, the COCOMS and the Services utilizing seminars, workshops, table top exercises, wargames and simulation exercises that also support Military Utility Assessment updates.

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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Exercises and Wargames								
Distributed Exercise 06-1	CPAF	GM/ Huntsville AL	0	500	1/2Q	0	N/A	500
Technical Support	CPAF	SPARTA/ Arlington, VA	0	6,963	1/2Q	10,824	1/2Q	17,787
BMDS Overlay - JUNIPER COBRA	CPAF	JNIC/BOEING/PE O AMSD/ Colorado Springs CO, Huntsville AL	0	500	1/4Q	2,000	N/A	2,500
BMDS Overlay - Keen Edge	CPAF	JNIC/ Colorado Springs CO	0	300	1/2Q	1,000	1/2Q	1,300
BMDS Overlay - Amalgam Phantom	CPAF	JNIC/GM/ASMDP EO/ Colorado Springs CO	0	2,200	3/4Q	5,000	3/4Q	7,200
BMDS Overlay - Joint Project Optic Windmill IX	CPAF	JNIC/GM/ASMDP EO/ Colorado Springs CO, Arlington VA, Huntsville AL	0	2,000	1/2Q	0	N/A	2,000
BMDS Overlay - Vigilant Shield	CPAF	JNIC/GM/ASMDP EO/ Colorado Springs CO, Huntsville AL	0	2,200	3/4Q	5,000	3/4Q	7,200

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
BMDS Overlay - Planning Terminal Fury	CPAF	JNIC/GM/ASMDP EO/ Colorado Springs, CO/Arlingt on VA, Huntsville, AL	0	2,100	3/4Q	2,447	3/4Q	4,547
Distributed Exercise 07-1	CPAF	GM/ Huntsville, AL	0	0	1/2Q	1,769	1/2Q	1,769
Distributed Exercise 07-2	CPAF	GM/ Huntsville, AL	0	500	2/3Q	1,700	2/3Q	2,200
Other Exercises and Data Analyses	CPAF	JNIC/GM/ Colorado Spring CO, Huntsville AL	0	1,552	1/4Q	2,749	1/4Q	4,301
JNIC BMDS Exercise Planning	CPAF	GM/ Huntsville AL	0	300	1/2Q	300	1/2Q	600
Concepts and Plans								
Studies & Analysis	MIPR	JNIC/ARMYPEO/ NAVSEA/ Colorado Springs CO & Arlington, VA/Huntsville AL	0	648	1/4Q	1,805	1/4Q	2,453
BMDS Logistics								
BMDS Logistics	CPAF	JNIC/ Denver, CO	0	1,087	1/4Q	959	1/4Q	2,046
Geographic Combatant Commander (GCC) Support								
Civilian Staff Support	TM	MDA/ Arlington, VA	0	2,118	2Q	2,312	1/4Q	4,430

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
USSTRATCOM,USECOM,USPA CECOM & USNORTHCOM	MIPR	San Diego, CA/Colorado Springs CO/Huntsville AL	0	520	1/4Q	635	1/4Q	1,155
Sustainment & Operations - MOC								
MOC Operations	CPAF	JNIC/ Colorado Springs, CO	0	1,354	1/4Q	1,579	1/4Q	2,933
Technical Support	CPAF	SPARTA/ Rosslyn, VA	0	2,920	1/2Q	3,118	1/2Q	6,038
BMDS Training								
BMDS Training Center	CPAF	JNIC/ Denver, CO	0	1,523	1/3Q	4,244	1/3Q	5,767
Studies & Analyses	CPAF	SPARTA/ Arlington, VA	0	240	2Q	247	2Q	487
Training Transition to Services	CPAF	MDA/ Arlington, VA	0	643	1Q	662	1Q	1,305
CTO-Distributed Multi-Echelon Training System	C/CPAF	MDNT/B / Arlington, VA	0	476	2Q	0	N/A	476
Ballistic Missile Defense System Manager								
Technical Support	CPAF	TSM	0	400	1/3Q	5,000	1/4Q	5,400
Subtotal Product Development			0	31,044		53,350		84394

Remarks

Prior year costs (FY 2004-2005) are discussed in Project 0703.

Funding for CTO/DMETS transitions to a new Project (0817) in FY07.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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II. Support Costs Cost (\$ in Thousands)

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

Remarks

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			0	31,044		53,350		84,394
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011																								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																					
BLOCK 2006																																																	
JNIC BMDS Exercise Planning					▲	▲																																											
BMDS Overlay 06 - Keen Edge 06						▲																																											
CTO-DMETS Interface w/Aegis FBX/Theater Elements						▲	▲	▲																																									
Complete CTO-DMETS Network Design						▲																																											
Distributed Exercise 06-1						▲																																											
Stand-up CTO-DMETS Red Cell Capability						▲	▲	▲																																									
BMDS Overlay 06 - Amalgam Phantom 06							▲																																										
BMDS Overlay 06 - Joint Project Optic Windmill IX							▲																																										
Distributed Exercise 06-2							▲																																										
Preliminary CTO-DMETS Network Stand-up								▲																																									
BMDS Overlay 07 - Terminal Fury 07										▲																																							
BMDS Overlay 07 - Vigilant Shield 07										▲																																							
Distributed Exercise 07-1										▲																																							
BMDS Overlay 07 - Juniper Cobra 07												▲																																					
Distributed Exercise 07-2												▲																																					
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Legend																																																	
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▲	Planned Activity																																																

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2006							
JNIC BMDS Exercise Planning		1Q-2Q					
BMDS Overlay 06 - Keen Edge 06		2Q					
CTO-DMETS Interface w/Aegis FBX/Theater Elements		2Q-4Q					
Complete CTO-DMETS Network Design		2Q					
Distributed Exercise 06-1		2Q					
PACOM Exercise Set 06		2Q-3Q					
Stand-up CTO-DMETS Red Cell Capability		2Q-4Q					
BMDS Overlay 06 - Amalgam Phantom 06		3Q					
BMDS Overlay 06 - Joint Project Optic Windmill IX		3Q					
Distributed Exercise 06-2		3Q					
Preliminary CTO-DMETS Network Stand-up		4Q					
BMDS Overlay 07 - Terminal Fury 07			1Q				
BMDS Overlay 07 - Vigilant Shield 07			1Q				
Distributed Exercise 07-1			1Q				
BMDS Overlay 07 - Juniper Cobra 07			4Q				
Distributed Exercise 07-2			4Q				
Distributive Exercise 07-3			4Q				

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE					
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603889C Ballistic Missile Defense Products					
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0903 Joint Warfighter Support Block 2008	0	0	0	49,687	50,912	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

As part of the total Ballistic Missile Defense System (BMDS), the Joint Warfighter Support Program (JWSP) is the key vehicle which enables MDA to work directly and collaboratively with the Combatant Commanders (COCOMs) and Services to define, test, deploy and employ missile defense Block capabilities. The JWSP consists of a core set of consistent, repeatable processes, divided into two-year Blocks tailored to the evolutionary capability Blocks of the BMDS. Block 2008 will see numerous BMDS capabilities and or asset quantity increases during the FY08-2009 time-frame. These capabilities will be added to each JWSP activity to ensure the Joint Warfighter is properly trained to employ and integrate these capabilities to address the evolving Ballistic Missile threat environments.

The JWSP consists of seven primary activities, tailored in scope to the current BMDS Block capabilities as they transition, or near transition, to the user. These seven areas are:

Conducting Exercises and Wargames to enable end-user mission training, qualification, certification and rehearsal of BMDS operations, strengthen user confidence in the current system and shape development of the future BMDS. This activity involves all participating COCOMs in building coherent missile defense plans and tactics, techniques and procedures for the near term BMDS, and then testing cohesive execution of those plans via high fidelity simulations. It also incorporates BMD system engineering and interoperability test activities when possible to leverage MDA material development events by providing real-world training to operators. Finally, exercises and wargames create the conditions for continued, in-depth foreign and/or international participation in BMDS operations and development.

Providing "Above-Element" level Training and Education. This activity develops and maintains programs for the Joint Warfighters, Defense officials and the Services to provide stakeholders with critical knowledge on BMD capabilities and system operation. A key part of this activity includes developing BMDS educational courses, establishing training facilities and capabilities within Service/Joint Schools and conducting education and training of select BMDS stakeholders, staffs and organizations on emerging BMDS Block deployment capabilities. As new BMDS capabilities are transitioned to the field, upgrades and improvements will be incorporated to maintain the requisite level of training service.

