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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	151,217	225,268	204,320	199,468	246,291	286,286	305,365
6010 Advanced Technology Development	148,348	0	0	0	0	0	0
0502 Advanced Technology Development	0	198,381	199,970	195,074	241,173	280,293	298,692
0503 Laser/LADAR Technology	0	22,253	0	0	0	0	0
6090 Program-Wide Support	2,869	0	0	0	0	0	0
0602 Program-Wide Support	0	4,634	4,350	4,394	5,118	5,993	6,673

Note: Beginning in FY 2004, the BMD Technology Program Element (PE) projects change, as follows:

-Project 6010 changes to 0502

-Project 6090 changes to 0602

All projects will continue to employ their previous names. Project numbers more accurately reflect the Missile Defense Agency's (MDA's) desired management structure.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The Ballistic Missile Defense System (BMDS) requires constantly improving technology and new concepts in order to implement its strategy of Block-by-Block capability improvements on two-year cycles. The Program Element (PE) 0603175C serves two major roles in this strategy. It funds component technologies that feed into larger systems, thereby delivering product improvement technologies for deployed systems. Additionally, the PE funds the initial demonstration of innovative new concepts that, if successful, can enhance the BMDS in a particular Block improvement.

Many of today's baseline BMD projects are viable due to previous investments in technology research, development, and maturation. Examples include: the Lightweight Exoatmospheric Projectile (LEAP) for Sea-Based Midcourse Defense, indium antimonide and mercury cadmium telluride focal plane arrays, used (respectively) on the Theater High Altitude Area Defense (THAAD) and Space Tracking and Surveillance Systems (STSS), among other systems; 32-bit radiation-hardened Reduced Instruction Set Computer (RISC) processors for image analysis; composite materials for lightweight aerospace vehicle structures; cooled window capability for seekers; interferometric fiber optic gyroscopes for miniaturized guidance and control; master frequency generator for PAC-3 RF seeker and solid-state gallium arsenide transmitter/receivers for advanced missile defense (XBR, THAAD, AEGIS); and dual wavelength passive imagery for BMD test missions and future elements. There is increased emphasis in the BMD Technology program on laser and electro-optical technologies for missile detection, tracking, imaging, and other applications. Electro-optical systems for missile defense provide a significant opportunity for a large return on investment while complementing radar systems.

MDA Advanced Systems has co-responsibility for the Enhancement Plan (EP) with the Systems Engineering and Integration and Test & Assessment organizations. A System Evolution Plan (SEP) produced by Systems Engineering, charts the Block-by-Block improvements in the BMDS. The EP serves as a companion document to the SEP by describing the mix of new concepts and technologies that feed into these enhancements. The EP links the advanced concepts in development and is used to measure technology execution against technology vision of future BMDS Block enhancements. This PE funds those new concepts and technologies.

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MDA has defined the optimum content of Blocks 2004 and 2006. The MDA Systems Engineer has produced a Block 2006 Gaps Analysis which describes residual unfilled capabilities at the end of Block 2006. Every project in PE number 0603175C fills at least one of those gaps in capability.

The flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in Battle Management Command Control plus Systems Engineering & Integration now guides the integration of new technology into the BMD System and Test Bed. The FY 2005 MDA Technology budget reflects an integrated strategy to provide new and better technologies to the BMD System when and where they are most needed. Focused by MDA's architectural and engineering processes, the program enhances MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The program seeks to identify high-payoff technologies with a risk level commensurate to the payoff.

Program Operations under this project covers personnel and related support costs, statutory and fiscal requirements. It may also include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. It also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	151,130	240,820	205,791
Current President's Budget (FY 2005 PB)	151,217	225,268	204,320
Total Adjustments	87	-15,552	-1,471
Congressional Specific Program Adjustments	0	-13,000	0
Congressional Undistributed Adjustments	0	-2,552	0
Reprogrammings	3,228	0	-1,471
SBIR/STTR Transfer	-3,141	0	0

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
6010 Advanced Technology Development	148,348	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The efforts contained in project 6010 in FY 2003 are moved to project 0503 in FY 2004 and out. This move was made to more appropriately align the PE with MDA goals.

A. Mission Description and Budget Item Justification

The Advanced Technology Development program develops technology to counter missiles in all phases of flight by investing in technologies according to engineering discipline: Sensor Systems, Engagement Systems, High Altitude Airships, and Innovative Technologies.

The Sensing Systems Technology area focuses on EO/IR Active Sensors, EO/IR Passive Sensors, Radar Systems Technology, Early Launch Detection and Tracking, and Microsatellites.

- The EO/IR Active Sensors task, under the Advanced Discriminating LADAR Technology (ADLT) program, is developing advanced laser radar technology for insertion in future kinetic kill vehicle systems. LADAR technology will improve discrimination performance against advanced threats and increase the Probability of Engagement Success for advanced kill vehicles.

- The EO/IR Passive Sensors task develops basic technologies in components and materials focused on enhancing the capabilities of the BMDS. Examples include:

- Multi-color focal plane arrays
- High-power semi-conductors
- Radiation-hardened electronic components
- VLWIR Sensors

- The Radar Systems Technology (formerly: Advanced Radar Technology) program integrates and tests next-generation transmitters, receivers, antennas, signal processors, and software to demonstrate new concepts and technologies to insert in future BMDS Blocks. These technologies will be available for insertion into Blocks 08 through 12.

- The Early Launch Detection Technology (ELDT) program develops, integrates, and tests optical and radio-frequency concepts for detecting and tracking missile launches through clouds. These technologies support earlier commitment of interceptors.

- The Microsatellite program is investigating small satellite concepts, payloads, and applications for future BMDS technology demonstrations and test assets.

The Engagement Systems Technology area consists of: Advanced Discrimination Initiative (ADI), Long Range Atmospheric Defense and Multiple Kill Vehicles (MKVs).

- The MKV program develops multiple, lightweight, sophisticated, and lethal interceptors on a single-carrier vehicle that is compatible with existing launch systems.

- The ADI effort provides scientific and technical expertise, laboratory hardware testing, data analysis, and mission planning to support the development of engineering specifications. ADI also investigates the fundamental limits of advanced discrimination weapons, sensors, and engagement strategies to develop new ADI concepts and preliminary designs.

- The Airship program is MDA's participation in the High Altitude Airship (HAA) Advanced Concept Technology Demonstration (ACTD) and supports the development of uninhabited, long-endurance platform to carry a wide range of BMD assets.

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- The Innovative Technology and Analysis (IT&A) area consists of Innovative Science and Technology (IS&T) and technical analysis.
- The SBIR Team oversees the MDA SBIR Evaluation and Debriefing process for all MDA Phase I and Phase II proposals. The Team also manages AS Phase I and Phase II SBIR Contracts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
SENSING SYSTEMS TECHNOLOGY	54,641		
RDT&E Articles (Quantity)			

FY 2003 SENSING SYSTEMS ACCOMPLISHMENTS:

- Range Resolved Doppler Imaging (RRDI) Laser Radar (LADAR) - Demonstrated 30 Hz real-time RRDI LADAR proof-of-concept. Completed baseline breadboard for RRDI (TRL4).
- Obtained real-time measurement of RRD imagery for:
 - Advanced Measurements Optical Range (AMOR) ranges of 60 - 300 km.
 - Re-entry vehicles (RVs), balloon, and retro-targets.
 - Spin, precession, tumbling, and closely space object (CSO) cases.
- Advanced Focal Plane Arrays (FPA) - Five FPA efforts were funded during FY 2003. These efforts focused on demonstrating simultaneous multi-waveband infrared FPAs. Leading interceptor application FPA material is Mercury Cadmium Telluride (TRL 2-3).
- Further mature simultaneous two-color and three-color FPAs (TRL 3-4).
- Focal Plane Arrays - Continued Mercury Cadmium Telluride and Silicon Arsenide focal plane arrays for space surveillance applications (TRL 3-4). Continued development in Mercury Cadmium Telluride (HgCdTe) on Silicon to improve HgCdTe FPA operability and producibility. Also continued development in Strained Layer Superlattice (SLS) technology with the goal of achieving longer wavelength response at higher operating temperatures. Demonstrated the first ever SLS imagery with a 256x256 Type II GaSb/InAs detector. (TRL3)
- Developed large format dual-band Focal Plane Arrays (FPA) for Boost Phase applications. Demonstrated two-color sandwich IRFPA camera on successful HALO I mission resulting in the impending retirement of a heritage system. The retirement results in enhanced data collection capabilities and substantial cost avoidance. Initiated integration of a large format Quantum Well Infrared Photodetector (QWIP) FPA into a camera system for flight test. (TRL 3-5).
- Silicon Seeker Focal Plane Cooler Assembly - Initiated the integration of low-temperature (10 Kelvin) superconducting silicon FPA and processor electronics into an interceptor seeker breadboard (TRL 3-4).
- Proof-of-Principle 10-Kelvin Cryocooler - Continued development of a 10-Kelvin cryocooler using pulse tube technology for space surveillance application. Enables extended tracking range for STSS (TRL 3-5).

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603175C Ballistic Missile Defense Technology	
<p>- Continued analysis and development of technologies and algorithms to support Next Generation Radar technology requirements. RST technology thrusts include development of high power Ga:As amplifiers to increase radar sensitivity; advanced digital receivers with higher bandwidth and dynamic range to improve discrimination performance; system engineering and design for transportable X-band radar systems; and development of signal processing and algorithmic techniques to increase robustness against clutter and ECCM. (TRL 3-4).</p> <p>- Over the horizon radar (OTHR) - Used available OTHR assets to collect data on two Aerial Dispersion Experiments (ADE) scud launches and one target of opportunity launch demonstrating capability to detect and track a missile launch event soon after liftoff (TRL 4). Collected data for a concept exploring the use of bi-static receivers to improve OTHR system performance.</p> <p>- Passive Coherent Location (PCL) - Collected data on four Aerial Dispersion Experiment (ADE) launches. Demonstrated the ability to develop missile tracks shortly after launch. Evaluated message formatting to provide PCL tracks in Joint Tactical Integrated Data System (JTIDS)/Link-16 format (TRL 3-5).</p> <p>- Hypertemporal Infrared Sensor (HTI) and First Alert and Cueing (FAC) Sensor - Successfully collected data on 3 of 4 ADE missions. Also had successful collections on the two Advanced Systems Flight Test missions.</p>			
	FY 2003	FY 2004	FY 2005
ENGAGEMENT SYSTEMS TECHNOLOGY	43,911		
RDT&E Articles (Quantity)			
FY 2003 ENGAGEMENT SYSTEMS ACCOMPLISHMENTS:			
<ul style="list-style-type: none"> - Conducted system design reviews and kill vehicle preliminary design reviews of three competing contractor teams MKV concepts. - Conducted laboratory demonstrations of seeker breadboard and divert propulsion system components (TRL3). - Defined acquisition strategy and released request for proposals for selection of one contractor team to begin system demonstration hardware development. - Initiated and completed ACN-0040-GMD-DEV-Rev0, Advanced Discrimination, approved by the BMD System Configuration Control Board. - Initiated Engineering Change Proposal - 0011. - Initiated ASN-0020-GMD-DEV-Rev0 Kill Vehicle Enhancement Study. - Initiated Concept Development - Developed concepts for strategic terminal defenses in the upper atmosphere. 			

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	FY 2003	FY 2004	FY 2005
HIGH ALTITUDE AIRSHIP	7,859		
RDT&E Articles (Quantity)			
FY 2003 HIGH ALTITUDE AIRSHIP ACCOMPLISHMENTS:			
<ul style="list-style-type: none"> - Three contracts were awarded in FY03 for the HAA ACTD Concept Definition, Phase 1 to Lockheed Martin Naval Electronics and Surveillance Systems, McDonnell Douglas Corporation (subsidiary of the Boeing Company), and Aeros Aeronautical Systems Corp. The concepts were evaluated and resulted in a down select to Lockheed Martin to continue into the Design and Risk Reduction, Phase 2. 			
	FY 2003	FY 2004	FY 2005
INNOVATIVE TECHNOLOGY AND ANALYSIS	6,165		
RDT&E Articles (Quantity)			
FY 2003 INNOVATIVE TECHNOLOGY AND ANALYSIS ACCOMPLISHMENTS:			
<ul style="list-style-type: none"> - Received: Over 330 New Ideas - Approved: 42 Approved for Execution - Funded: 12 			
	FY 2003	FY 2004	FY 2005
STATUTORY AND MANDATED	5,892		
RDT&E Articles (Quantity)			
The SBIR/STTR, Historically Black Colleges and Universities / Minority Institutions (HBCU/MI) and Technology Applications projects are all covered within the BMD Technology PE Statutory and Mandated program.			
FY 2003 STATUTORY AND MANDATED ACCOMPLISHMENTS:			
<ul style="list-style-type: none"> - Incrementally funded nine HBCU/MI contracts in the areas of electronics, sensors, materials, and BMC3 selected in FY 2003 competition. - Several grants go to the same HBCU with different Points of Contacts. 			