Developing Concepts and Plans that explain emerging and future BMDS material capabilities and technologies to the warfighter. This activity addresses potential impacts to current BMDS operations and results in Joint Warfighter development of new BMDS employment constructs

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>/Concepts of Operations (CONOPs). It introduces far term, emerging BMD technologies and capabilities to the Combatant Commanders and enables them via low fidelity simulations and tabletop exercises to investigate alternative ways of operating the BMDS. It also serves MDA as a prime vehicle for the Warfighter Involvement Process (WIP) which seeks user feedback and guidance to shape future Block development of the BMDS.</p> <p>Creating, developing and coordinating BMDS-wide Integrated Logistics Support policies and procedures to ensure that the requisite Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) and funding will be in place to sustain the deployed BMDS Block capabilities. A pre-condition for effective missile defense is having a solidly supported logistics system. This effort develops transition plans and policy to improve logistics planning and predictability for the Military departments and COCOMs. The plans include not only historical precedent, but also provide a forward look to the Services and COCOMs on what capabilities they may be getting, when they may be getting them, and what their support responsibilities may be.</p> <p>Providing Geographical Combatant Commander (GCC) Support to enable COCOM and Service participation in MDA activities such as wargames, exercises, table tops, flight tests, ground tests, resource planning meetings and other conferences and interchanges where getting user input is critical for an effective outcome. This activity supports the WIP enabling operators, users, and other BMDS stakeholders to travel and participate in missile defense related exercises, tests, activities and other events. User involvement ensures that MDA, the Joint Warfighters and Services will work together to define, field, and operationalize the initial BMDS capability and subsequent new Block capabilities in an efficient and effective manner.</p> <p>Delivering BMDS Sustainment & Operations through the MDA Missile Defense Operations Center (MOC) and the BMDS Watch Officers. The MOC serves as the MDA's central node for BMDS operations, situational monitoring and information collection in support of the Combatant Commanders' mission to conduct missile defense. This activity facilitates communications between the MDA and operational activities, maintains situational awareness on the status of the BMDS, and coordinates the activities required to return it to a specified status when necessary. It also schedules BMDS asset availability for testing, developmental, and operational/training activities. In sum, the MOC is a key hub in assuring that the operational BMDS is provided with timely and effective logistics support on an ongoing basis.</p> <p>Supporting the BMD System Manager (BMDSM) function. The Joint Functional Component Command Integrated Missile Defense has been designated by MDA and US Strategic Command as the lead for this function. The MDA funds a portion of this function through the JWSP. The BMDSM monitors and synchronizes all aspects of BMDS development, testing and evaluation, corrective actions, acquisition, materiel release, and fielding, to include direct interaction with the materiel developers, test community, combatant commands and the gaining command. The BMDSM is authorized to integrate Service activities and functions related to the BMDS, and to coordinate directly with the applicable Services, MDA offices, Combatant Commands, and other activities as appropriate. The BMDSM also serves as the Joint User Community's centralized manager and</p>		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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integrator of DOTMLPF considerations and products, and provides a framework for Joint integration and problem resolution as DOD's Lead for Ground-based Missile Defense (GMD).

Among the planned increased scope of the BMDS Block capabilities that will be addressed by the JWSP are:

- Additional BMDS interceptor inventories.
- Additional Forward Based X-Band Radar-Transportable (FBX-T) .
- Upgrades to X-Band Dish Radars to Augment FBX-T.
- Upgrades to existing sensors for asymmetric threat coverage.
- Implementing additional sensor netting and improved discrimination via data fusion, with improved threat tracking.
- Expanded Engagement Sequence Group scope, as new elements and capability is added. Expanded C2BMC capabilities and scope, including new decision aids and data displays encompassing all of the above.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Joint Warfighter Support will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks. The JWSP accomplishes this by development and vetting of Operational Concepts through the Joint Theater Air and Missile Defense Office, the Joint National Integration Center, the COCOMS and the Services utilizing seminars, workshops, table top exercises, wargames and simulation exercises that also support Military Utility Assessment updates.

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

Date
February 2006

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
BLOCK 2008																														
CENTCOM US/UK 08 Exercise Set															▲	—	▲													
BMDS Overlay 08 - System Engineering Simulation															▲															
BMDS Overlay 08 - Joint Project Optic Windmill															▲															
Distributed Exercise 08-1															▲															
BMDA Overlay 08 - Blue Flag Exercise															▲	—	▲													
BMDS Overlay 08 - Eagle Resolve 2008															▲	—	▲													
BMDS Overlay 08 - PACOM Exercise Set															▲	—	▲													
Distributed Exercise 08-2															▲															
Integrated Support Plan Update															▲															
BMDS Overlay 08 - Senior Leader Seminar															▲															
BMDS Overlay 08 - BMDS Exercise															▲															
BMDS Overlay 08 - Internal Look Exercise															▲															
Distributed Exercise 08-2C															▲															
IBMDS Overlay 08 - Planning Exercise															▲															
CENTCOM US/UK 09 Exercise Set																														
BMDS Overlay 09 - Juniper Cobra																														

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-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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BMDS Overlay 09 - System Engineering Simulation																												
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BMDS Overlay 09 - Senior Leader Seminar																												

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 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2008							
CENTCOM US/UK 08 Exercise Set				1Q-4Q			
BMDS Overlay 08 - System Engineering Simulation				2Q			
BMDS Overlay 08 - Joint Project Optic Windmill				2Q			
Distributed Exercise 08-1				2Q			
BMDA Overlay 08 - Blue Flag Exercise				3Q-4Q			
BMDS Overlay 08 - Eagle Resolve 2008				3Q-4Q			
BMDS Overlay 08 - PACOM Exercise Set				3Q-4Q			
Distributed Exercise 08-2				3Q			
Integrated Support Plan Update				3Q	3Q		
BMDS Overlay 08 - Senior Leader Seminar				4Q			
BMDS Overlay 08 - BMDS Exercise				4Q			
BMDS Overlay 08 - Internal Look Exercise				4Q	4Q		
Distributed Exercise 08-2C				4Q			
IBMDS Overlay 08 - Planning Exercise				4Q			
CENTCOM US/UK 09 Exercise Set					1Q-4Q		
BMDS Overlay 09 - Juniper Cobra					2Q		
BMDS Overlay 09 - System Engineering Simulation					2Q		
Distributed Exercise 09-1					2Q,4Q		
BMDS Overlay 09 - Blue Flag Exercise					3Q-4Q		
BMDS Overlay 09 - Eagle Resolve 2009					3Q-4Q		
Distributed Exercise 09-2					3Q		
PACOM Exercise Set 2009					3Q-4Q		
BMDS Overlay 09 - Planning Exercise					4Q		
BMDS Overlay 09 - BMDS Exercise					4Q		
BMDS Overlay 09 - Senior Leader Seminar					4Q		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0003 Joint Warfighter Support Block 2010	0	0	0	0	0	52,322	55,519
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

As part of the total Ballistic Missile Defense System (BMDS), the Joint Warfighter Support Program (JWSP) is the key vehicle which enables MDA to work directly and collaboratively with the Combatant Commanders (COCOMs) and Services to define, test, deploy and employ missile defense Block capabilities. The JWSP is divided into two-year Blocks to match the evolutionary capability Blocks of the BMDS. During every Block the JWSP will perform similar functions and activities as the previous Block, but with ever expanding BMDS capabilities incorporated into those activities.

Block 2010 will see numerous BMDS capabilities and or asset quantity increases during the FY10-2011 time-frame. These capabilities will be added to each JWSP activity to ensure the Joint Warfighter is properly trained to employ and integrate these capabilities to address the evolving Ballistic Missile threat environments. Among the increased scope of the BMDS Block capabilities that will be addressed by the JWSP are:

- Additional SM-3 sea-based interceptors and upgraded Aegis cruisers and destroyers.
- Additional Ground-Based Interceptors.
- A second Theater High Altitude Area Defense (THAAD) Fire Unit including 3 launchers, 1 radar, and 24 missiles.
- Improved THAAD booster for increased performance against long range threats.
- Engage on Remote sensor capability for THAAD.
- Add X-Band Dish Radar #2, in conjunction with Forward-Based X-Band Radar-Transportable, for extended tracking and discrimination.
- Implement sensor netting to improve threat tracking and discrimination.
- Expanded Engagement Sequence Group scope, as new elements and capabilities are added.
- Expanded Command, Control, Battle Management and Communications capabilities and scope including new decision aids and data displays encompassing all of the above.

The JWSP consists of seven primary activities, tailored in scope to the current BMDS Block capabilities as they transition, or near transition, to the user. These seven areas are:

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<p>Conducting Exercises and Wargames to enable end-user mission training, qualification, certification and rehearsal of BMDS operations, strengthen user confidence in the current system and shape development of the future BMDS. This activity involves all participating COCOMs in building coherent missile defense plans and tactics, techniques and procedures for the near term BMDS, and then testing cohesive execution of those plans via high fidelity simulations. It also incorporates BMD system engineering and interoperability test activities when possible to leverage MDA material development events by providing real-world training to operators. Finally, exercises and wargames create the conditions for continued, in-depth foreign and/or international participation in BMDS operations and development.</p> <p>Providing “Above-Element” level Training and Education. This activity develops and maintains programs for the Joint Warfighters, Defense officials and the Services to provide stakeholders with critical knowledge on BMD capabilities and system operation. A key part of this activity includes developing BMDS educational courses, establishing training facilities and capabilities within Service/Joint Schools and conducting education and training of select BMDS stakeholders, staffs and organizations on emerging BMDS Block deployment capabilities. As new BMDS capabilities are transitioned to the field, upgrades and improvements will be incorporated to maintain the requisite level of training service.</p> <p>Developing Concepts and Plans that explain emerging and future BMDS material capabilities and technologies to the warfighter. This activity addresses potential impacts to current BMDS operations and results in Joint Warfighter development of new BMDS employment constructs /Concepts of Operations (CONOPs). It introduces far term, emerging BMD technologies and capabilities to the Combatant Commanders and enables them via low fidelity simulations and tabletop exercises to investigate alternative ways of operating the BMDS. It also serves MDA as a prime vehicle for the Warfighter Involvement Process (WIP) which seeks user feedback and guidance to shape future Block development of the BMDS.</p> <p>Creating, developing and coordinating BMDS-wide Integrated Logistics Support policies and procedures to ensure that the requisite Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) and funding will be in place to sustain the deployed BMDS Block capabilities. A pre-condition for effective missile defense is having a solidly supported logistics system. This effort develops transition plans and policy to improve logistics planning and predictability for the Military departments and COCOMs. The plans include not only historical precedent, but also provide a forward look to the Services and COCOMs on what capabilities they may be getting, when they may be getting them, and what their support responsibilities may be.</p> <p>Providing Geographical Combatant Commander (GCC) Support to enable COCOM and Service participation in MDA activities such as wargames, exercises, table tops, flight tests, ground tests, resource planning meetings and other conferences and interchanges where getting user input is critical for an effective outcome. This activity supports the WIP enabling operators, users, and other BMDS stakeholders to travel and participate in missile</p>		

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defense related exercises, tests, activities and other events. User involvement ensures that MDA, the Joint Warfighters and Services will work together to define, field, and operationalize the initial BMDS capability and subsequent new Block capabilities in an efficient and effective manner.

Delivering BMDS Sustainment & Operations through the MDA Missile Defense Operations Center (MOC) and the BMDS Watch Officers. The MOC serves as the MDA's central node for BMDS operations, situational monitoring and information collection in support of the Combatant Commanders' mission to conduct missile defense. This activity facilitates communications between the MDA and operational activities, maintains situational awareness on the status of the BMDS, and coordinates the activities required to return it to a specified status when necessary. It also schedules BMDS asset availability for testing, developmental, and operational/training activities. In sum, the MOC is a key hub in assuring that the operational BMDS is provided with timely and effective logistics support on an ongoing basis.

Supporting the BMDS Manager (BMDSM) function. The Joint Functional Component Command Integrated Missile Defense has been designated by MDA and the Strategic Command as the lead for this function. The MDA funds a portion of this function through the JWSP. The BMDSM monitors and synchronizes all aspects of BMDS development, testing and evaluation, corrective actions, acquisition, materiel release, and fielding, to include direct interaction with the materiel developers, test community, combatant commands and the gaining command. The BMDSM is authorized to integrate Service activities and functions related to the BMDS, and to coordinate directly with the applicable Services, MDA offices, Combatant Commands, and other activities as appropriate. The BMDSM also serves as the Joint User Community's centralized manager and integrator of DOTMLPF considerations and products, and provides a framework for Joint integration and problem resolution as DOD's Lead for Ground-based Missile Defense (GMD).

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560

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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

Joint Warfighter Support will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability Blocks. JWSP will accomplish this and support the Military Utility Assessment through development and vetting of Operational Concepts through the Joint Theater Air and Missile Defense Office, the COCOMs and the Services utilizing seminars, workshops, table top exercises, wargames and simulation exercises.

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE					
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603889C Ballistic Missile Defense Products					
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0204 Joint National Integration Center (JNIC)	71,631	75,728	99,461	106,611	107,560	109,325	110,581
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The mission of the JNIC is to help develop and support the operation of a robust suite of missile defense wargaming, test and evaluation capabilities, which ensures BMDS elements are acquired and integrated into an interoperable, layered system, while simultaneously supporting warfighter operations of designated BMDS elements. The JNIC accomplishes this mission of providing MDA with Agency-level technical integration and BMDS-level operational integration products and services by:

- Supporting the definition, development, and test & evaluation of integrated missile defense Engagement Sequence Group capabilities;
- Planning and executing the implementation of BMDS-level modeling and simulation;
- Supporting BMDS developers and warfighters by exercising missile defense readiness, and wargaming command and control procedures, operational concepts, and doctrinal requirements; and
- Providing BMDS operational support and technical reachback to designated program elements and Combatant Commands (COCOMs).

The JNIC maintains a secure facility that includes the computers; communications; networks; flight, ground, and simulation test bed environments; wargaming complex; environmental support; and other fixed cost capabilities essential for the execution of MDA programs. It provides the enabling infrastructure to support both acquisition and warfighter communities.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
BMDS Operational Security	1,291	1,262	746
RDT&E Articles (Quantity)	0	0	0

Provides increased reliability, availability and maintainability of the JNIC Electronic Security System as well as improved physical security/anti-terrorism provisions.

FY05 Accomplishments:

- BMDS Operational Security maintained, operated/monitored, and began the upgrade of the JNIC's Electronic Security System (ESS).
- Provided support for around the clock security of designated Protection Level 1 (PL 1) resources/System Security Level-A (SSL-A) areas.

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FY06 Planned Program:

- Maintain, operate/monitor, and complete the upgrade of the ESS.
- Install security screening and an X-ray station leading into the JNIC research and development complex.
- Continue to provide around the clock monitoring/security of designated PL 1 resources/SSL-A areas.

FY07 Planned Program:

- Maintain, and operate/monitor the ESS.
- Implement required patches for all security hardware/software throughout the JNIC.
- Continue to provide around the clock monitoring/security for designated PL 1 resources/SSL-A areas.

	FY 2005	FY 2006	FY 2007
BMD Wargaming, Exercises and Analysis	14,296	16,362	33,201
RDT&E Articles (Quantity)	0	0	0

The JNIC functions as the core integration activity for exercising, evaluating, analyzing and refining advanced missile defense concepts that can then be used to improve follow-on blocks to the BMDS. It does this by planning, providing technical support, and executing Operator-in-the-Loop and Element-in-the-Loop Wargames; Joint Warfighter Exercises and Experiments; Missile Defense Integration Exercises; C2BMC integration testing and experiments, and System Level Missile Defense Analyses. These activities allow the developer, tester, and operator to assess capabilities in the same operationally representative environment. Additionally, the JNIC facilitates international cooperation and support of the BMDS through the development and execution of missile defense seminars, workshops, wargames, and other multinational activities. It builds and retains a corporate knowledge base comprised of leading technical experts to respond quickly to customer requirements and perform technical MDA missions.

The JNIC also supports consolidated and integrated modeling and simulation development for the Agency. The BMDS Simulation, formerly known as MDWAR, is the only BMD force-on-force simulation with plug & play tactical message interfaces capable of interactive real-time execution. The Missile Defense and Space Warning Tool is the only trusted tool for injecting simulated missile threats into all Combatant Commands over the Integrated Broadcasting System so that theater and strategic early warning systems can be exercised. The Threat Modeling and Simulation System generates integrated, high-fidelity, force level threat scenarios across all threat objects in flight. Together the development and operation of these Modeling & Simulation tools by the JNIC provides MDA and the missile defense community the ability to simulate the current and evolving BMD environment, threat, and systems for wargames, exercises, training, tests, and performance analyses.

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<p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Supported demonstrations with USN Aegis ships to show interactions with BMDS command and control, radar tracking, and intercept capability. • Conducted Ground Test/Missile Defense Integrated Exercise(s), on behalf of the MDA Director for Test and Assessment, to assess Engagement Sequence Groups and to improve interoperability and integration. • Planned (under the Joint Warfighter Support Program) Missile Defense wargames, demonstrations, and workshops in support of BMDS Block development <ul style="list-style-type: none"> ○ Provided wargame scenarios to enhance understanding of current missile defense capabilities, and to investigate options for future capabilities ○ Conducted the Nimble Titan wargame, which allowed warfighters to develop, assess, and employ tactics, techniques, and procedures to protect the homeland ○ Conducted the first fully distributed Integrated Missile Defense Wargame, which involved globally distributed warfighters using equipment in their remote command and control centers. • Planned, collected data, assessed, examined, and reported on MDA directed missile defense exercises <ul style="list-style-type: none"> ○ Maintained and operated the Exercise Operations Center (to include its related Tactical Display Processors) and the Area Air Defense Commander-Suite ○ Broadcast messages with the Missile Defense Space and Warning Tool for use in over 86 designated exercises and 20 different wargames and demonstrations ○ Populated and maintained the Missile Defense Exercise Connection Website ○ Managed, as directed, the Cooperative Air and Missile Defense Exercise Network and integrated it with JNIC capabilities • Conducted MDA critical analysis efforts in support of <ul style="list-style-type: none"> ○ Block Capability Verification Assessment Reports ○ Other MDA Systems Engineering and Integration directed studies/assessments • Conducted Verification & Validation of BMD models as directed • Provided direct support to the MDA Program Director for International Support in the form of unique capabilities, tools and resources to enhance international missile defense cooperation <ul style="list-style-type: none"> ○ Supported the development of an unclassified and exportable missile defense simulation that is easy to use, transport, and configure (i.e., the International Model & Simulation) ○ Supported activities that promote all orientation to and knowledge of the BMDS and associated BMD concepts and issues ○ Supported the international integration of BMDS block development and system upgrades through bilateral and multilateral BMD analyses, seminars, simulations, and workshops ○ Leveraged International Model and Simulation technologies, processes and products into other JNIC initiatives 		