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<p>HBCU/MIs include:</p> <ul style="list-style-type: none">*Norfolk State*University of Texas, El Paso*Alabama A&M*Florida International University*Fisk University*City College of CUNY*North Carolina A&T*University of New Mexico*University of Puerto Rico <p>SBIR/STTR:</p> <ul style="list-style-type: none">- Established 102 Tri-service evaluation teams- Coordinated the evaluation of > 2000 Phase 1 proposals, resulting in > 6000 evaluations, resulting in 424 MDA Phase 1 contracts- Coordinated the evaluation of 100's Phase 2 proposal, resulting in > 200 MDA Phase 2 contracts- Coordinated the development of 21 MDA/AS specific topics, resulting in 88 Phase 1 contracts- Coordinated the invitation of 42 MDA/AS Phase 2 proposal invitations.- MDA/AS will be leveraging > \$40 million in SBIR/STTR investments by end of this fiscal year.- Establishing technology roadmaps for SBIR/STTR focused investments in following areas: Photonics, MKV, ADLT, EDLT, ASIC, and others.- The Technology Applications program assisted 76 MDA-funded companies prepare to commercialize their technologies and 17 MDA-funded company university-based researchers assess and implement their commercialization work plans.- Published 4 issues of the MDA Update, highlighting 49 MDA research projects; wrote 44 new technology spin-off articles for the website.- Published two new reports highlighting 24 research projects.- Exhibited at 5 conferences.- Improved and expanded mda.technology.net website as well as MDALink.- Program support for the administration of the SBIR/STTR Program.		

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	FY 2003	FY 2004	FY 2005
DIRECTED INTEREST	29,880		
RDT&E Articles (Quantity)			

FY 2003 DIRECTED INTEREST ACCOMPLISHMENTS:

- Bottom Anti-reflective Coating
- Massively Parallel Optical Interconnects
- Wide Bandgap Silicon Carbide Semiconductor Research
- Gallium Nitride High Power Microwave
- Improved Materials for Optical Memories
- Thick Film Silicon Coatings
- High Data Rate Communications
- Advanced RF Technical Development
- AEOS MWIR Adaptive Optics
- Wafer Scale Planarization
- High Resolution Color Imaging

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

BMD Technology does not have any major performers that qualify for this category based on the Financial Management Regulations.

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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0502 Advanced Technology Development	0	198,381	199,970	195,074	241,173	280,293	298,692
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Advanced Technology Development program develops technology to counter missiles in all phases of flight by investing in technologies according to engineering discipline: Sensor Systems, Engagement Systems, High Altitude Airships, and Innovative Technologies.

The Sensing Systems Technology area focuses on EO/IR Active Sensors, EO/IR Passive Sensors Radar Systems Technology, Early Launch Detection and Tracking, and Microsatellites. Sensing Systems has two core missions: Concept Development and Demonstration, and Technology Development and Maturation. The Concept Development and Demonstration task performs system development and testing for concepts with High Technology Maturity Levels. Current efforts include the Airborne Infrared Surveillance (AIRS) and Unconventional Radar Concepts such as Passive Coherent Location and Hybrid Over-the Horizon Radar. The Technology Development and Maturation task develops technologies such as the Advanced Discriminating Ladar, EO/IR Focal Plane Arrays and Sensor Components, and advanced Radar System Technologies for insertion into BMDS elements and future element upgrades.

- The EO/IR Active Sensors task, under the Advanced Discriminating LADAR Technology (ADLT) program, is developing advanced laser radar technology for insertion in future kinetic kill vehicle systems. LADAR technology will improve discrimination performance against advanced threats and increase the Probability of Engagement Success for advanced kill vehicles.

- EO/IR Passive Sensors task develops basic technologies in components and materials focused on enhancing the capabilities of the BMDS. Examples include:
 - Multi-color focal plane arrays
 - High-power semi-conductors
 - Radiation-hardened electronic components
 - VLWIR Sensors

- The Radar Systems Technology (formerly: Advanced Radar Technology) program integrates and tests next-generation transmitters, receivers, antennas, signal processors, and software to demonstrate new concepts and technologies to insert in future BMDS Blocks. These technologies will be available for insertion into Blocks 08 through 12.

- The Early Launch Detection Technology (ELDT) program develops, integrates, and tests optical and radio-frequency concepts for detecting and tracking missile launches through clouds. These technologies support earlier commitment of interceptors.

- The Microsatellite program is investigating small satellite concepts, payloads, and applications for future BMDS technology demonstrations and test assets.

The Engagement Systems Technology area consists of: Advanced Discrimination Initiative (ADI) and Multiple Kill Vehicles (MKVs).

- The MKV program develops multiple, lightweight, sophisticated, and lethal interceptors on a single-carrier vehicle that is compatible with existing launch systems. The MKV project is on pace for insertion in Block 10.

- The ADI is a cross-Agency effort to modify BMD System weapons and sensors to defeat adversary countermeasures and increase overall system effectiveness in the midcourse phase. The Initiative also develops command-control strategies and prototype mission software to control engagement sequences that invoke advanced discrimination. The ADI effort provides scientific and

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technical expertise, laboratory hardware testing, data analysis, and mission planning to support the development of engineering specifications. ADI also investigates the fundamental limits of advanced discrimination weapons, sensors, and engagement strategies to develop new ADI concepts and preliminary designs. The Ground-based Midcourse Defense element is the transition agent for ADI. Under the ADI, MDA will conduct a series of ground tests in FY 2004 - FY 2005.

- The Airship program is MDA's participation in the High Altitude Airship (HAA) Advanced Concept Technology Demonstration (ACTD) and supports the development of uninhabited, long-endurance platform to carry a wide range of BMD assets.
- The Innovative Technology and Analysis (IT&A) area consists of the Advanced Systems Innovation Cell (ASIC), Innovative Science and Technology (IS&T) and technical analysis.
- The SBIR Team oversees the MDA SBIR Evaluation and Debriefing process for all MDA Phase I and Phase II proposals. The Team also monitors AS Phase I and Phase II SBIR Contracts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
SENSING SYSTEMS TECHNOLOGY	0	59,219	72,067
RDT&E Articles (Quantity)			

FY 2004 SENSING SYSTEMS PLANNED PROGRAM:

- Upgrade range-resolved Doppler imaging LADAR to full power and other discriminating seeker capabilities (TRL 3-5).
- An infrared dual-band camera will continue development and participate in 3-4 flight tests in FY04.
- Further mature simultaneous two-color and three-color FPAs (TRL 3-4).
- Continue limited development of space-based surveillance FPAs and cryocoolers for Space Tracking and Surveillance System (STSS) applications (TRL 4-7). Delivering two different Quantum Well Infrared Photodetector (QWIP) cameras to Airborne Laser program for improved infrared search and track capability.
- Proof-of-principle 10-Kelvin Cryocooler - Continue development of a 10-Kelvin cryocooler using pulse tube technology for space surveillance application. Enables extended tracking range for SBIRs-Low (TRL 3-5).
- The Radar Systems Technology (formerly: Advanced Radar Technology) program integrates and tests next-generation transmitters, receivers, antennas, signal processors, and software to demonstrate new concepts and technologies to insert in future BMDS Blocks.
 - Continue design and technical analysis on advanced antenna technologies; perform distributed aperture coherence tests; deliver high voltage S-Band Ga:As high power amplifier chips; perform demonstration of wideband digital receiver technology.
 - Develop cohere-on-transmit distributed aperture algorithms and demonstrate in X-band laboratory tests.

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<ul style="list-style-type: none">-- Develop prototype low power density phased array panel demonstrating proof-of-concept of affordable high-performance scaleable phased array architecture.-- Demonstrate and deliver producible and reliable high voltage X-band GaAs amplifiers providing improved sensitivity, efficiency, and bandwidth for BMDS radars.-- Demonstrate and deliver advanced digital receiver exciter technology supporting wide bandwidth digital beam forming architectures and countermeasures mitigation.- Continue development and test of promising ELDT capabilities including flight tests (TRL 4-6). Collect Hypertemporal Infrared (HTI) and First Alert and Cueing (FAC) sensor data against static rocket firings.- Over-the-horizon radar (OTHR) - Use available OTHR assets to collect data on target of opportunity launches demonstrating capability to detect and track a missile launch event soon after liftoff (TRL 4). Collect data for continuing to advance a concept exploring the use of bi-static receivers to improve OTHR system performance.- Develop new antennas and employ enhanced signal processors to improve PCL performance. Develop higher sensitivity, larger FOV sensors for HTI and FAC.- Microsatellite - Commence analysis and design of microsatellite concept demonstration experiments. Perform concept selection and mature design efforts to Preliminary Design Review (PDR) status during FY04. <p>FY 2005 SENSING SYSTEMS PLANNED PROGRAM:</p> <ul style="list-style-type: none">- Mature Range-Resolved Doppler Imaging LADAR to full power brassboard design (TRL 5).- Further mature simultaneous two-color and three-color Focal Plane Arrays (FPAs) and pursue MDA flight test opportunities (TRL 3-5).- Continue development of space-based surveillance FPAs and cryocoolers for Space Tracking and Surveillance System applications (TRL 4-7).- Develop new antennas and employ enhanced signal processors to improve passive radar performance. Develop higher sensitivity, larger FOV sensors for HTI and FAC.- Demonstrate cohere-on-transmit distributed aperture algorithms in field tests at Reagan Test Site (RST).- Develop prototype low power density phased array panel demonstrating proof-of-concept of an affordable high-performance scaleable phased array architecture.- Demonstrate and deliver producible and reliable high voltage X-band Gallium Arsenide (GaAs) amplifiers providing improved sensitivity, efficiency, and bandwidth for BMDS radars.- Demonstrate and deliver advanced digital receiver exciter technology supporting wide bandwidth digital beam forming architectures and countermeasures mitigation.- Demonstrate and deliver photonic time delay unit technology providing stable, affordable wideband capability for in-service and future radar architectures.- Continue design and technical analysis on advanced antenna technologies; perform distributed aperture coherence tests; deliver high voltage X-Band GaAs high power amplifier chips; perform demonstration of wideband digital receiver technology; continue technology spiral for advanced transportable antenna arrays.		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)		R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology	
<ul style="list-style-type: none"> - Initiate a classified radar program, MkrR, between various elements of MDA and other agencies which has the goal of improving the tracking capability of the BMDS. - Mature microsatellite concept demonstration designs to Critical Design Review (CDR) level. 			
	FY 2003	FY 2004	FY 2005
ENGAGEMENT SYSTEMS TECHNOLOGY	0	35,646	85,355
RDT&E Articles (Quantity)			
FY 2004 ENGAGEMENT SYSTEMS PLANNED PROGRAM:			
<ul style="list-style-type: none"> - Select one contractor team to begin Multiple Kill Vehicle (MKV) system development. - Conduct critical kill vehicle seeker, divert propulsion, and avionics component and subsystem demonstrations (TRL 4). - Conduct kill vehicle critical design review. - Purchase long lead items for integrated kill vehicle hover test in FY 2005. - Conduct second system design review to ensure kill vehicle and carrier vehicle compatibility. - Perform advanced studies and engineering tests to improve ADI and related concepts, and develop other advanced counter-countermeasure capabilities. - Prepare and Conduct Advanced Study Notices, Advanced Change Notices, and Engineering Change Proposals for review by the CCB. - Complete an Engineering Change Proposal for insertion of Advanced Discrimination into the Ground Based Midcourse Defense System. - Perform Ground Testing of Advanced Discrimination. - Conduct a Concept Design Review for ADI, Block 2008/2010 capability in BMDS. 			
FY 2005 ENGAGEMENT SYSTEMS PLANNED PROGRAM:			
<ul style="list-style-type: none"> - Conduct integrated kill vehicle hover tests in FY 2005 (TRL 5). - Conduct system control and weapon-to-target assignment software development. - Continue execution of Strategic Illuminator, Compact Laser Radar Amplifier, Advanced Inertial Reference Unit, Advanced Detectors, and Angle-Angle-Range Doppler Imaging LADAR through prototype demonstration to termination. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology
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- Select one to three technology base projects in FY 2005 for execution in FY 2006.
- Complete disposition of Capistrano Test Site equipment from the former Spaced Based Laser program in FY 2005.
- Conduct carrier vehicle preliminary design review.
- Purchase long lead items to support kill vehicle flight testing starting in FY 2006.
- Conduct initial kill vehicle control and sensor flight test in FY 2006. (TRL 5).
- Initiate Proof of principle flight-testing program.
- Complete early engineering planning and design and initiate major work to install Concept A into the BMD System.