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<ul style="list-style-type: none">• Provided a foundation for incorporating advanced employment concepts into JNIC planning tools, exercises, test activities, and wargames across multiple security levels<ul style="list-style-type: none">○ Leveraged existing JNIC capabilities and provided technical coordination, analytical support, and an integrating function for advanced missile concepts across the JNIC○ Leveraged connectivity and established interoperability with other Operator-in-the-Loop facilities involved in the incorporation of advanced technical capabilities into BMDS Block development <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Support fleet demonstrations to prove that deployed Aegis ships are capable of integrating into the BMDS command and control structure, can conduct sensor tracking, and possess limited intercept capabilities• Provide wargame scenarios to enhance understanding of current missile defense capabilities and investigate options for future capabilities• Support the Combined Test Force (CTF) conduct of Ground Test/Missile Defense Integrated Exercise(s)• Continue to provide Wargaming Support to the Joint Warfighter Support Program by:<ul style="list-style-type: none">○ Developing and producing documentation to support all directed wargaming events○ Conducting wargames to develop, test, and refine Concept of Operations, Tactics, Techniques and Procedures, and Command and Control plans○ Providing post-event data collection and analysis support○ Providing for the operations and maintenance of the Wargaming Enterprise Support Center○ Managing, as directed, the BMDS Training Center• Continue to plan, collect data, assess, examine, and report on MDA Joint Warfighter Support Program directed missile defense exercises• Continue to conduct MDA critical analysis efforts in support of Block Capability Verification Assessment Reports, and other MDA System Engineering and Integration directed studies/assessments• Conduct Verification & Validation of BMD models as directed• Continue to provide direct support to the MDA Director for International Support in the form of unique capabilities, tools and resources to enhance international missile defense cooperation• Incorporate advanced employment concepts into JNIC planning tools, exercises, test activities, and wargames across multiple security levels		

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FY07 Planned Program:

- Continue to support the integration of missile defense capable deployed USN Aegis ships into the BMDS command and control structure
- Provide wargame scenarios to enhance the understanding of current missile defense capabilities, and to investigate options for future capabilities
- Conduct (as part of CTF-JNIC) Ground Test/Missile Defense Integrated Exercise(s) that assess Engagement Sequence Groups, and support the interoperability and integration of the BMDS program elements
- Operate as MDA's Warfighter Support Center of Excellence in the conduct of BMDS-level wargames, exercises, and training
- Plan, collect data, assess, examine, and report on MDA directed C2BMC integration exercises and experiments and C2BMC spiral integration testing
- Continue to conduct MDA critical analysis efforts in support of Block Capability Verification Assessment Reports, and other MDA System Engineering and Integration directed studies/assessments
- Operate as MDA's Model and Simulation (M&S) Center of Excellence for the development and implementation of BMDS-level M&S critical to wargaming and test support
- Continue to incorporate advanced employment concepts into JNIC planning tools, exercises, test activities, and wargames across multiple security levels

	FY 2005	FY 2006	FY 2007
Infrastructure Development & Support	50,085	54,235	61,514
RDT&E Articles (Quantity)	0	0	0

The JNIC supports the technical development and provides the enabling infrastructure for several critical Agency activities. The JNIC supports the Ground-based Midcourse Missile Defense Mission Control Center Facility, as well as the C2BMC Integration and Test Centers and the C2BMC Experimentation Laboratories. It provides infrastructure support for the Satellite Tracking and Surveillance System's Missile Defense Space Experimentation Center; the Targets and Countermeasures' JNIC Target Operations Center; and the developmental support, as directed, of a common satellite ground station and sensor netting test bed for designated BMDS elements. It also plans, conducts, and supports BMDS Engagement Sequence Group testing and analysis with the Combined Test Force through the operation of the Test Execution Control node for distributed BMDS ground tests.

The JNIC provides the enabling infrastructure that supports operations of the Missile Defense Element, manned by the 100th Missile Defense Brigade, the USNORTHCOM C2BMC Support Center, and USSTRATCOM's Joint Functional Component Command-Integrated Missile Defense. In addition, the JNIC operates the MDA Technical Support Center, which provides situational awareness of the health and status of the end-to-end BMDS; provides network subject matter expertise and technical reachback for the program elements and COCOMs; maintains a technical repository

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<p>of BMDS Implementation Architectures for real-time Operation & Maintenance and configuration control; provides both state change management and asset management technical support for the BMDS; and provides the technical environment for BMDS Watch Officers, Safety Officers, and Information Assurance Officers to execute their assigned duties. The JNIC also operates the Joint Early Warning Laboratory, which provides USSTRATCOM with quick response analyses of real-world launches, and rapid anomaly identification and resolution.</p> <p>The JNIC designs, implements, verifies, operates, maintains and manages secure Information Technology infrastructure(s) and service interfaces, communication circuit connectivity, and tiered service levels on site. It provides additional labor and diagnostic tools for around the clock information management, and facilities operation and maintenance technical support. This technical support, provided outside normal duty hours, is crucial to warfighter mission critical system outage restoration, coordination, and reporting.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none">• Provided Information Management services that<ul style="list-style-type: none">○ Sustained and enhanced the JNIC mission and administrative infrastructures in order to support all missions--RDT&E and operational○ Supported Wargames, Exercises, Integration, Tests, Analyses, and the MDA Chief Information Officer○ Provided O&M of Automated Data Processing Equipment, systems administration, communications, audiovisual equipment, and the Web○ Executed Wide area and local area communications engineering and sustainment○ Operated the Network Operations Center, Computer Center, and Enterprise Network Operations and Security Center○ Provided Integration Data Center, MDA Web Portal, and Technical Information Service Center operations and maintenance○ Provided Media Services and High Performance Computing Center support• Conducted Environment and Facilities O&M to include<ul style="list-style-type: none">○ Operated and maintained the JNIC facility infrastructure○ Provided around the clock support to critical operational assets, including Heating, Ventilation and Air Conditioning, and Electrical (Commercial, Uninterrupted Power Supply, Generators)○ Provided safety training & analyses, fire prevention, and environmental protection support○ Provided facility engineering analyses, estimates, designs, and project installation support○ Accomplished facility services, personnel relocations, furniture reconfigurations, buildouts, and ergonomic & special event support○ Provided Contract & Federal Acquisition Regulation compliant Property Control System including management of supplies○ Monitored janitorial, installation, reproduction & cafeteria subcontracts• Executed Systems Engineering of Mission Critical Systems to include		

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<ul style="list-style-type: none">○ Provided JNIC infrastructure system level engineering, planning, and process management to support concurrent MDA weapon system acquisition and Combatant Command operations○ Conducted engineering and board administration to accomplish requirements management, implementation strategy review, and configuration management of assets and technical implementation architectures○ Executed program risk management○ Maintained the JNIC Mission Assurance Implementation Plan○ Conducted integrated scheduling of JNIC mission critical resources○ Operated and maintained the MDA Technical Support Center● Provided around the clock technical infrastructure support to the<ul style="list-style-type: none">○ Ground Based Midcourse Defense (GMD) Mission Control Center Facility (MCCF)○ GMD Missile Defense Element (MDE) and 100th Missile Defense Brigade○ Brigade Intelligence Cell○ GMD Battle Management, Command, Control and Communications Element Laboratory (BEL)● Provided Flight Test support● Provided multimedia support in the areas of graphics, photography, and video production● Executed public affairs and protocol activities in support of MDA and the JNIC<ul style="list-style-type: none">○ Operated and maintained the Presentation Center, International Event Complex, and major JNIC conference rooms○ Provided visitor/event support○ Promoted the Agency and JNIC missions to external audiences through the use and staffing of an MDA conference/multi-media booth○ Provided Audio Visual system architecture and engineering expertise to ensure reliable operations and repair/sustainment paths <p>FY06 Planned Program:</p> <ul style="list-style-type: none">● Provide ongoing information management services● Conduct ongoing environment and facilities O&M● Initiate environment and facility repairs:<ul style="list-style-type: none">○ Install an electrical backup capability in the Computer Center for servers supporting operational missions○ Execute Phase II and Phase III of the Direct Digital Control (DDC) repair plan○ Correct Facility Installation Standards (FIS) and Safety deficiencies identified in the previous fiscal year○ Replace deteriorating stairwell treads throughout the JNIC○ Procure and install a Hot Water Heater for Building 730		

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<ul style="list-style-type: none">○ Repair and expand West Parking Lot to absorb 300 additional spaces required to support events and added missions○ Begin the Phase I expansion of the Uninterrupted Power System (UPS) Switchgear to support MDA and COCOM organizations operating from the JNIC○ Expand the Emergency Voice System into the rest of the Research and Development Complex (Building 720)● Execute ongoing systems engineering of mission critical systems● Provide continuing media support in the areas of graphics, photography, and video production● Execute continuing public affairs and protocol activities in support of MDA and the JNIC● Continue to provide an enabling infrastructure that supports MDA RDT&E efforts at the JNIC for the:<ul style="list-style-type: none">○ GMD Mission Control Center Facility○ C2BMC Integration and Test Centers, and the C2BMC Experimentation Laboratories○ STSS Missile Defense Space Experimentation Center○ JNIC Target Operations Center○ Joint Warfighter Support Program○ Combined Test Force-JNIC● Continue to provide an enabling infrastructure that supports BMDS operational capability development for the:<ul style="list-style-type: none">○ MDE and 100th Missile Defense Brigade○ USNORTHCOM C2BMC Support Center○ USSTRATCOM Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD) Headquarters and Operations Center○ Joint Early Warning Laboratory● Operate and maintain the MDA Technical Support Center (MTSC); and as directed, expand the situational awareness and BMDS monitoring capability of the BWOs, BSOs, and Information Awareness Officers manning the MTSC● Incorporate and support the MDA Centers of Excellence assigned to the JNIC● Plan and begin, as directed, the consolidation of existing MDA spaces in Colorado Springs into the JNIC <p>FY07 Planned Program:</p> <ul style="list-style-type: none">● Provide ongoing information management services● Conduct ongoing environment and facilities O&M● Initiate environment and facility repairs:<ul style="list-style-type: none">○ Initiate Phase II of the UPS Switchgear expansion○ Construct a waste container enclosure off the south loading docks		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<ul style="list-style-type: none">○ Replace the roof on the Research and Development Complex (Building 720)○ Reinforce the electrical infrastructure of the Network Operations Center (NOC)○ Install a digital monitoring system for the UPS○ Begin Phase I of the replacement of the Heating, Ventilation, and Air Conditioning (HVAC) units (Air Handling Unit, Evaporative Coolers, and Purge Fans)○ Repair mission spaces, and begin the infrastructure support planning for returning tenant (Space Warfare Center) spaces in FY08-09● Execute ongoing systems engineering of mission critical systems● Provide continuing media support in the areas of graphics, photography, and video production● Execute continuing public affairs and protocol activities in support of MDA and the JNIC● Continue to provide an enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) that supports MDA RDT&E efforts at the JNIC for the:<ul style="list-style-type: none">○ GMD Mission Control Center Facility○ C2BMC Center of Excellence○ STSS Missile Defense Space Experimentation Center○ JNIC Target Operations Center○ Warfighter Support Center of Excellence○ Combined Test Force-JNIC○ Models and Simulation Center of Excellence● Continue to provide an enabling infrastructure that supports BMDS operational capability development for the:<ul style="list-style-type: none">○ MDE and 100th Missile Defense Brigade○ USNORTHCOM C2BMC Support Center○ USSTRATCOM JFCC-IMD Headquarters and Operations Center○ Joint Early Warning Laboratory● Operate and maintain the MDA Technical Support Center● Continue, as directed, the consolidation of existing MDA spaces in Colorado Springs into the JNIC		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006	
APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603889C Ballistic Missile Defense Products	
	FY 2005	FY 2006	FY 2007
Special Programs	331	360	366
RDT&E Articles (Quantity)	0	0	0
<p>The JNIC runs the Intelligence Support Center/Special Programs Center for MDA/SI, USSTRATCOM, and the 100th Missile Defense Brigade.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Provided the BMDS Watch Officers (BWOs) manning the JNIC's MDA Technical Support Center (MTSC) with critical situational awareness (SA) intelligence on worldwide ballistic missile developments that could affect the development or execution of the BMDS. • Prepared and delivered over 240 daily intelligence briefings, 50 weekly special educational briefings, and 20 VIP briefings to support the BMDS, worldwide. • Produced credible threat products and engineering trajectories for over 200 DoD users <ul style="list-style-type: none"> ○ Operated a threat system modeling and simulation tool in support of the MDA Intelligence Directorate ○ Maintained and integrated other assigned modeling tools. • Maintained and supported the operation of the MDA Intelligence Support Center (ISC) <ul style="list-style-type: none"> ○ Provided intelligence support and products required to plan and execute MDA sponsored ballistic missile defense wargames, exercises, simulations, training, and activities ○ Provided daily intelligence update briefing to senior JNIC leadership ○ Developed and implemented a plan to add a near-real time infrared detection feed, which allowed the first-time capability to completely monitor the intelligence cycle for on-going missile events ○ Completed the planning and installation of the Cheyenne Mountain Operations Center (CMOC) operations loop into the ISC. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Continue to provide intelligence SA to the BWOs as they monitor BMDS health and status, and state changes. • Continue to produce credible threat products and engineering trajectories for DoD users. • Prepare daily intelligence briefings and special intelligence topic briefings as directed by MDA. • Provide ongoing maintenance and operation support of the ISC for both MDA and COCOM customers. 			

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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FY07 Planned Program:

- Provide intelligence support to the BWOs, and implement any intelligence hardware/software updates required to support the MTSC.
- Continue to produce credible threat products and engineering trajectories for DoD users
 - Operate the threat modeling module within a larger BMDS Simulation tool
 - Support the integration of other threat tools as required.
- Prepare and provide ongoing daily intelligence briefings and summaries as directed.
- Continue the maintenance and operation support of the ISC, and (when directed) plan/initiate the installation of any additional intelligence data feeds required to support the BMDS.

	FY 2005	FY 2006	FY 2007
International Program (Cong Add)	2,500	0	0
RDT&E Articles (Quantity)	0	0	0

In FY05, Congress directed the funding of \$2.5M to the JNIC in support of International Programs.

FY05 Accomplishments:

- Conducted an interactive missile defense workshop in Tokyo for the Japanese Defense Agency.
- Initiated bilateral planning with the United Kingdom (UK) for the negotiation of a formal Program Arrangement to define a combined missile defense effort.
- Planned and executed a classified CONUS-overseas tabletop exercise using distributed simulation over live on the Combined Federated Battle Laboratories Network (CFBL Net) to derive joint US-UK operational concept alternatives.
- Conclude agreements and execute activities under the Program Agreement for Bilateral Activities via Secure Interactive Link (BASIL) between the JNIC and the UK Missile Defense Center.
- Conduct two additional distributed tabletop exercises with the UK to
 - Validate intended simulation boundaries
 - Review policy requirements for the forthcoming UK-US Bilateral, Collaborative Missile Defense Wargame.
- Conduct risk reduction testing between the US and UK over secure link.
- Plan, organize, and conduct the UK-US Bilateral, Collaborative Missile Defense Wargame.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006	
APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603889C Ballistic Missile Defense Products	
	FY 2005	FY 2006	FY 2007
JNIC Security	3,128	3,509	3,634
RDT&E Articles (Quantity)	0	0	0
<p>Provides physical and access control to protect BMDS development capabilities, annual training and education for all assigned personnel, and additional labor and diagnostic tools for around the clock security systems engineering and Security Operations Command Post activities.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Provided program protection, force protection, and an anti-terrorism posture in compliance with MDA and DoD requirements, to include classified material handling, visitor control, and security awareness, training, and education. <ul style="list-style-type: none"> ○ Established an Emergency Management Plan. ○ Reviewed and revised the JNIC Security Training Program. • Provided industrial and physical security, including foreign disclosure, counterintelligence analysis and threat assessment, and guard and response force management. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Continue to provide program protection, force protection, and an anti-terrorism posture in compliance with MDA and DoD requirements, capable of supporting various events scheduled at the JNIC. <ul style="list-style-type: none"> ○ Transition all applicable annual security training to a computer based system. ○ Provide an integrated security approach for all new mission areas assigned to the JNIC. ○ Transition the JNIC Classified Document Control Center from a long-term to short-term storage facility by leveraging the MDA electronic repository for all retained material. • Provide ongoing industrial and physical security, including foreign disclosure, counterintelligence analysis and threat assessment, and guard/response force management. <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Continue to provide program protection, force protection, and an anti-terrorism posture in compliance with MDA and DoD requirements, capable of supporting various events scheduled at the JNIC. • Pursue Capability Maturity Model Integration (CMMI) Level 3 certification for all JNIC security processes and procedures. • Provide ongoing industrial and physical security, including foreign disclosure, counterintelligence analysis and threat assessment, and guard/response force management. 			

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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- Receive and execute local delegated release authority for foreign disclosure information.
- Implement MDA effort to provide comprehensive technical security program in support of Combined Test Force events.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products				

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

The strategy for JNIC mission execution is to employ an integration contract to simultaneously perform all of the BMDS RDT&E tasks with integrated operation and sustainment. The JNIC is operated by missile defense subject matter experts composed of Government military and civilian personnel, Federally Funded Research and Development Center, JNIC Technical Advisory and Assistance Services, and major defense contractors.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Infrastructure Development & Support								
JNIC	MIPR	JNIC/ 50th Space Wing, Schriever AFB, CO	1,978	1,104	1Q	1,124	1Q	4,206
Subtotal Support Costs			1,978	1,104		1,124		4206

Remarks These funds are for utilities and base communications as specified in the Inter-service Support Agreement with the 50th Space Wing.