	FY 2003	FY 2004	FY 2005
HIGH ALTITUDE AIRSHIP	0	54,885	24,074
RDT&E Articles (Quantity)			

FY 2004 HIGH ALTITUDE AIRSHIP PLANNED PROGRAM:

- Executing Agent for High Altitude Airship ACTD scheduled for FY 2006 demonstration (TRL 4-7). The objective of this ACTD is to demonstrate the engineering feasibility and potential military utility of an unmanned, untethered, gas filled, solar powered airship that can fly at 65,000 feet. The prototype airship developed under this effort will be capable of continuous flight for up to a month while carrying a multi-mission payload. The prototype airship will demonstrate all enabling technologies that will be required for one year or more of continuous flight. Prototype airship design and risk reduction phase will culminate with a Critical Design Review 3Q FY04. Airship engineering feasibility studies and CONOPS will be defined and reviewed, preparing the way for demo flight testing in FY 2006.

FY 2005 HIGH ALTITUDE AIRSHIP PLANNED PROGRAM:

- Airship prototype development, build and demo continues through FY 2005 when flight tests will demonstrate remote C2 link connectivity, sensor and communications package utilization, and flight / payload integration capability.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)		R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology	
	FY 2003	FY 2004	FY 2005
INNOVATIVE TECHNOLOGY AND ANALYSIS	0	5,732	15,290
RDT&E Articles (Quantity)			
FY 2004 INNOVATIVE TECHNOLOGY AND ANALYSIS PLANNED PROGRAM:			
<p>-The Advanced Systems Innovation Cell (ASIC) is the focal point for review of all internally and externally generated new ideas submitted to MDA. This team of experts (government, industry and academic) evaluates new ballistic missile defense concepts and technologies determining their technical feasibility, initial capability, and maintains cognizance over leading edge concepts. The team seeks new and innovative concepts via a Federal Business Opportunities Broad Agency Announcement (BAA) for integrated systems and for technical improvements in boost, midcourse, and terminal phases of missile defense.</p>			
FY 2005 INNOVATIVE TECHNOLOGY AND ANALYSIS PLANNED PROGRAM:			
<p>- Continue to execute ASIC planned program. Fund additional ideas.</p> <p>- Missile Defense Science, Technology and Research (MSTAR): MSTAR is MDA'S University Research Program. It seeks to incorporate innovative research at the University level into ballistic missile defense, as well as to provide training for future missile defense scientists and engineers. MSTAR seeks new and innovative concepts via a Federal Business Opportunities Broad Agency Announcement (BAA) for research and for technical improvements in boost, midcourse, and terminal phases of missile defense.</p> <p>- Initiate MSTAR program with 6-9 new awards</p>			
	FY 2003	FY 2004	FY 2005
STATUTORY AND MANDATED	0	3,659	3,184
RDT&E Articles (Quantity)			
The SBIR/STTR, Historically Black Colleges and Universities / Minority Institutions (HBCU/MI) and Technology Applications projects are all covered within the BMD Technology PE Statutory and Mandated program.			
FY 2004 STATUTORY AND MANDATORY PLANNED PROGRAM:			
<p>- Continue to fund HBCU/MI.</p> <p>- Continue providing technology maturation techniques, such as commercialization reviews and outreach, which help leverage outside resources and provide a strong foundation essential for scaling up MDA-funded technology to address system capabilities.</p> <p>- Continue program support for the administration of the SBIR/STTR Program.</p> <p>- Establish investment strategy and formulation of SBIR/STTR Technology Roadmaps</p>			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology
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FY 2005 STATUTORY AND MANDATED PLANNED PROGRAM:

- Continue to fund HBCU/MI.
- Continue providing technology maturation techniques, such as commercialization reviews and outreach, which help leverage outside resources and provide a strong foundation essential for scaling up MDA-funded technology to address system capabilities.
- Continue program support for the administration of the SBIR/STTR Program.

	FY 2003	FY 2004	FY 2005
DIRECTED INTEREST	0	39,240	
RDT&E Articles (Quantity)			

FY 2004 DIRECTED INTEREST PLANNED PROGRAM:

- Massively Parallel Optical Interconnects for Microsatellites
- Silicon Carbide Wide Bandgap Research
- Wide Bandgap Optoelectronics
- AEOS MWIR Adaptive Optics
- Advanced RF Technology Development
- SiC Mirrors
- Poursous Silicon
- Tulane Center for Missile Defense
- Extended FootPrint Program
- Advanced Metalized Gelled Propellants
- Chemical Vapor Deposition of Organic Materials
- Center for Optical Devices
- Improved Materials for Optical Memories
- Multiple Target Tracking Optical Sensor Array Technology

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)					R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
<u>D. Acquisition Strategy</u>									
HAA has awarded Lockheed Martin a Design and Risk Reduction, Phase 2 contract for \$40 million. A Critical Design Review is scheduled for June 2004.									

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)				R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0503 Laser/LADAR Technology	0	22,253	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><u>A. Mission Description and Budget Item Justification</u></p> <p>The Laser Technology program focuses on developing lasers and related component technology for low power applications including tracking, weapon guidance, and imaging, while investing in high-energy laser technologies that could lead to future ABL improvements. The emphasis on low-power systems is driven by their considerable potential to improve and support MDA's hit-to-kill weapons. Having selected concepts and awarded contracts for four focused technology projects in FY 2003, the Agency will continue these through FY 2004, and initiate new projects in FY 2005. The projects will be drawn from proposals solicited from the laser and electro-optics industry and supported by BMDs element evolutionary block upgrades.</p> <p>Selected programs include:</p> <ul style="list-style-type: none"> -Strategic Illuminator for rugged long-range tracking and wavefront sensing device to support Airborne Laser upgrades and strategic surveillance applications. -Compact laser radar (LADAR) amplifier for kill vehicles to enhance target discrimination at extended range. -Advanced inertial reference unit for precision pointing knowledge for acquisition, tracking, and pointing applications. -Advanced low-noise, fast detectors for tracking, ranging, imaging, and laser wavefront sensing. 							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Laser Technology			22,253				0
RDT&E Articles (Quantity)							
<p>FY 2003 ACCOMPLISHMENTS:</p> <p>All projects below were selected in FY 2003 and are planned for continuation through FY 2006. Funding levels are approximately \$10 million/year for major projects and \$2.5 million/year for technology base projects.</p> <p>The major project is:</p> <ul style="list-style-type: none"> - Strategic Illuminator - A multi-kilowatt brassboard illuminator system that will significantly advance the state of the art in high-power LADAR illuminator brightness, reliability, and packaging. Contracts were awarded in April 2003 on the basis of a BAA to three responsive contractors for a four month concept development phase (Phase I). Following a Conceptual Design Review, Phase II for brassboard design was exercised in September 2003 providing continued funding to Northrop Grumman for 18 months of effort. <p>The technology base projects are:</p> <ul style="list-style-type: none"> - Compact Laser Radar Amplifier - A powerful small laser transmitter (hundreds of watts) suitable for insertion on a missile defense platform with tight weight and volume constraints. Contracts were awarded in May 2003 on the basis of a BAA to two responsive contractors, Northrop Grumman and Coherent Technologies Inc., for a 12 month concept development phase (Phase I). 							

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology	
<p>- Advanced Inertial Reference Unit - A device for highly accurate laser pointing and tracking. Contract was awarded in April 2003 on the basis of a BAA to Applied Technology Associates for a 12 month concept development and gyro survey phase (Phase I).</p> <p>- Advanced Detectors - Improved detectors for laser radars, with increased sensitivity and bandwidth. Contract was awarded in May 2003 on the basis of a BAA to four responsive contractors (Raytheon, SAIC, Sensors Unlimited, and VOXTEL) for a 6 month concept development phase (Basic contract) of a wave front sensor/tracker and a ranging camera.</p> <p>- Capistrano Test Site - Initiated the decommissioning of the site. The requirement to shut down the Capistrano Test Site was levied on the Laser Technology program when it replaced the cancelled Space Based Laser Program.</p> <p>FY 2004 PLANNED PROGRAM:</p> <p>- Strategic Illuminator - The contractor will design a densely packaged, rugged, high radiance, solid-state laser. Tasks include breadboarding the electronics, developing a light weight power supply and designing a blowdown chiller that all fit together in a compact volume.</p> <p>- Compact Laser Radar Amplifier - Following Preliminary and Critical Design Reviews (in 1QFY04 and 3QFY04, respectively), Phase II for breadboard fabrication will be exercised providing funding for one contractor to continue with this 12 month effort.</p> <p>- Advanced Inertial Reference Unit - Following Preliminary and Critical Design Reviews (in 1QFY04 and 4QFY04, respectively), Phase II for breadboard fabrication of a prototype device will be exercised providing funds to one contractor to continue this 12 month effort.</p> <p>- Advanced Detectors - Following Critical Design Review in November 2003, Option I will be exercised providing continued funding to two contractors for 12 month efforts to produce a wave front sensor/tracker and a ranging camera.</p> <p>- Angle-Angle-Range Resolved Doppler Imager - Design and experiments on a revolutionary photon-counting laser radar capable of both direct detect and Doppler measurements.</p> <p>- Advanced Chemical Oxygen-Iodine Laser (COIL) Technology - Theory and experiments to increase specific power (watts/kg) of COIL devices for future Airborne Laser blocks.</p> <p>- One to three technology base projects are anticipated for selection in FY 2004 for execution in FY 2005. In addition to these projects, in FY 2004, approximately \$7.4 million is planned to cover costs associated with Capistrano Test Site deactivation.</p> <p>FY 2005 PLANNED PROGRAM: (Note: In FY 2005, Laser Technology will be moved into the Advanced Technology Development PE)</p> <p>PLEASE SEE THE ENGAGEMENT SYSTEMS IN PROJECT 0502 FOR FY 2005 PLANNED PROGRAM</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)					R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
Continuing									

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<p>MDA Exhibit R-2A RDT&E Project Justification</p>		<p>Date February 2004</p>
<p>APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)</p>	<p>R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology</p>	
<p><u>D. Acquisition Strategy</u></p> <p>Program Information for the Laser Technology Program</p> <p>The MDA Director designated the Deputy of Advanced Systems (MDA/AS) as the official responsible for planning, programming, and directing the MDA Laser Technology Program (LTP), and appointed the Airborne Laser (ABL) Program Director (MDA/AL) as the executing agent (EA). The goal of LTP is promoting research and development to provide a general advancement in laser technology benefiting multiple MDA programs.</p> <p>The intent is to fund one to three, \$10 million Major Projects for up to three years, two to four, \$2.5 million Technology Base Projects for two to three years, and a small number of \$250 thousand Technology Feasibility Studies for one year. Broad Agency Announcements (BAAs) were chosen as the contract vehicle to provide maximum flexibility. Each contract awarded will be for one year with two (2) option years. In the event that some options are not exercised and funding is made available, additional projects can be started. Any remaining funds would be used on additional projects to continue to promote a general advancement in Laser Technology.</p> <p>Contract oversight will be ongoing. Projects will have two reviews a year. The reviews will include a mid-year review and an end-of-year review unless the project phase lengths require reviews at different times. MDA/AS, in consultation with the COR and the EA, will decide whether to exercise an option and provide funding for the next year based on the results of the previous year. Only in special cases will a project be funded for more than three years.</p> <p>Additional projects, selected in future fiscal years, will be briefed to MDA/AL (delegable to MDA/ALK) and will require approval prior to a new BAA release. The brief will be considered a delta ASP that adds the projects being selected that fiscal year.</p> <p>Business Considerations</p> <p>Full and open competition will be used with BAAs as the publicizing/solicitation tool. The contracts will be Research & Development contracts for the advancement of general laser technology. There will be no platform specific requirements only technical goals with multiple future applications. BAAs will allow maximum flexibility for Research and Development projects like those anticipated. Evaluation will be in accordance with FARS 35.016. Technical proposals will be evaluated using the following factors in descending order of importance based on scientific peer review: (a) technical: to include technical quality, scientific merit of the proposed technical approach and program plan, and capabilities and related experience, facilities, techniques or unique combinations of these which are an integral factor for achieving proposal objectives (b) Importance to MDA programs and (c) Fund availability to include cost realism. Oral presentations will not be used. Anticipate that CPFF will be the standard contract type for the duration of this program.</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
6090 Program-Wide Support	2,869	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 6090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army Program Executive Officer (PEO) Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements (PE) in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PEs while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	2,869	0	0
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603175C Ballistic Missile Defense Technology				

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004					
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)				R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology							
COST (\$ in Thousands)				FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
0602 Program-Wide Support				0	4,634	4,350	4,394	5,118	5,993	6,673	
RDT&E Articles Qty				0	0	0	0	0	0	0	
<i>Note: Fiscal Year 2003 is reflected in Project 6090 and Fiscal Years 2004 and out are in Project 0602.</i>											
<u>A. Mission Description and Budget Item Justification</u>											
This project covers personnel and related support costs, statutory and fiscal requirements.											
Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army Program Executive Officer (PEO) Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.											
Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.											
Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.											
Note that these funds are allocated across multiple Program Elements (PE) in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PEs while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.											
<u>B. Accomplishments/Planned Program</u>											
				FY 2003	FY 2004			FY 2005			
Civilian Salaries and Support				0	4,634			4,350			
RDT&E Articles (Quantity)											
Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.											

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)	R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology	

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts – Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/03 Advanced Technology Development (ATD)				R-1 NOMENCLATURE 0603175C Ballistic Missile Defense Technology					
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters – MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603869C Mead Concepts - Dem/Val			

COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	101,754	0	0	0	0	0	0
2015 Medium Extended Air Defense (MEADS)	101,754	0	0	0	0	0	0

Note: Per Congressional direction, beginning in FY04 MEADS transitioned to the Army.

A. Mission Description and Budget Item Justification

The Medium Extended Air Defense System (MEADS) is a future Force system. It is an international co-development program essential to fulfill the requirements of the U.S. Army and the U.S. Marine Corps for a low-medium air and missile defense system in the 21st century. MEADS will offer a significant improvement in surveillance, target tracking, integrated fire control and target engagement, tactical mobility and strategic deployability over comparable missile systems. It will defend the maneuver force and other critical forward-deployed assets against short and medium range Theater Ballistic Missiles (TBMs), cruise missiles (CMs) and other air-breathing threats such as unmanned combat aerial vehicles (UCAVs) throughout all phases of tactical operations. MEADS will operate with upper-tier systems in areas of debarkation and assemble and provide continuous coverage alone, or with Shorter Range Air Defense Systems (SHORAD) such as SLAMRAAM in the maneuver areas of the battlefield during movement to contact and decisive operations. MEADS will be interoperable with other airborne and ground-based sensors and utilize a netted and distributed architecture with modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, CMs, UAVs, tactical air-to-surface missiles, rotary-wing and fixed-wing threats.

The MEADS program is currently executing a thirty two and half month Risk Reduction Effort (RRE) phase. The primary objectives of RRE are to develop program cost and schedule consensus to mature critical technologies, and prepare program planning for entry into the Design and Development (D&D) Phase at Milestone B in 2004. The D&D Phase is currently planned to be a six year, ten month effort producing six MEADS Fire Units with the First Unit Equipped in FY12. The D&D Phase will be executed under an International Memorandum (MOU) between the participating nations.

A critical void remains in maneuver force defense against the current and future Air and Missile Defense (AMD) threat of short and medium range TBMs, CMs, and low-to-medium altitude advanced air-breathing threats. This program will meet this challenge by integrating the PAC-3 missile and developing the critical technologies required for maneuver force protection, including development and testing of a Light Weight Launcher, Reloader, 360-degree Multifunction Fire Control and Surveillance Radars and a netted and distributed Battle Management/Command, Control, Communications, Computers, and Intelligence (BM/C4I) Tactical Operations Center (TOC). The PAC-3 missile is the baseline interceptor for MEADS. Sensor and battle management software technology from both U.S. and international programs will be examined to enhance and augment organic-equipment functions, reducing development cost, manpower requirements and risk. Improvements will be balanced against costs and the projected threat to develop a U.S. and allied capability to counter the current and future AMD threats. The approach emphasizes prototyping of system-specific and surrogate hardware in key areas of BM/C4I, fire control radar, and Light Weight Launcher to satisfy mobility, strategic deployability and interoperability requirements.

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MDA Exhibit R-2 RDT&E Budget Item Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603869C Mead Concepts - Dem/Val

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	114,781	0	0
Current President's Budget (FY 2005 PB)	101,754	0	0
Total Adjustments	-13,027	0	0
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	0	0
Reprogrammings	-6,595	0	0
SBIR/STTR Transfer	-6,432	0	0

The FY 2003 MEADS funding was reduced by \$2.082 million during the appropriations cycle for Congressionally Undistributed Reductions.

The FY 2003 MEADS funding was also reduced by \$0.882 million for inflation.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2015 Medium Extended Air Defense (MEADS)	101,754	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Medium Extended Air Defense System (MEADS) is a future Force system. It is an international co-development program essential to fulfill the requirements of the U.S. Army and the U.S. Marine Corps for a low-medium air and missile defense system in the 21st century. MEADS will offer a significant improvement in surveillance, target tracking, integrated fire control and target engagement, tactical mobility and strategic deployability over comparable missile systems. It will defend the maneuver force and other critical forward-deployed assets against short and medium range Theater Ballistic Missiles (TBMs), cruise missiles (CMs) and other air-breathing threats such as unmanned combat aerial vehicles (UCAVs) throughout all phases of tactical operations. MEADS will operate with upper-tier systems in areas of debarkation and assemble and provide continuous coverage alone, or with Shorter Range Air Defense Systems (SHORAD) systems such as SLAMRAAM in the maneuver areas of the battlefield during movement to contact and decisive operations. MEADS will be interoperable with other airborne and ground-based sensors and utilize a netted and distributed architecture with modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, CMs, UAVs, tactical air-to-surface missiles, rotary-wing and fixed-wing threats.

The MEADS program is currently executing a thirty two and half month Risk Reduction Effort (RRE) phase. The primary objectives of RRE are to develop program cost and schedule consensus to mature critical technologies, and prepare program planning for entry into the Design and Development (D&D) Phase at Milestone B in 2004. The D&D Phase is currently planned to be a six year, ten month effort producing six MEADS Fire Units with the First Unit Equipped in FY12. The D&D Phase will be executed under an International Memorandum (MOU) between the participating nations.

A critical void remains in maneuver force defense against the current and future Air and Missile Defense (AMD) threat of short and medium range TBMs, CMs, and low-to-medium altitude advanced air-breathing threats. This program will meet this challenge by integrating the PAC-3 missile and developing the critical technologies required for maneuver force protection, including development and testing of a Light Weight Launcher, Reloader, 360-degree Multifunction Fire Control and Surveillance Radars and a netted and distributed Battle Management/Command, Control, Communications, Computers, and Intelligence (BM/C4I) Tactical Operations Center (TOC). The PAC-3 missile is the baseline interceptor for MEADS. Sensor and battle management software technology from both U.S. and international programs will be examined to enhance and augment organic-equipment functions, reducing development cost, manpower requirements and risk. Improvements will be balanced against costs and the projected threat to develop a U.S. and allied capability to counter the current and future AMD threats. The approach emphasizes prototyping of system-specific and surrogate hardware in key areas of BM/C4I, fire control radar, and Light Weight Launcher to satisfy mobility, strategic deployability and interoperability requirements.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Risk Reduction (RRE)	30,710		
RDT&E Articles (Quantity)			

Continue U.S. contribution to the North Atlantic Treaty Organization (NATO) MEADS Management Agency (NAMEADSMA) International Program Office operational and administrative budgets for the MEADS RRE contract and continued development of digital end-to-end simulation, continued development of a prototype launcher, fire control radar, prototype BM/C4I hardware/software, test planning, technology transfer and anti-tamper. Continued tri-national planning for seamless transition to the Design and Development (D&D) Phase Contract.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val	
	FY 2003	FY 2004	FY 2005
Proj Def-Val (PD/V)			
RDT&E Articles (Quantity)			
Note: Project Definition-Validation (PD/V) is an FY 2002 and prior activity and, for administrative purposes only, is included here to provide a section in the R-3 to show Total Prior Year costs.			
	FY 2003	FY 2004	FY 2005
Multi-Spectral RF Datalink	6,080		
RDT&E Articles (Quantity)			
Provides for the Development of the Multi-Spectral Radio Frequency (RF) Datalink (MRFDL) in the PAC-3 Missile (Hardware Only).			
	FY 2003	FY 2004	FY 2005
Program Integration	46,041		
RDT&E Articles (Quantity)			
Conduct program integration efforts that will examine Department of Defense (DoD), Joint Vision and Army transformation objective force mix and integration issues; support MEADS in the test and evaluation of Air and Missile Defense (AMD) task force interoperability; support development and maintenance of Joint Data Network interface requirements and planning and appropriate planning of MEADS manpower, training, human factors, safety issues, cost reduction initiatives, single canister design, composite tracker and U.S. only security.			
	FY 2003	FY 2004	FY 2005
PD/V Test Support			
RDT&E Articles (Quantity)			
Note: Project Definition-Validation (PD/V) is an FY 2002 and prior activity and, for administrative purposes only, is included here to provide a section in the R-3 to show Total Prior Year costs.			
	FY 2003	FY 2004	FY 2005
Internal Operating	5,591		
RDT&E Articles (Quantity)			
Continue MEADS program management, support and salaries for both the national and international program offices. Includes efforts to support U.S. unique requirements for MEADS documentation plan.			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val
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	FY 2003	FY 2004	FY 2005
Government Agencies and Support Contracts	13,332		
RDT&E Articles (Quantity)			

Continue funding for government agencies and support contracts to provide technical analysis and tools in specialty areas of lethality, BM/C4I and system simulations, as well as support of conducting independent evaluations of contractor trades and analysis.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603869C Meads Concepts - Dem/Val				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

D. Acquisition Strategy

The MEADS acquisition strategy included competition between two transatlantic industrial teams in the Program Definition/Validation (PD/V) phase. These two international entities prepared and competed for the PD/V phases. As the Department of Defense and partner nations restructured the program, the PD/V phase was extended with the selection of a single contractor team to conduct a three-year risk reduction effort (RRE). In August 2000, the Defense Acquisition Executive (DAE) approved entry in the RRE. In this phase, technology from Germany, Italy and the United States, including the PAC-3 missile, will be leveraged to define the most cost-effective solution to meet the MEADS operational requirements. The MEADS Product Office is also pursuing integration of MEADS BM/C4I with the Project Manager, Air & Missile Defense Command and Control Systems (AMDCCS), to take advantage of other Army developments that can be incorporated into the MEADS program. A U.S. funded bridging effort commenced on 14 August 2000 to work on the high-risk-areas and long-lead items within the scope of the RRE effort. The International MOU was signed 27 June 2001 and the RRE contract was awarded 10 July 2001. Per the 2 January 2002 SECDEF missile defense direction memo, the U.S. national unique requirements of the MEADS program will be developed in consultation with the Missile Defense Agency (MDA). The international requirements of the MEADS program will be directed per the International Memorandum of Understanding (MOU) and as modified in the future for international participation in the Ballistic Missile Defense System (BMDS).