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

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
BMDS Operational Security								
JNIC	C/CPAF	Northrop Grumman Mission Sys./ CO	1,090	1,063	N/A	541	N/A	2,694
JNIC		JNIC/ Colorado Springs, CO	313	199	N/A	205	N/A	717

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
BMD Wargaming, Exercises and Analysis								
JNIC	C/CPAF	Northrop Grumman Mission Sys./ CO	16,041	11,497	N/A	28,203	N/A	55,741
JNIC		JNIC/ Colorado Springs, CO	5,161	3,284	N/A	3,389	N/A	11,834
JNIC	C/FFP	JNIC/ SRS/Colorado Springs	3,008	1,581	1Q	1,609	1Q	6,198
Infrastructure Development & Support								
JNIC	C/CPAF	JNIC/ CO	85,630	44,729	1/4Q	51,786	1/4Q	182,145
JNIC		JNIC/ Colorado Springs, CO	5,630	3,582	N/A	3,697	N/A	12,909
JNIC	C/FFP	JNIC/ SRS/Colorado Springs, CO	6,194	3,254	1Q	3,313	1Q	12,761
JNIC	C/FFRDC	JNIC/ Mitre Corp/Colorado Springs, CO	3,014	1,566	1Q	1,594	1Q	6,174
Special Programs								
JNIC	C/CPAF	Northrop Grumman Mission Sys./ CO	556	360	N/A	366	N/A	1,282
International Program (Cong Add)								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
JNIC	C/CPAF	Northrop Grumman/ CO	2,500	0	N/A	0	N/A	2,500
JNIC Security								
JNIC	C/CPAF	5457/ CO	5,984	3,012	2/3Q	3,121	2/3Q	12,117
JNIC		JNIC/ Colorado Springs, CO	782	497	N/A	513	N/A	1,792
Subtotal Test and Evaluation			135,903	74,624		98,337		308864

Remarks

These funds are executed by the Integration Center Research and Development Contractor and provide FFRDC and Technical Advisory and Assistance Services employees, for JNIC operations and oversight of the Integration Center Research and Development Contractor

Funds include FY05 Congressional Add of \$2.5 million for International Missile Defense Events and Activities.

IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			137,881	75,728		99,461		313,070
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Remarks

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

Date
February 2006

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JNIC																												
Aegis Ballistic Msl Defense Fleet Msl Tests	▲————▲																											
FTM 04-1	▲																											
FTM 04-2 (FM-8)	▲																											
FTM 04-3 (FM-9)	▲																											
FTM 06-1	▲																											
FTM 06-2	▲																											
FTM 06-3	▲																											
FTM 06-4 (FM-12)	▲																											
FTM 08-1	▲																											
FTM-08-2	▲																											
FTM 08-3	▲																											
Aegis Critical Measurement Program Tests	▲————▲																											
Arrow System Test	▲————▲																											
Airborne Laser System Integrated Flight Test Spt	▲————▲																											
Nimble Titan Wargame	▲————▲																											
Integrated Missile Defense (IMD) Wargames	▲————▲																											

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-4 Schedule Profile

Date
February 2006

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JNIC																												
Missile Defense Integrated Exercises (MDIE)		▲	—	▲	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MDIE 5a		▲																										
MDIE 5b			▲																									
GT 06-1 (MDIE 06a)								▲																				
GT 06-2 (MDIE 06b)											▲																	
MDIE 7a											▲																	
MDIE 7b												▲																
MDIE 8a															▲													
MDIE 8b																▲												
MDIE 9a																				▲								
MDIE 9b																								▲				
IFT14		▲																										
FTG 04-1			▲																									
FTG 04-5								▲																				
FTG 04-2												▲																
FTG 06-2																▲												

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-4 Schedule Profile

Date
February 2006

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
JNIC																																
FTG 06-1 a/b (Salvo Mission)								△																								
FTG 06-4											△																					
FTG 06-3a/b											△																					
FTG 06-5															△																	
FT 06-1								△																								
FT 04-1 (IFT-16a)							△																									
FT 04-4 (CMCM-2)								△																								
FT 04-5 (Cobra Dane LRALT)				△																												
FT 06-6 (GMD RCF-4)											△																					
FT 04-2 (CMCM-1)								△																								
FT 04-3 (MRT)											△																					
FT 06-4 (CMCM-4)												△																				
Support of Regional BMD Exercises	▲				▲				▲				▲				▲				▲											
IMD 05.1 COCOM Exercise		▲																														
IMD 10.4 BMDS SE-SIM Exercise/Wargame	▲				▲				▲				▲				▲				▲											
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-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
JNIC																													
International Events (UK)		▲	—	—	—	▲	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲
International Wargame/Demo/Seminar Events		▲	—	—	—	▲	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲
MDA National Missile Defense Conference Wargame		▲	—	—	—	▲	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	
Multinational Conference Wargame		▲	—	—	—	▲	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	
C2BMC (spirals 4.5, 6.1, and 6.2)					▲	—	—	▲																					
IMD 05.4 BMDS SE-SIM Exercise/Wargame					▲																								
STSS Surrogate Test Bed					▲	—	—	▲																					
NFIRE Experiment								▲																					

Legend	
▲	Significant Event (complete)
★	Milestone Decision (complete)
◆	Element Test (complete)
▼	System Level Test (complete)
▲—▲	Complete Activity
▲	Significant Event (planned)
★	Milestone Decision (planned)
◆	Element Test (planned)
▼	System Level Test (planned)
▲—▲	Planned Activity

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail					Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
JNIC							
Aegis Ballistic Msl Defense Fleet Msl Tests	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
FTM 04-1	2Q						
FTM 04-2 (FM-8)		1Q					
FTM 04-3 (FM-9)		2Q					
FTM 06-1		3Q					
FTM 06-2			1Q				
FTM 06-3			3Q				
FTM 06-4 (FM-12)				1Q			
FTM 08-1				2Q			
FTM-08-2				4Q			
FTM 08-3					2Q		
Aegis Critical Measurement Program Tests	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
Arrow System Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q		
Airborne Laser System Integrated Flight Test Spt		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Nimble Titan Wargame	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q		
Integrated Missile Defense (IMD) Wargames	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Missile Defense Integrated Exercises (MDIE)	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
MDIE 5a	2Q						
MDIE 5b	3Q						
GT 06-1 (MDIE 06a)		4Q					
GT 06-2 (MDIE 06b)			1Q				
MDIE 7a			2Q				
MDIE 7b			3Q				
MDIE 8a				2Q			
MDIE 8b				3Q			
MDIE 9a					2Q		
MDIE 9b					3Q		
IFT14	2Q						
FTG 04-1	3Q						
FTG 04-5		1Q					

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
FTG 04-2		2Q					
FTG 06-2			1Q				
FTG 06-1 a/b (Salvo Mission)		4Q					
FTG 06-4			3Q				
FTG 06-3a/b			2Q				
FTG 06-5				1Q			
FT 06-1		3Q					
FT 04-1 (IFT-16a)		2Q					
FT 04-4 (CMCM-2)		3Q					
FT 04-5 (Cobra Dane LRALT)	4Q						
FT 06-6 (GMD RCF-4)			1Q				
FT 04-2 (CMCM-1)		3Q					
FT 04-3 (MRT)			1Q				
FT 06-4 (CMCM-4)			3Q				
Receptions Staging Onward Movement & Integration	1Q	1Q	1Q	1Q	1Q	1Q	1Q
Support of Regional BMD Exercises	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Weekly Theater Event System Support	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
IMD 05.1 COCOM Exercise	2Q						
IMD 05.2 BMDS TACEX	2Q						
IMD 10.4 BMDS SE-SIM Exercise/Wargame	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
International Events (Japan)	2Q	2Q		2Q		1Q	
International Events (UK)	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
International Wargame/Demo/Seminar Events	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Juniper Cobra	2Q-3Q		3Q,4Q		3Q,4Q		3Q,4Q
MDA National Missile Defense Conference Wargame	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Marine Aviation Weapons and Tactics Squadron	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
Multinational Conference Wargame	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Optic Bar 05	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
Roving Sands	2Q-3Q						
IMD 05.3 Battle Planning Exercise	3Q						

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
International Events (DTRA)	3Q	3Q	3Q	3Q	3Q	3Q	3Q
International Events (NATO)	3Q	4Q	2Q	1Q	4Q	3Q	2Q
International Events (Russia)	3Q	3Q	4Q		1Q	2Q	3Q
International Events (Spain)	3Q	3Q,4Q		1Q		2Q	
International Events (Ukraine)	3Q	1Q,3Q	4Q		1Q		2Q
Joint Project Windmill (JPOW)	3Q	4Q		3Q,4Q		3Q,4Q	
NT Workshop	3Q	3Q	3Q	3Q	3Q	3Q	
National Missile Defense Conference 05 Wargame	3Q						
Ulchi Focus Lens (UFL)	3Q-4Q						
7th Air Force Peninsula Operations Readiness Ex	4Q						
Carrier Strike Group Composite Training Unit Ex	4Q	3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q
Federation Testing	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Multinational Conference Wargame 05	4Q						
PACOM Command and Control	4Q						
Stellar Valcory (FM-8)	4Q						
Terminal Fury	4Q	4Q	4Q	4Q	4Q	4Q	4Q
USFJ Command and Control	4Q						
Virtual Flag	4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
C2BMC (spirals 4.5, 6.1, and 6.2)		1Q-4Q					
IMD 05.4 BMDS SE-SIM Exercise/Wargame		1Q					
International Events (Taiwan)		1Q		1Q		1Q	
JDEP Defense of Israel Evaluation		1Q					
STSS Surrogate Test Bed		1Q-3Q,3Q					
International Events (India)		2Q,4Q		1Q	2Q		1Q
Joint Expeditionary Force Experiment		2Q	2Q	2Q	2Q	2Q	2Q
Keen Edge		2Q	2Q		2Q		2Q
National Missile Defense Conference 06 Wargame		2Q					
IMD 06.1 COCOM Exercise		3Q					
IMD 06.2 BMDS SE-SIM Exercise/Wargame		3Q					
International Events (Australia)		3Q		3Q		3Q	
Multinational Conference Wargame 06		4Q					

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
NFIRE Experiment		4Q					
IMD 06.3 Battle Planning Exercise			1Q				
IMD 06.4 BMDS SE-SIM Exercise/Wargame			1Q				
International Events (Italy)			1Q	4Q		1Q	
International Events (Poland)			1Q		2Q		2Q
International Events (Turkey)			1Q	4Q	4Q		2Q
IMD 07.1 COCOM Exercise			2Q				
IMD 07.3 Battle Planning Exercise			3Q				
National Missile Defense Conference 07 Wargame			3Q				
International Events (Czech Republic)			4Q		1Q		2Q
International Events (France)			4Q		2Q		1Q
Multinational Wargame 07			4Q				
IMD 07.4 BMDS SE-SIM Exercise/Wargame				1Q			
IMD 08.1 COCOM Exercise				2Q			
IMD 08.2 BMDS SE-SIM Exercise/Wargame				2Q			
IMD 08.3 Battle Planning Exercise				3Q			
National Missile Defense Conference 08 Wargame				3Q			
Multinational Conference Wargame 08				4Q			
IMD 08.4 BMDS SE-SIM Exercise/Wargame					1Q		
IMD 09 BMDS SE-SIM Exercise/Wargame					2Q		
IMD 09.1 COCOM Exercise					2Q		
IMD 09.3 Battle Planning Exercise					3Q		
National Missile Defense Conference 09 Wargame					3Q		
Multinational Conference Wargame 09					4Q		
IMD 09.4 BMDS SE-SIM Exercise/Wargame						1Q	
IMD 10.1 COCOM Exercise						2Q	
IMD 10.2 BMDS SE-SIM Exercise/Wargame						2Q	
IMD 10.3 Battle Planning Exercise						3Q	
National Missile Defense Conference 10 Wargame						3Q	
Multinational Conference Wargame 10						4Q	

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0817 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2006	0	0	22,500	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Starting in FY07 Concurrent Test & Operations (CTO-Distributed Multi-Echelon Training System (DMETS) efforts previously included in Ballistic Missile Defense Products PE 0603889C in Projects 0803, 0903 and 0003 within the BMDS Training area are now addressed in CTO-DMETS dedicated Projects 0817 (Block 2006), 0917 (Block 2008) and 0017 (Block 2010).

A. Mission Description and Budget Item Justification

The Concurrent Test & Operations-Distributed Multi Echelon Training System (CTO-DMETS) program provides a vital capability allowing the warfighters to test the BMDS and to “Train as they will Fight” without actually launching target missiles and ballistic missile interceptors. CTO-DMETS is a vital tool that will be used to ensure that the complex Ballistic Missile Defense System (BMDS) will perform to the standards and specifications that it was designed to by conducting system-wide test over the operational hardware and operational communications architecture.

CTO-DMETS will test all functions of the BMDS: sensors, interceptors (shooters) and battle management, command, and control. To validate the system, CTO-DMETS will initiate a test event by stimulating a sensor or sensors and then evaluate every element being tested for accuracy, variance and latency. CTO-DMETS will be scalable and variable to meet goals and objectives of the test being conducted. CTO-DMETS is a primary need on the Strategic Command's Prioritized Capability List (PCL) as essential to sustaining BMDS proficiency. CTO-DMETS consists of live, virtual and constructive training environments for proficiency training, operator certification, wargames and exercises, and BMDS employment Tactics, Techniques and Procedures (TTPs) development, review, testing and revision. This system supplements the training and operational experience provided by the BMDS tests program.

The goal of the CTO-DMETS is to enable end-to end BMDS training that allows operators plug in any/all BMDS elements, as needed. The system will allow operators to train where they fight; allow for scalability from individual BMD assets to regional BMDS capabilities, to the full BMDS global community; safely separate training venues from real-world activities; and inject high-fidelity simulations to run realistic scenarios on operational equipment and networks. This will allow training and exercises for all BMDS forces/users and in all phases of the BMDS mission envelope using all sensor/shooter combinations with the same equipment configurations and communications networks as would be required in real-world live-fire BMD.

The CTO-DMETS will harness network technologies permitting missile defense warfighters to practice together on a virtual battlefield from their home stations. The CTO-DMETS will create a wargame-like environment for units to gain training task coverage and achieve other learning

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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objectives by presenting standardized, technically accurate threat scenarios and other problems, faults, and situations that elicit the performance of individual and collective tasks. As the MDA continues to develop the BMDS to defend the United States, deployed forces, friends and allies, the spiral development of CTO-DMETS will keep pace to meet the continuing need to maintain a viable, safe system and provide a capability to effectively train the crews, elements, staffs and commanders who execute the evolving BMDS mission.

The functions of the CTO-DMETS are to:

- Evaluate integrity of the BMDS.
- Conduct fault identification and isolation.
- Conduct analysis leading to a recommended engineering solution CTO.
- Provide a means for individuals, elements, and Combatant Commanders (COCOMS) to train, maintain proficiency, collaborate, and exercise from their go-to-war stations.
- Aid in unit standardization evaluation and certification for all BMDS personnel and ensure all crews are highly qualified to perform their mission-specific tasks by conducting exercises and wargames executed from actual equipment and networked configurations.
- Validate and practice Tactics, Techniques and Procedures (TTPs) on how to operate the BMDS.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
CTO-DMETS	0	0	22,500
RDT&E Articles (Quantity)	0	0	0

The goal of the CTO-DMETS is to enable end-to end testing of the BMDS and enable BMDS training that allows operators plug in any/all BMDS elements, as needed. The system will allow for scalable testing of the BMDS over the operational architecture as well as allow operators to train where they fight utilizing a parallel architecture either physically separated or logically separated from the operational one; training will be scalable as well; from individual BMD assets to regional BMDS capabilities to the full BMDS global community; safely separate training venues from real-world activities; and inject high-fidelity simulations to run realistic scenarios on operational equipment and networks.

FY06 Planned Program: Activity and funding for CTO-DMETS in FY06 is within Project 0803 (Joint Warfighter Support Program) in the Training Task.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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FY07 Planned Program:

- Initiate engineering analysis and trades.
- Develop initial designs and conduct initial design reviews.
- Begin procurement of hardware to implement Concurrent Test & Operations (CTO).
- Begin development, testing and integration of software required for CTO.
- Implement the dedicated CTO-DMETS network designed in FY06. This will entail the procurement, fabrication, fielding, and testing of Communications and Networking Equipment to support the CTO-DMETS.
- Provide 24/7 schedule availability for CTO-DMETS exercises with full function displays and interactive simulations.
- Design and implement connectivity to Aegis underway, the BMD Deployable X-Band Radar and Sea-Based X-Band Radar, as participants in CTO-DMETS training exercises.
- Design connectivity to theater assets Patriot and THAAD, through theater/regional battle management capability.
- Design and implement a CTO-DMETS red cell enabling off-nominal threat scenarios.
- Design, procure equipment for, fabricate, field and test two training enclaves to meet warfighter requirements, including scalability. Each enclave requires equipment to support Simulation/Stimulation, computing resources duplicating each of the major systems (i.e. Command, Control, Battle Management and Communications (C2BMC), Ground-Based Missile Defense (GMD) Fire Control, and Integrated Tactical Warning and Attack Assessment (ITW/AA) system).
- Commence availability for training, scalable to an individual COCOM.
- Continue to provide Operations and Support to warfighter training.
- Technically refresh installed training equipment to ensure it matches the deployed BMDS configurations.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

The CTO-DMETS Project Office will follow the MDA's capability-based acquisition strategy that emphasizes assessment, phased-development, testing and evolutionary acquisition through the definition of distinct phases and two-year capability blocks. The CTO-DMETS Project Office accomplishes this by design and development activities that support System Specification and Implementation Plan updates, and then vetting war fighter requirements through the MDA management processes and through the warfighter through forums such as the Integrated Training Working

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
Group, Joint Forces Component Command -- Integrated Missile Defense, the COCOMS and the Services utilizing seminars, workshops, table top exercises, wargames and simulation exercises.		