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Risk Reduction (RRE)										
Risk Reduction (RRE)	C/CPFF	NAMEADSMA/ HSV, AL	90,510						90,510	
Risk Reduction (RRE)	C/CPFF	LMMC/ Orlando, FL	6,612						6,612	
Bridging Effort	C/CPFF	NAMEADSMA/ HSV, AL	12,000						12,000	
Implement TPRP	C/CPFF	LMMC/ Orlando, FL	3,000						3,000	
Multi-Spectral RF Datalink										
Multi-Spectral RF Datalink	C/CPFF	LMMC/ Dallas, TX	9,135						9,135	
Proj Def-Val (PD/V)										
Proj Def-Val (PD/V)	C/FFP	NAMEADSMA/ HSV, AL	101,672						101,672	
International Teaming	C/FFP	LM/H&R Teams/ HSV, AL	9,605						9,605	
Subtotal Product Development			232,534	0		0		0	232,534	
Remarks										
Note: MEADS is assigned its own MDA PE (0603869C) for FY 2003. Total Prior Year costs (including FY 2002) are captured in the Total Prior Year column of the MEADS PE 0603869C.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Integration										
Program Integration	C/Variou	PEO AMD/ HSV, AL	2,057						2,057	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Int'l Program Office	C/Variou	NAMEADSMA/ HSV, AL	7,432						7,432	
U.S. Contracts	C/Variou	MEADS Product Office/ HSV, AL	10,510						10,510	
U.S. OGAs	C/MIPR	MEADS Product Office/ HSV, AL	16,530						16,530	
U.S. Security	C/Variou	Lockheed Martin/ Syracuse, NY, Dallas, TX, FL	4,000						4,000	
U.S. AoA	C/MIPR	MEADS Product Office/ HSV, AL	2,298						2,298	
Composite Tracker	C/MIPR	CAS/ HSV, AL								
Government Agencies and Support Contracts										
Subtotal Support Costs			42,827	0		0		0	42827	
Remarks										
Note: MEADS is assigned its own MDA PE (0603869C) for FY 2003. Total Prior Year costs (including FY 2002) are captured in the Total Prior Year column of the MEADS PE 0603869C.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PD/V Test Support										
Redstone Technical Test Center	MIPR	RTTC/ HSV, AL	253						253	
ADSAM	C/Various	SMDC/ HSV, AL	9,915						9,915	
Subtotal Test and Evaluation			10,168	0		0		0	10168	
Remarks										
Note: MEADS is assigned its own MDA PE (0603869C) for FY 2003. Total Prior Year costs (including FY 2002) are captured in the Total Prior Year column of the MEADS PE 0603869C.										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Internal Operating										
Internal Operating	C/Various	MEADS Product Office/NAMEADSM A/ HSV, AL	19,956						19,956	
Subtotal Management Services			19,956	0		0		0	19956	
Remarks										
Note: MEADS in FY 2002 was included in the Missile Defense Agency (MDA) Terminal Defense Segment Program Element (PE) 0603881C. The Total prior years (PYs) costs column includes the costs from the prior MEADS program elements.										
Project Total Cost			305,485	0		0			305,485	
Remarks										
Note: MEADS in FY 2002 was included in the Missile Defense Agency (MDA) Terminal Defense Segment Program Element (PE) 0603881C. The Total prior years (PYs) costs column includes the costs from the prior MEADS program elements.										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603869C Meads Concepts - Dem/Val			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Decisions							
System Level Interface Demo	4Q						
Other							
Program Review	4Q						

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MDA Exhibit R-2 RDT&E Budget Item Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603880C Ballistic Missile Defense System Segment			

COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	1,026,566	0	0	0	0	0	0
1010 Battle Management, Command and Control (BM/C2)	113,773	0	0	0	0	0	0
1030 Targets & Countermeasures	125,124	0	0	0	0	0	0
1050 Systems Engineering & Integration	389,582	0	0	0	0	0	0
1060 Test & Evaluation	340,570	0	0	0	0	0	0
1070 Producibility & Manufacturing Technology	17,833	0	0	0	0	0	0
1090 Program-Wide Support	39,684	0	0	0	0	0	0

Note: Starting in FY 2004, funding for these efforts is contained within the Ballistic Missile Defense Test & Targets (0603888C), Ballistic Missile Defense Products (0603889C), and BMD System Core (0603890C) Program Elements.

A. Mission Description and Budget Item Justification

Based on Presidential direction, MDA is developing an initial defensive operational capability that is based on the BMDS Test Bed and augmented with additional development assets. MDA will continue to employ the Test Bed for testing beyond initial fielding to evolve an integrated, layered Ballistic Missile Defense capability.

The Ballistic Missile Defense (BMD) System Segment Program Element (PE) provides the resources to define, integrate, test, demonstrate and evolve the multi-layered BMDS capable of defending the United States, deployed forces, friends, and allies. The BMD System mission is comprised of seven primary projects: C2BMC, Communications, Targets & Countermeasures, SE&I, Test & Evaluation (T&E), Producibility & Manufacturing Technology, and BMD Information Management Systems. Successful performance of these activities is necessary for fielding a multi-layered, evolutionary system for defense in depth against the full spectrum of ballistic missile threats.

The missile defense program has transitioned from an element-centric to a system-centric focus, and from a requirements-based to a capability-based, Block delivery approach. The objective of this approach is to acquire a single, integrated layered Ballistic Missile Defense System (BMDS) that provides multiple engagement opportunities along the entire flight path of threat ballistic missiles. The advantage of this single, integrated layered system approach is that it provides engineers significant opportunity for synergy and trade space to exploit the inherent capabilities of all system elements and their components while optimizing aggregate performance, resulting in operational flexibility and robustness to protect the U.S., deployed forces, friends and Allies around the world. This allows the BMDS to evolve over time employing different combinations of sensor suites, weapons, battle management and command, control, and communications elements as an overarching, integrated capability. The development of this layered BMDS requires a collaborative enterprise comprised of the best and most experienced people from Industry and Government. This collaboration will be accomplished through the employment of the Missile Defense National Team (MDNT). The MDNT will develop and verify BMDS level designs and products for all ground, sea, air and space based elements through the use of models and the BMDS Test Bed. The flow down of BMD System Capability Specifications resulting from MDNT efforts in Systems Engineering & Integration (SE&I) and Command and Control, Battle Management, and Communications (C2BMC) will guide the integration of elements into the BMD System, the BMDS C2BMC architecture, and the BMDS Test Bed.

The BMDS provides initial capabilities and enhances these capabilities over time (block upgrades) by developing and testing defenses that employ complementary sensors, weapons, and communications/decision support systems to engage threats in the boost, mid-course, and terminal phases of flight. Blocks are synergistic sets of validated capability with military utility as demonstrated via the BMDS Test Bed. Each Block is comprised of selected BMDS elements which are able to operate autonomously or provide enhanced capability participating as part of the integrated BMDS Block configuration. Each subsequent Block will build on the predecessor Block. This block approach allows the Missile Defense Agency (MDA) to put the best, most capable technologies "in play" sooner than would otherwise be possible. MDA has designed a comprehensive, but flexible RDT&E program to both integrate and expand existing element capabilities, and to

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<p>examine and integrate the widest possible range of promising technologies into the block upgrades. The first BMDS Block is planned for the FY 2004 timeframe. Once demonstrated, Block capability is available for initial defensive operations use, if directed, and transitioned to the services for procurement, operation and support.</p> <p>The BMDS Command, Control, and Battle Management Communications (C2BMC) element is the integrating function across all BMDS elements. It is also the function that integrates the BMDS into the C2 structure of the Combatant Commanders and into that of allies and friends. C2BMC will evolve from today's limited autonomous point defense BMDS capability into a global integrated BMDS capability. The BMDS C2BMC functionality will mature into Collaborative-Distributed Planning and increased Situational Awareness C2 capabilities that support Engagement Coordination and Integrated Fire Control BM capabilities. A Missile Defense National Team for C2BMC (MDNTB) was assembled to assist MDA with this project. The MDNTB, consisting of MDA, a defense contractor team (MDNTB (I)), Federally Funded Research and Development Centers (FFRDC) and Scientific Engineering and Technical Assistance (SETA) providers, will develop and deliver a flexible integrated BMDS C2BMC.</p> <p>The Targets and Countermeasures program provides capability-based ballistic missile target systems to include missile subsystems (such as boosters, re-entry vehicles (RV) guidance and control) payloads (sensor packages, countermeasures), and launch support systems. This activity funds new target and countermeasure development, risk reduction flights, subsystem characterization, as well as procures and maintains long lead material of major target components. Advanced target instrumentation, a new liquid booster, Mobile Launch Platform Targets, Medium Range Targets and Long Range Air Launched Target (LRALT) are being developed. In addition, this program supports aging surveillance, refurbishment and reuse of existing inventory such as Minuteman II and Pershing II hardware.</p> <p>The SE&I project provides the overall systems engineering development and integration of the BMDS. The SE&I mission is to define and manage the layered BMD system, providing the collaborative, layered, and detailed systems engineering and integration required across the entire spectrum of BMDS war fighter capabilities. The SE&I program scope spans the development of individual components (e.g. boosters), elements (e.g. Block 2006 Theater High Altitude Area Defense (THAAD)), BMD segments (e.g. midcourse), and the fully integrated BMD System. SE&I activities provide the engineering core competency, modeling facilities, and integrative engineering development efforts needed to technically manage and field the capability-based BMDS.</p> <p>The T&E project provides consolidated BMDS-wide T&E capabilities / resources and implements test policy and standards required to enable cohesive execution of all BMDS test activities. T&E efforts include the development, operation, maintenance, and modernization of the T&E infrastructure supporting both the testing of BMDS Elements and System Level testing. It includes resources for the development, maintenance, and configuration management of credible core analytical tools used by all BMDS Elements and for the engineering and testing of integration and interoperability across the BMDS. The project also contains the BMDS System Test and Assessment program that includes system tests, critical measurements, integration tests, and supporting technology experiments. T&E activities associated with specific BMDS Elements are captured in the respective BMDS Element. T&E activities are grouped in terms of System Test and Assessment; Test Resources of facilities, ranges, sensors, and test instrumentation; Modeling and Simulation (M&S); Facilities, Siting, and Environmental (FS&E) efforts; and, Test Policy, Integration, and Mission Assurance.</p> <p>Producibility and Manufacturing Technology provides tools and strategies for improving technology insertion support of the BMDS spiral development to meet block upgrades. These include near term technology insertion programs that demonstrate capabilities for multiple applications across the BMDS (encompassing risk reduction, performance enhancement, and cost reduction/avoidance). These programs are identified by utilizing systems engineering, analyses and assessments as a basis for offering potential remediation of a BMDS problem area. Producibility and Manufacturing Technology then provides manufacturing technologies and implementation strategies that will benefit all the BMDS.</p> <p>BMD Information Management efforts will improve the management of and access to data, information and knowledge throughout the MD Enterprise. The new project will assist the acquisition of Missile Defense systems by a) providing IM/IT policies, processes and infrastructure through the MD Enterprise that allows for daily operations to be performed in an efficient, secure and affordable manner; b) creating an Enterprise Information Management System and processes using web-based technologies and establishing electronic business practices that help achieve more effective and more efficient and secure business and mission activities throughout the MD Enterprise; c) improving IT infrastructure that supports design, development and testing of MD systems; and d) development of information architectures that identify information needs for interoperability among MD systems.</p>		

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Program Operations under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	1,046,652	0	0
Current President's Budget (FY 2005 PB)	1,026,566	0	0
Total Adjustments	-20,086	0	0
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	0	0
Reprogrammings	16,296	0	0
SBIR/STTR Transfer	-36,382	0	0

Resources for FY 2004 and beyond have been transferred to the BMD System Test and Targets (0603888C), BMD Products (0603889C), and BMD System Core (0603890C) Program Elements.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1010 Battle Management, Command and Control (BM/C2)	113,773	0	0	0	0	0	0
RDT&E Articles Qty	6	0	0	0	0	0	0

Note: Starting in FY 2004, funding for this effort will be contained within the Ballistic Missile Defense Products (0603889C) Program Element.

A. Mission Description and Budget Item Justification

The BMDS Command, Control, Battle Management and Communications (C2BMC) element is the integrating function across all BMDS elements. It is also the function that integrates the BMDS into the C2 structure of the Combatant Commanders and into that of allies and friends.

MDNTB:

Missile Defense Agency (MDA) established a Missile Defense National Team BM/C2/Comm (MDNTB) construct to deliver an integrated BMDS C2BM system. This effort requires a collaborative enterprise comprised of the best and most experienced minds of Industry and Government. The MDNTB is composed of major defense contractors, Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), and Scientific Engineering and Technical Assistance (SETA) providers. The concept of operations for the MDNTB is as follows: the Government provides the overall management of the BMDS program and participates within the MDNTB; and the MDNTB is responsible for the engineering, design, development and delivery of an executable BMDS C2BMC integration framework, BMDS C2BMC Block capability specifications, and the integration of BMDS Elements into the BMDS C2BMC integration framework.