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
CTO-DMETS								
	C/CPAF	MDNT/B/ Arlington, VA	0	0	N/A	5,200	N/A	5,200
Subtotal Product Development			0	0		5,200		5200

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
CTO-DMETS								
	C/CPAF	MDNT/B/ Arlington, VA	0	0	N/A	5,550	2Q	5,550
Subtotal Support Costs			0	0		5,550		5550

Remarks

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

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
CTO-DMETS								
	C/CPAF	MDNT/B/ Arlington, VA	0	0	N/A	8,000	2Q	8,000
Subtotal Test and Evaluation			0	0		8,000		8000

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
CTO-DMETS								
	C/CPAF	MDNT/B/ Arlington, VA	0	0	N/A	3,750	2Q	3,750
Subtotal Management Services			0	0		3,750		3750

Remarks

Project Total Cost			0	0		22,500		22,500
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Remarks

Funding for CTO-DMETS in FY06 is contained in Project 0803 (Joint Warfighter Support Program)

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BLOCK 2006																												
Refresher Training Equip/Current HW/SW Versions									▲	—	▲																	
Complete CTO-DMETS Network									▲																			
Establish Two Additional Training Enclaves									▲	—	▲																	
Engineering Workups for FY08 Tasks											▲																	
Increase Training Availability To 2 Shifts											▲																	

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2006							
Refresher Training Equip/Current HW/SW Versions			1Q-4Q				
Complete CTO-DMETS Network			3Q				
Establish Two Additional Training Enclaves			3Q-4Q	1Q-4Q			
Engineering Workups for FY08 Tasks			4Q				
Increase Training Availability To 2 Shifts			4Q				

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603889C Ballistic Missile Defense Products			

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0917 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2008	0	0	0	13,800	11,100	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Funding for FY06, is addressed in Project 0803. Beginning in FY07 a unique Project structure is established for CTO-DMETS, with FY07 funding in Project 0817, Block 2008 (FY08-09) in Project 0917, and Block 2010 (FY10-11) in Project 0017.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) is developing a Concurrent Test & Operations (CTO)/Distributed Training Capability (DMETS) that will consist of a systemic, scalable testing capability to ensure and validate the operational specifications of the BMDS and a live, virtual and constructive training environments for proficiency training, operator certification, wargames and exercises, and Tactics, Techniques and Procedures (TTPs) development, review, testing and revision.

CTO-DMETS will provide 1) a systemic approach to validating and verifying the integrity of the BMDS through the ability to test the BMDS at the engineering/software level. Each spiral update, block improvement element addition or change will require a rigorous analysis to verify system operability. The only way to do this is to test the operational system, CTO will do this. 2) DMETS supplements the training and experience provided by the limited amount of live-fire Ballistic Missile Defense System (BMDS) tests possible. It will become one of the most vital components of the BMDS by ensuring all users have the ability to adequately train for employment of the BMDS without actually launching target missiles and ballistic missile interceptors. CTO is a vital tool that will be used to ensure that the complex Ballistic Missile Defense System (BMDS) will perform to the standards and specifications that it was designed to by conducting system-wide test over the operational hardware and operational communications architecture.

CTO will test all functions of the BMDS: sensors, interceptors (shooters) and battle management, command, and control. To validate the system, CTO will initiate a test event by stimulating a sensor or sensors and then evaluate every element being tested for accuracy, variance and latency. CTO will be scalable and variable to meet goals and objectives of the test being conducted.

The goal of the DMETS is to enable end-to end BMDS training through an architecture that lets operators plug in any/all BMDS elements desired and simulate/train as needed. The system will allow operators to train where they fight, allow for scalability from individual BMD assets to regional BMDS capabilities, up through the entire BMDS global community, safely separate training venues from real-world activities, and inject high-fidelity simulations to run realistic scenarios on operational equipment and networks. This will allow training and exercises for all BMDS forces/users and in all phases of the BMDS mission envelope using all sensor/shooter combinations with the same equipment configurations as would

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>be required in real-world live-fire BMD. DMETS will provide a system to enable routine training and exercising at the BMDS (above element) level, giving element operators and crews the opportunity to exercise across BMDS elements, communications, and coordination aspects for defensive operations.</p> <p>The CTO-DMETS will harness network technologies permitting missile defense warfighters to practice together on a virtual battlefield from their home stations. The CTO-DMETS will create a wargame-like environment for units to gain training task coverage and achieve other learning objectives by presenting standardized, technically accurate threat scenarios and other problems, faults, and situations that elicit the performance of individual and collective tasks. As the MDA continues to develop the BMDS to defend the United States, deployed forces, friends and allies, the spiral development of CTO-DMETS will keep pace to meet the continuing need for a viable, safe system and to effectively train the crews, elements, staffs and commanders who execute the evolving BMDS mission.</p> <p>The functions of the CTO-DMETS are to:</p> <ul style="list-style-type: none">• Evaluate integrity of the BMDS.• Conduct fault identification and isolation.• Conduct analysis leading to a recommended engineering solution• Provide a means for individuals, elements, and Combatant Commanders (COCOMs) to train, maintain proficiency, collaborate, and exercise from their go-to-war stations.• Aid in unit standardization evaluation and certification for all BMDS personnel and ensure all crews are highly qualified to perform their mission-specific tasks by conducting exercises and wargames executed from actual equipment and networked configurations.• Validate and practice Tactics, Techniques and Procedures (TTPs).		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	

D. Acquisition Strategy

The CTO-DMETS Project Office will follow the MDA's capability-based acquisition strategy that emphasizes assessment, phased-development, testing and evolutionary acquisition through the definition of distinct phases and two-year capability blocks. The CTO-DMETS Project Office accomplishes this by design and development activities that support System Specification and Implementation Plan updates, and then vetting war fighter requirements through the MDA management processes and through the warfighter through forums such as the Integrated Training Working Group, Joint Forces Component Command -- Integrated Missile Defense, the COCOMS and the Services utilizing seminars, workshops, table top exercises, wargames and simulation exercises.

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BLOCK 2008																																
Engineering Workup for FY09 Tasks																△																
Interface w/Additional Element System Trainers																△				△												
Legend																																
 Significant Event (complete)  Milestone Decision (complete)  Element Test (complete)  System Level Test (complete)  Complete Activity														 Significant Event (planned)  Milestone Decision (planned)  Element Test (planned)  System Level Test (planned)  Planned Activity																		

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2008							
Engineering Workup for FY09 Tasks				4Q			
Interface w/Additional Element System Trainers				4Q	4Q		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products						
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0017 Concurrent Test & Operations (CTO) - Distributed Multi-Echelon Training System (DMETS) Block 2010	0	0	0	0	0	9,300	9,600
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: CTO-DMETS activity is divided into two-year capability Blocks, with funding and planned activity addressed in those Blocks: Block 2006 (FY06-07) = Project 0817; Block 2008 (FY08-09) = Project 0917; Block 2010 (FY10-11) = Project 0017.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) is developing a Concurrent Test & Operations (CTO) Distributed Training Capability (DMETS) that will consist of a systemic, scalable testing capability to ensure and validate the operational specifications of the BMDS and a live, virtual and constructive training environments for proficiency training, operator certification, wargames and exercises, and Tactics, Techniques and Procedures (TTPs) development, review, testing and revision.

CTO-DMETS will provide 1) a systemic approach to validating and verifying the integrity of the BMDS through the ability to test the BMDS at the engineering/software level. Each spiral update, block improvement element addition or change will require a rigorous analysis to verify system operability. The only way to do this is to test the operational system, CTO will do this. 2) DMETS supplements the training and experience provided by the limited amount of live-fire Ballistic Missile Defense System (BMDS) tests possible. It will become one of the most vital components of the BMDS by ensuring all users have the ability to adequately train for employment of the BMDS without actually launching target missiles and ballistic missile interceptors. CTO is a vital tool that will be used to ensure that the complex Ballistic Missile Defense System (BMDS) will perform to the standards and specifications that it was designed to by conducting system-wide test over the operational hardware and operational communications architecture.

CTO will test all functions of the BMDS: sensors, interceptors (shooters) and battle management, command, and control. To validate the system, CTO will initiate a test event by stimulating a sensor or sensors and then evaluate every element being tested for accuracy, variance and latency. CTO will be scalable and variable to meet goals and objectives of the test being conducted.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				

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PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
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PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
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D. Acquisition Strategy

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	8,802	10,548	17,061	22,383	18,114	17,061	15,312
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common non-headquarters support functions across the entire program such as strategic planning, program integration, business management, cost estimating, contracting, and financial management, to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Many of these costs reside within the Missile Defense Agency Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities, although some functions and costs within this program element are performed by MDA employees assigned within the National Capital Region (NCR). Other costs included herein provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Civilian Salaries and Support	8,802	10,548	17,061
RDT&E Articles (Quantity)	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 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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