BMDS BM:

The BMDS BM will substantially enhance BMDS effectiveness beyond that achievable by stand-alone systems. The BM component integrates kill chain functions (surveillance, detect/track/classify, engage and assess) across the layered defenses (boost, mid-course, terminal, and external sensors (Space Based Infrared System - SBIRS)) and evolves with the BMDS elements. Initially, BM will deliver the hardware/software (HW/SW) necessary to provide the means for executing pre-planned responses by integrating available information to provide the user with increased automation capability and ability to integrate information from increasingly diverse resources. BM will eventually provide a highly flexible and configurable framework for real time, adaptive coordination of missile defense assets, while also supporting the incorporation of new elements. Block 2004 BM component currently plans to integrate Ground Missile Defense System (GMDS), Theater High Altitude Air Defense (THAAD), Airborne Laser (ABL), Patriot 3 (PAC-3) Interceptor, Aegis BMD, Space Tracking & Surveillance System (STSS), and Defense Support Program (DSP). This may change as a result of annual Block capability reviews.

BMDS C2:

The BMDS C2 provides a flexible, integrated component to plan, direct, control and monitor missile defense activities. C2 sets the framework for all subordinate commands' actions, including decisions concerning the defense course of actions; force lay down, consistent shot doctrine, etc. In addition, it provides the means to quickly re-plan and adapt to changing mission requirements. C2 develops the operational war fighting aids required for the command structure to formulate and implement informed decisions. BMDS C2 integrates, where applicable, new capabilities into National C2 Systems, Global Command and Control System (GCCS), Theater Battle Management Core Systems (TBMCS), North American Air Defense/US Combatant Commander Space Command Warfighter Support System (N/UWSS), Joint Defensive Planner (JDP) and other relevant C2 mission applications. The BMDS C2 also integrates the Combatant Commanders, North American Treaty Organization (NATO) and other allies, friends, and other external systems to which BMDS C2 will connect. Block 2004 C2 component provides prototypes to support Combatant Commanders. This may change as a result of annual Block capability reviews.

COMMUNICATIONS:

The BMDS Communications efforts will consolidate, refine requirements, and develop upgrades to existing communication systems that are being developed by the BMDS. It is responsible for developing capabilities that will allow all components of BMDS to exchange data, and to permit C2 orders to be transmitted to the weapon and sensor systems. Delivery of the Joint Range Extension

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<p>(JRE) long-haul communications capability during the FY 2002/FY 2003 timeframe fills a critical, and timely, warfighter need in this area. The Communication network(s) will seamlessly connect BMDS assets and link them with other applicable DoD and non-DoD networks and assets as required by optimizing the use of existing and future data and information conduits and protocols such as the Global Information Grid.</p> <p>INTEGRATION TEST SUPPORT: Part of this funding will support integration and testing activities at the JNIC. A state-of-the-art Development and Integration Environment Laboratory will be established to support C2BMComm Integration framework and Systems Specification development; develop, test and evaluate prototype C2BMC components; and support other critical BMDS C2BMC efforts with the goal of fully integrating the war fighters, systems engineers, and BMDS Elements capabilities developers and testers. The MDNTB will perform most of the BMDS C2BMC Test Bed component; System Specification and Elements assessment, integration, testing and validation work at the JNIC.</p> <p>B. Accomplishments/Planned Program</p> <table border="1"> <thead> <tr> <th></th> <th align="center">FY 2003</th> <th align="center">FY 2004</th> <th align="center">FY 2005</th> </tr> </thead> <tbody> <tr> <td>C2BMC</td> <td align="center">101,818</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td align="center">6</td> <td></td> <td></td> </tr> </tbody> </table> <p>The Missile Defense National Team for BM/C2/Comm (MDNTB) will deliver BMDS C2BMC element definition, system design, planning for the content of each block as well as integration of C2BMC components. Four major activities shall be completed: 1) define the BMDS C2BMC Element Capabilities and the evolutionary plan for achieving those capabilities; 2) develop, integrate and test a supportable Test Bed System Level C2BMC capability that could also be deployed in the event initial defensive operations are required; 3) support demonstrations and experiments; 4) define the approach to support the initial defensive operations deployable capability and define the components and attributes of the necessary acquisition package for transitioning the BMDS C2BMC to full-scale development and deployment.</p> <p>To achieve the above objectives, the MDNTB shall develop and provide C2BMC system architecture and operational architecture description data to include C2BMC element and interface data for each BMDS element, and for the Objective C2BMC element. Block 2004 shall receive primary emphasis; work on Block 2006 and on the Objective Architecture shall be accomplished as required.</p> <p>BLOCK 2004: The Block 2004 C2BMC element shall provide C2 capability for planning, situational awareness, and control, BM capability for track correlation and execution of preplanned responses, and communications among C2 nodes, BM nodes, Block 2004 sensors and Block 2004 weapon systems. It shall include an initial capability to leverage and incorporate the data from multiple sensors (sensor netting) to improve track correlation quality and target discrimination.</p> <ul style="list-style-type: none"> - Enhance system level tracking and discrimination capability to include Improved/Precision Cueing for Aegis SMD to GMD. - Design and integrate Sensor Netting and Early Warning capabilities into the Block 2004 C2BMC. This effort shall also incorporate, as appropriate, products developed by Project Hercules. Perform Sensor Netting work including coding and productizing Hercules algorithms for the BMDS Test Bed; Discrimination Fusion, track fusion, sensor registration and advanced Sensor Netting engineering validation. - Develop a new stand-alone C2BMC node prototype to provide a centralized C2/BM capability for the BMDS; and weapon system/sensor system C2BMC HW/SW that perform as components of the C2BMC element. 					FY 2003	FY 2004	FY 2005	C2BMC	101,818			RDT&E Articles (Quantity)	6		
	FY 2003	FY 2004	FY 2005												
C2BMC	101,818														
RDT&E Articles (Quantity)	6														

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603880C Ballistic Missile Defense System Segment	
<ul style="list-style-type: none">- Create an initial description of the C2BMC Objective Element. The Objective C2BMC Element will be updated annually. The purpose is to provide an aim point that's continually ahead and guides technology investment decisions. - Develop, implement and operate a C2BMC-Experimental (C2BMC-X) environment at the JNIC to perform/support demonstrations, experiments (including technology insertion), exercises, war games, and user assessments. - Develop, implement and operate two Development and Testing laboratories and three Integration and Testing laboratories at Huntsville, AL, and Colorado Springs, CO., for BMDS C2BMC Test Bed prototype development. One of the C2BMC I&T Suites will double as the BMDS C2BMC Node at the JNIC. Complete Block 2004 Spiral development cycles. - Perform analysis of current deployment capabilities and logistics requirement of the C2BMC composite element and impact analysis for deploying the C2BMC element for an initial defensive operations capability and the production version of the deployable system. - Establish Global Command & Control System-Missile Defense (GCCS-MD) with DISA, and develop and field GCCS-MD mission applications. Continue development and integration of Joint Data Planner into GCCS. Continue Early Warning project focusing on technical data package (functional specifications) and finalizing the Early Warning Master implementation Plan. - Continue work on BMDS Information Technology Migration study to support independent technology insertions. Continue cooperative analysis on NATO(BMC2) functions required to integrate NATO Air Command and Control System integration into BMDS. Continue TMD and Strategic Missile Defense Data Interoperability Assessment program. Continue GE(EAD) Annex C program to jointly develop BMC3 functions required to integrate German AF TMD capabilities into BMDS. Continue Joint Technical Architecture (JTA) efforts to develop standard interface profiles for the Objective BMDS. - Support C2BMC Integration Test Center and C2BMC-X Battle lab in accordance with MDNTB directed updates, interfaces and connectivity requirements and software purchases and licenses. - Complete JRE standard development and testing (Block 2004) in order to enhance BMD Situational Awareness by extending Link 16 information between the Services' major C2 nodes beyond line of sight. - Develop and test the communications integration and test environment of the C2BMC Test Bed to ensure high availability of communications for the system. - Design and integrate JRE capability for Aegis BMD (Block 2004). - Embed the JRE capability into BMDS, and continue to update the JRE Application Protocol (JREAP). Initiate development of JRE capability for Aegis BMD. - Continue to develop long-haul communications requirement for the BMDS. Support DISA efforts to implement a global communication capability, interconnecting the theaters, Combatant Commanders, GMD and the national level C2BMC element node at the JNIC. - Continue BMDS Information Assurance/Computer Network Defense (IA/CND) efforts begun in FY 2002. Update IA/CND Implementation plan and threat/risk assessment. Perform IA/CND Architecture Design. Evaluate BMDS component compliance with architecture.		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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	FY 2003	FY 2004	FY 2005
COMMUNICATIONS	11,955		
RDT&E Articles (Quantity)			

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603880C Ballistic Missile Defense System Segment				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

C2/BM/C will 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 design and development of a BMDS Command and Control, Battle Management and Communication (C2/BM/Comm) Architecture and System Specifications is a collaborative effort. The strategy is to require the Missile Defense National Team C2/BM/Comm (MDNTB) to perform the engineering and delivery of an executable C2/BM/Comm Test Bed, BM/C2/Comm Block capability specifications, design specifications and interface control documents for the BMDS. The MDNT will be composed of two industry teams (MDNTB & MDNTS), major defense contractors, engineers from Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC) and System Engineering and Technical Assistance (SETA) defense contractor(s), and the government.

The intent is to develop a fully capable BMDS Test Bed while retaining development capability that can be used for initial defensive operations deployment . C2/BM/C capability can be transitioned into further operational force structure via coordination with the Services and their acquisition community so they can plan, budget and procure necessary HW/SW for operational deployed and sustained forces.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC										
MDNTB	SS/CPAF	MDNTB/ Gaith, MD; Arl, VA	24,890						24,890	
Subtotal Product Development			24,890	0		0		0	24890	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC										
SETA	C/CPFF	MDA, HQ/ Arl, VA	2,900						2,900	
Subtotal Support Costs			2,900	0		0		0	2900	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC										
JNIC	Various	JNIC/ CO	3,000						3,000	
Subtotal Test and Evaluation			3,000	0		0		0	3000	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			30,790	0		0			30,790	
Remarks										

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MDA Exhibit R-4 Schedule Profile																		Date February 2004										
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)														R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment														
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Objective Architecture																												
Define Objective Architecture	▲————▲																											
Composite Materials and Structures																												
Block System Design (BECs, ECBs & EIDs)	▲																											
Element TIMs	▲————▲																											
Spiral 4.1 Integration & Testing	▲—▲																											
Block Design Review	▲																											
Communication Network Design	▲————▲																											
Integration & Test Planning	▲————▲																											
C2BMC Element																												
Block Planning & Capability Assessment	▲————▲																											
Communication Network Design			▲—▲																									
Block System Design (ECSs, EDBs, & EIDs)			▲—▲																									
Communications																												
Communications Integrated Logistics and Spt Plan		▲																										
Communications Transition Plan		▲																										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Communications																												
JRE Spiral 4 Verification Testing	▲																											
JNIC																												
Sustainment Engineering of Mission Infrastructure	▲	→	→	▲																								
Support to Wargames & Exercises	▲	→	→	▲																								

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Objective Architecture							
Define Objective Architecture	1Q-4Q						
Composite Materials and Structures							
Block System Design (BECs, ECBs & EIDs)	1Q						
Element TIMs	1Q-4Q						
Model & Sim Tools (Eval/Instal)	1Q-3Q						
Spiral 4.1 Prototype Development	1Q-2Q						
Spiral 4.3 Prototype Development	3Q-4Q						
Modeling & Simulation Analysis	1Q-4Q						
Spiral 4.1 Integration & Testing	1Q-2Q						
Block Design Review	1Q						
Deployment & Logistics Spt Planning	1Q						
Spiral 4.2 Prototype Development	1Q-4Q						
Communication Network Design	1Q-4Q						
Integration & Test Planning	1Q-4Q						
Spiral 4.2 Integration & testing	3Q-4Q						
C2BMC Element							
Block Planning & Capability Assessment	1Q-4Q						
Communication Network Design	3Q-4Q						
Modeling & Simulation Analyses	3Q-4Q						
Block System Design (ECSs, EDBs, & EIDs)	3Q-4Q						
Communications							
Communications Integrated Logistics and Spt Plan	2Q						
Communications Transition Plan	2Q						
JRE Spiral 4 Verification Testing	1Q						
BM/C2/C-X Experiment							
BM/C2/C-X Experiment	1Q-4Q						
JNIC							
Sustainment Engineering of Mission Infrastructure	1Q-4Q						
Support to Wargames & Exercises	1Q-4Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1030 Targets & Countermeasures	125,124	0	0	0	0	0	0
RDT&E Articles Qty	6	0	0	0	0	0	0

Note: Starting in FY 2004, this project transitioned to PE 0603888C, Ballistic Missile Defense Test and Targets.

A. Mission Description and Budget Item Justification

The Targets and Countermeasures program funds the design, prototyping, development, acquisition, certification, product improvement, and qualification testing of a suite of targets and payloads to test the capability of the Ballistic Missile Defense System (BMDS). Specifically, this program provides capability-based ballistic missile full up target systems to include target sub-systems such as boosters, payloads (re-entry vehicles, sensor packages, countermeasures, and on-board instrumentation), and launch support systems in support of the BMDS Block strategy. New target and payload development, risk reduction flights, sub-system characterization, and the acquisition and maintenance of long lead material of major target components will be accomplished. This program funds the development of key target systems for use in BMDS testing; all elements (e.g., Ground Based Midcourse, AEGIS Ballistic Missile Defense (BMD), THAAD, etc.) fund the acquisition and use of targets required for BMDS testing. The following current and new developments are planned to meet Block 2004 testing:

- Continued the development of Short Range Air Launch Targets (SRALT) to support Arrow, Patriot (PAC-3), and Theatre High Altitude Area Defense (THAAD).
- Continued the development of Long Range Air Launch Targets (LRALT) to support THAAD and Arrow.
- Continued the development of Short Range Liquid Fuel Target Booster.
- Initiated the modification of a Foreign Material Acquisition (FMA) target launched from a Mobile Launch Platform to support Arrow and THAAD.
- Initiated the development of multi-mode Medium Range Targets to support Aegis BMD and THAAD.
- Initiated and completed 4 total payloads suites for use in Critical Measurements and Countermeasures (CMCM) tests.

Central to the development and acquisition of ongoing and new target systems to support the BMDS block testing schedule is the utilization of a prime contractor. During 1Q/FY 2004, the Targets and Countermeasures Directorate will award a prime contract to a contractor who will be responsible for, but not limited to: 1) providing systems engineering across the targets portfolio, including managing and executing Block target requirements; 2) developing future target booster development activities; 3) designing and developing BMDS payloads and countermeasures; 4) developing advanced targets; and, 5) Long Lead Material and Asset Management.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Payload Development	25,396		
RDT&E Articles (Quantity)	2		

This effort continued the development of capability-based payloads (re-entry vehicles, countermeasures, on-board instrumentation) to include design, development, characterization, instrumentation, and testing efforts in support of Advanced Concepts Flight Tests (ACFT). These flight tests required capability-based payloads to collect and assess critical phenomenology data in order to develop realistic payloads in for targets used in BMDS flight tests. This effort also developed a next generation Fly Along Sensor Package (FASP), which provides critical visible and infrared imagery for missile defense seeker performance risk reduction, algorithm evaluation, and target payload characterization.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment	
<p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - RDT&E Test Articles: 2 payloads for ACFT-1b in May / June Flight FY 2003. - Began development of SLO payload suite (RV, instrumentation, associated objects, payload interface) to support Ground-based Midcourse Defense (GMD) to support RCF-3 (3Q05) and future IFTs. - Initiated payload suite design and development for CMCM Campaign 1a & 1b tests in 2Q FY 2005. - Initiated payload design and development for two CMCM-2a and 2b tests in 4Q FY 2005. - Completed payload development for an ACFT in April 2003. - Continued development of the FASP. 			
	FY 2003	FY 2004	FY 2005
Target Development	75,028		
RDT&E Articles (Quantity)	4		
<p>This effort provided: 1) ongoing target development; 2) new target development efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories; and, 3) continued early concept development and prototyping of advanced systems or sub-systems for BMDS targets. On-going target development efforts funded in this area included: the Short Range Air Launch Target (SRALT); the Long Range Air Launch Target (LRALT); and, a Short Range Liquid Fuel Target Booster (LFTB). New target systems initiated in FY 2002 and conducted for FY 2003 included: modification of an FMA target launched from a sea-based Mobile Launch Platform and the development of a multi-mode Medium Range Target. Early concept development and prototyping efforts included an Enhanced Target Delivery System (ETDS) concept definition study, completed in FY 2002.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - RDT&E Test Articles: 2 LRALTs for risk reduction testing; 2 Lances for FMA / Mission Launch Platform proof-of-principle testing. - Completed two proof-of-principle tests (launched two Lance missiles from the Mobile Launch Platform) for the FMA / Mobile Launch Platform effort . - Continued LRALT development and risk reduction flight testing. - Continued SRALT and Short Range LFTB development efforts / contracts. - Awarded a Medium Range Target contract. 			
	FY 2003	FY 2004	FY 2005
Asset Management	7,963		
RDT&E Articles (Quantity)			
<p>This effort continues a risk reduction initiative designed to ensure the availability of capability-based targets for BMDS flight tests. Additionally, this effort provides limited long-lead target modules that will be procured in economic quantities and stored for use in BMDS flight tests. The modules include components of capability-based RV's, inter-stages, and related hardware. Upon definition and approval of a BMD target requirement, the modules will be provided to a target integrator who will perform integration, flight readiness, and launch support. This effort also includes maintenance, aging surveillance, refurbishment, and routine testing of existing Government Furnished Equipment (GFE) boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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	FY 2003	FY 2004	FY 2005
Personnel/Support Costs	7,586		
RDT&E Articles (Quantity)			

Provides for government personnel, project costs, and targets program management support.

	FY 2003	FY 2004	FY 2005
Target Support	9,151		
RDT&E Articles (Quantity)			

This effort funds target and target-related engineering and technical assistance; Missile Defense Targets Joint Program Office (MDTJPO) core operations (routine facility maintenance, rent, office equipment); and mission support (range and flight test operations for targets) to all BMDS programs. Also, Federally Funded Research and Development Centers (FFRDC) are funded to assist the targets program by providing unique requirements, certification, and instrumentation analyses.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

Targets and Countermeasures Program will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. To support this strategy, the Targets and Countermeasures Program will award a ten year prime contract in FY04 (four year base plus three 2-year option periods) to an offeror who will provide the targets to test against the layered and integrated BMDS. The Targets prime contract will also add a new capability for Targets and Countermeasures systems engineering and provide single system management for the Targets and Countermeasures Program. Overall objectives of this procurement are to deliver reliable target system performance, to provide system level engineering and management through an integrated prime contractor, to reduce target acquisition cycle time, to control target program costs and stimulate creative cost reduction initiatives, and to focus on components and capability-based product lines through integration and launch of target systems. The contract will be a combination of Cost Plus Award Fee and Firm Fixed Price Delivery Orders under two Contract Line Items (CLIN's). This structure allows for maximum flexibility to produce either full blown up targets to test new concepts and ideas, or product lines under which common target components will be developed, integrated, and tested. By emphasizing common target components, it is anticipated that a reduction in both cycle time and cost will be achieved. As the targets prime contract begins its first four year base period, current on-going target development contracts will generally be completed under the terms of their existing contracts. This includes a variety of individual and Task Order Cost Plus Fixed Fee and Cost Plus Award Fee contracts. Some on-going target developments, however, may transition to the prime contractor depending on the status of the contract and maturity of the target system being developed. The government will maintain system responsibility and will ensure successful management of BMDS targets execution.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Development										
Short Rng Air Launch Target	C/CPFF	Orbital Sciences Corp./ Chandler, AZ	17,295						17,295	
Long Range Air Launch Target	C/CPIF	Coleman Aerospace Corp/ Orlando, FL	6,841						6,841	
Short Rng Liquid Fuel Booster	C/CPFF	TRW / Orbital Sciences Corp/ CA / AZ	13,895						13,895	TBD
FMA/Mobile Launch Platform	C/Variou	Lockheed Martin/ Huntsville, AL	5,740						5,740	
Medium Range Target	C/Variou	TBD	11,811						11,811	
Advanced Development	C/Variou	TBD	6,754						6,754	
FM-7 / 8 Target	C/CPFF	Orbital Sciences Corp./ Chandler, AZ	12,692						12,692	
Payload Development										
Fly Along Sensor Package	C/FFRDC	MIT/LL/ Boston, MA	7,266						7,266	
CM Design, Develop, Charact	C/Variou	Various	12,530						12,530	
HARDFAC	C/FFRDC	AFRL/ Albuquerque, NM	2,400						2,400	
SLO	C/FFRDC	SNL/ Albuquerque, NM	3,200						3,200	
Subtotal Product Development			100,424	0		0		0	100424	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Support										
MDTJPO Support	C/Various	Various/Huntsville, AL	5,238						5,238	
Systems Engineering	C/Various	JHU/APL/ Laurel,MD	400						400	
SMC Support	Various	Various/Kirtland, AFB/ NM	325						325	
MDTJPO Core/Mission Support	Various	Various/Huntsville, AL	3,188						3,188	
Subtotal Support Costs			9,151	0		0		0	9151	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Asset Management										
Various Booster Management	Various	Various	7,963						7,963	
Subtotal Test and Evaluation			7,963	0		0		0	7963	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Personnel/Support Costs										
MDTJPO Govt Proj Per & Suppt	C/Various	Govt Agency - MDTJPO/ Huntsville, AL	4,630						4,630	
Targets Mgt Support	C/Various	Various/ Washington, DC	2,784						2,784	
Government Travel	C/Various	Washington, DC	172						172	
Subtotal Management Services			7,586	0		0		0	7586	
Remarks										
Project Total Cost			125,124	0		0			125,124	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment																		
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Long Range Air Launch Target - STV Drop	▲																											
Lance RRF from Mobile Launch Platform	▲																											
Production Milestones																												
FMA Mobile Launch Plat - Contract / Develop	▲	————	▲																									
Medium Range Target	▲	————	▲																									
Payloads / Countermeasures Design	▲	————	▲																									
Payloads / Countermeasures Development	▲	————	▲																									
Enhanced Target Delivery System - Contract / Devel	▲	————	▲																									
Payloads / Countermeasures Characterization	▲	————	▲																									
Decisions																												
Develop Targets Prime Acq Strategy RFP		▲	————	▲																								

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Long Range Air Launch Target - STV Drop	1Q						
Lance RRF from Mobile Launch Platform	1Q						
Production Milestones							
FMA Mobile Launch Plat - Contract / Develop	1Q-4Q						
Medium Range Target	1Q-4Q						
Payloads / Countermeasures Design	1Q-4Q						
Payloads / Countermeasures Development	1Q-4Q						
Enhanced Target Delivery System - Contract / Devel	1Q-4Q						
Payloads / Countermeasures Characterization	1Q-4Q						
Decisions							
Develop Targets Prime Acq Strategy RFP	2Q-4Q						

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603880C Ballistic Missile Defense System Segment			

COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1050 Systems Engineering & Integration	389,582	0	0	0	0	0	0
RDT&E Articles Qty	10	0	0	0	0	0	0

Note: Starting in FY 2004 this Project is PE 0603889C (BMD Products), all Projects, and PE 0603890C (BMD System Core), all Projects.

A. Mission Description and Budget Item Justification

The missile defense program has transitioned from a focus on individual Element programs to the development of a single, integrated, layered Ballistic Missile Defense System (BMDS). This requires an engineering program that integrates the development of individual components and Element systems across all phases of a threat ballistic missile's flight to provide a capability for multiple engagements along the entire flight path. The MDA System Engineering and Integration (SE&I) mission is to define, manage, and integrate all engineering development for the BMDS. SE&I activities provide the technical expertise, tools, and facilities to develop the BMDS. These activities include the System Engineering and Architecture (SE&A), Threat Systems Engineering (TSE), Advanced Systems, Intelligence System Threat, Joint Warfighter Support, Joint National Integration Center, Cooperative Programs and Allied Support, and BMD Information Management efforts.

SYSTEM ENGINEERING AND ARCHITECTURE/THREAT SYSTEMS ENGINEERING:

System Engineering and Architecture (SE&A) is the core technical effort to define, design, and verify the capability of the BMDS, and to enhance these capabilities over time through block upgrades. SE&A develops a set of time-phased technical goals and objectives to guide the design and development of evolutionary capabilities for the BMDS. These goals and objectives are listed and described in the BMDS Technical Objectives and Goals (TOG) document. The design and evolution of an integrated, layered BMDS is a complex engineering task requiring the collaboration of the best and most experienced people from Industry and Government. The SE&A activity achieves this collaboration through the use of a Missile Defense National Team System Engineering (MDNTS). Engineering products developed through this team concept are baselined and controlled via a BMDS Configuration Control Board (CCB). The MDNTS prepares the System Evolutionary Plan (SEP) to describe the content of the BMDS development program based on the guidance in the TOG. The program content described in the SEP defines the time-phased capability of the BMDS. The MDNTS then prepares the System Capability Specification (SCS) to allocate these capabilities to component and Element programs for development. The SCS defines the technical baseline for the BMDS development program and provides technical direction to developers. The design and capability of the BMDS is verified by tests and evaluations using models and the BMDS Test Bed. SE&A prepares the Government Verification Management Plan (GVMP), and the MDNTS develops the verification requirements, which are incorporated into the SCS. Force-on-force and detailed analyses are conducted in accordance with the GVMP to establish expected capabilities and to assess system effectiveness against Technical Performance Measures developed by the MDNTS. These assessments also enable the MDNTS to track the technical progress and performance of the BMDS and to support the SE&A Risk Management Program (RMP). The RMP identifies and assesses system risks based on the priorities in the TOG and maintains plans to mitigate those risks. SE&A conducts engineering analysis in key focus areas such as Lethality, Kill Assessment, Phenomenology, and Countermeasures/Counter-Countermeasures. These analyses are fed back into the systems engineering process to support evolutionary block upgrades to the BMDS. Threat System Engineering (TSE) develops and maintains detailed characterizations of the threat to support BMDS design, development, and verification activities. TSE conducts engineering analyses to define technologically feasible threats and develops the Adversary Capability Document (ACD) that parametrically describes threat capabilities. The ACD guides BMDS design and development and supports the evaluation of BMDS robustness to unexpected variations in the threat. TSE conducts modeling and simulation of the ACD data to produce benchmark scenarios that illustrate the performance of threat systems in order to support analyses of the BMDS. TSE also identifies potential countermeasures and determines their technical feasibility to support engineering analyses and risk assessment of the BMDS. These countermeasure products are also essential for other BMD focused efforts such as Project Hercules, the Targets and Countermeasures Program, and the Countermeasures/Counter-Countermeasures Program. The MDA Countermeasures/Counter-Countermeasures program operates two adversary teams, each with a different threat perspective, to generate countermeasures to BMDS capabilities: a Red Team that is restricted to using only information on the BMDS available from open sources, and a Black Team that has complete access to all technical data on the BMDS in order to identify potential system vulnerabilities and technical concerns. A White Team, comprised of senior technical experts, reviews the adversary teams' concepts and provides MDA with an independent assessment of their feasibility and risk to the BMDS. The program's Blue Team develops capability improvements, also reviewed by the White Team, to counter the impact of high-risk vulnerabilities. The program funds initiatives to develop the Blue Team counter-countermeasures and demonstrate their readiness for insertion into the BMDS. The program budget supports two cycles per year of countermeasure generation and development of counter-countermeasure responses.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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ADVANCED SYSTEMS:

The Advanced Systems Deputate (AS) leads a national effort to assess and pursue innovative concepts and develop algorithms to improve BMDS capability. The Advanced Systems Innovative Concepts (ASIC) process evaluates all internally and externally generated advanced concepts to prove their viability and maintains cognizance over leading edge concepts that could contribute to evolutionary and revolutionary BMD capability enhancements. AS also leads the BMDS Small Business & Innovative Research (SBIR) evaluation process. The Advanced Systems (AS) Deputate Project Hercules is charged with establishing a national effort to develop robust adaptive algorithms to counter off-nominal and evolving missile threats. Project Hercules is developing a decision architecture; the application of advanced decision theory to future BMDS command, control and battle management concepts. Project Hercules provides ongoing algorithm development in response to BMDS element identifying critical algorithm needs in both the near and far terms. Project Hercules products will be provided to the Elements for insertion into their respective programs. In effect, Project Hercules will make capable sensors smarter by bringing algorithm development to the same level as that for developing hardware. Project Hercules utilizes an integrated corporate MDA effort approach to solving the algorithm needs of the Elements. Project Hercules brings together national experts from government organizations and private corporations to solve complicated decision and discrimination algorithm requirements.

INTELLIGENCE:

The Intelligence Directorate's primary mission is to serve as the principal advisor to the MDA Director and staff on all intelligence matters. Functional areas include current intelligence, intel assessments, scenarios, wargaming, asymmetric threat, and foreign material acquisition/exploitation. To accomplish this mission, a current and projected intelligence program, which is based on intelligence community projections, that is traceable to quantifiable analysis. This program defines and documents potential adversary military systems and forces, principally theater and strategic missiles, which BMD systems could confront. This program produces intelligence community-validated threat descriptions and associated capstone threat and countermeasure information as well as Intel-based threat scenarios. As the ACD benchmark scenario threats produced by TSE are finalized, IN will also develop capabilities-based strategic and theater conflict scenarios (STCS) by integrating ACD threat systems into the context of STCS. The ACD benchmark "scenarios" are more accurately described as system-level threat descriptions and 3DoF models, with the intent of allowing the ACD user to select their own launch and aim points. By inserting these conceptual threats within a STCS, the user has access to a scripted scenario conflict with all the road-to-war data appropriate for a BMD wargame or exercise.

JOINT WARFIGHTER SUPPORT:

The Joint Warfighter Support program ensures that warfighter operational perspectives and concerns are reflected in the development of Ballistic Missile Defense (BMD) capabilities. The Deputy for Force Structure Integration and Deployment (TR) works with the Combatant Commanders, Services and Joint Staff through seminars, wargames, and exercises to achieve this goal. Through interaction, areas of improvement in BMD capability are identified for action. This project also supports planning for initial defensive operations capabilities, integration of USSPACECOM/USNORTHCOM in required wargames, tabletops, experiments, and System Integrated Tests and Hardware in the Loop Tests required for enhanced use of JNIC in support of operational concept development.

JOINT NATIONAL INTEGRATION CENTER:

The Joint National Integration Center (JNIC) operates and maintains concurrent testing and operations centers for the C2BMC and Ground-based Midcourse Defense elements of the Ballistic Missile Defense System (BMDS). It provides technical capabilities and expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and quickly deliver the capabilities required to field a viable BMDS. The JNIC operates as the field-operating activity for MDA in Colorado Springs, CO. The JNIC consists of a highly secure research and development building and a consolidated support facility totaling almost a million square feet. It provides MDA with worldwide secure communications connectivity throughout the missile defense community. The JNIC is the premier missile defense BMC3 integration and interoperability facility as well as a modeling & simulation center. Beginning with IDO, and extending through Blocks 04, 06, 08 and beyond, the JNIC will be a "Host Center Services provider" for both BMDS RDT&E and real-world operations. Host Center Services include:

- JNIC support to the GMD Mission Control Center Facility (MCCF) and the GMD Fire Control/Communications (GFC/C) Mission Operations Center (GMOC).
- Operational support and connectivity of the C2BMC Integration and Test Center (BITC), and the C2BMC Experimentation Laboratory (X-Lab).
- Development and support of the BMDS Operations Center (BOC) and the Backup MDA Operations Center (BMOC).

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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- Infrastructure support of the Satellite Tracking and Surveillance System (STSS) Operations Center, Near Field Infrared Experiment (NFIRE) JNIC Mission Operations Center (JMOC), and sensor netting Test Bed.
- Development and support of a common satellite ground station for designated BMDS elements.
- Operation of the BMD Network Operations and Security Center (NOSC) for the MDA enterprise.

COOPERATIVE PROGRAMS AND ALLIED SUPPORT:

Cooperative Programs and Allied Support (CF) are responsible for directing the development and execution of MDA international acquisition programs. These efforts include programs, projects and activities with U.S. industry, allied governments and foreign industry. Cooperative Programs and Allied Support manages and directs international acquisition plans and programs. Additionally activities include conceptualization of new programmatic initiatives and development and execution of the Multinational BMD Conference.

INFORMATION MANAGEMENT SYSTEM:

Information Management System is responsible for the development, implementation, and operation of the BMD Information Management System, which includes decision support and collaboration tools, for both mission and business areas of the BMD enterprise.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
SE&A/TSE	200,660		
RDT&E Articles (Quantity)			

Starting in FY 2004, the System Engineering efforts resides in the BMD Core Program Element (0603890C).

SE&A/TSE conducts architecture and systems trade studies; investment analysis studies; special studies on system, element and component capabilities and performance; adversary capabilities parametric analyses; and performs collaborative design analyses. Engineering requirements and support for verification activities in the BMDS Test Bed are provided. SE&A/TSE conducts annual exchanges between the CM/CCM Program's adversary and BMDS teams to assess and improve BMDS performance against countermeasures. The MDA CM/CCM Program consolidates similar efforts being conducted by the Element Programs and associated funding into a single SE&A activity. SE&A/TSE executes a Corporate Lethality Program to support effective intercepts and establish collateral effects.

BLOCK 2004:

FY 2003 Accomplishments:

- Produced the System Evolution Plan (SEP) that describes the content of the BMDS development program.
- Produced the Block System Capability Specification (SCS) that describes the BMDS in terms of functions and performance-based capabilities, shows the allocation of those capabilities to the Elements in the BMDS, and identifies the method of verification for capabilities at the system level.
- Produced the Block Element/Component Capability Specification (ECS/CCS) that describes a BMDS element in terms of functions and performance-based capabilities that are allocated in, and are traced directly to the SCS. The ECS allocates these characteristics to major subsystems of the element with the result being a complete description of the element.
- Delivered the Block Interface Control Specifications (ICS) that describes BMDS interfaces and contains the requirements to establish and maintain the compatibility between interfacing systems or components.
- Delivered the Block System Integration Strategy (SIS) that guides the system integration and testing of the BMDS and its Elements. The purpose of the BMD SIS is to determine the optimum BMDS functionality and operability and to optimize testing of the synthesized architecture (both BMDS and non-BMDS elements that may require modification to meet BMDS requirements).

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment	
<ul style="list-style-type: none">- Delivered Red Team countermeasure conceptual design- Delivered Black Team countermeasure conceptual design- Delivered Blue Team counter-countermeasure plan against Red and Black Team countermeasures <p>BLOCK 2006: FY 2003 Accomplishments:</p> <ul style="list-style-type: none">- Delivered Block SCS- Delivered Block ECS/CCS- Delivered Block ICS- Finalized specifications for Forward Based Radar- Reviewed multiple candidates for Block architecture- Competed alternatives for BMDS Block architecture- Reviewed and approved Block program definition- Updated the TOG- Updated the ACD- Updated the SEP- Delivered Red Team countermeasure conceptual design- Delivered Black Team countermeasure conceptual design- Delivered Blue Team counter-countermeasure plan against Red and Black Team countermeasures <p>BLOCK 2008: FY 2003 Accomplishments:</p> <ul style="list-style-type: none">- Completed conceptual design for Block and BMDS elements- Developed specifications for KE Boost Interceptor- Updated the TOG- Updated the ACD- Updated the SEP <p>BLOCK 2008+: FY 2003 Accomplishments:</p> <ul style="list-style-type: none">- Updated the TOG- Updated the ACD- Updated the SEP		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment	
	FY 2003	FY 2004	FY 2005
Advanced Systems	79,482		
RDT&E Articles (Quantity)	10		
<p>PROJECT HERCULES: Beginning in FY 2004, funding for the Hercules Project will reside in the new BMDS Products Program Element (0603889C), Project 1010 (BMC2).</p> <ul style="list-style-type: none"> - Developed a prototype decision architecture; the application of advanced decision theory to future BMDS command, control & battle management concepts. - Initiated development of a BMDS Fusion Toolbox for real-time fusion of distributed sensors. Initial demonstration of this toolbox will be in December of 2002 - Completed development and testing of five advanced midcourse algorithms - Continued Development of an additional 40 decision and discrimination algorithms to enhance BMDS effectiveness - Developed a radar and optical clutter mitigation architecture - Planned flight experiments for evaluating the clutter mitigation architecture and validation of clutter models <p>Project Hercules Block 2004-2006: The initial focus of Project Hercules has been midcourse discrimination for the Ground Based Midcourse Element. In FY 2002, Project Hercules expanded its scope to include all phases of missile flight and the decision architecture. In FY 2003, Project Hercules will continue the spiral-development and testing of these key capabilities leading to maturation and integration into the BMDS. Activities include models, delivery and testing of Discrimination Algorithm (DA) prototypes, BMDS fusion Toolbox demonstration, BMDS Model support, post-flight-test data analysis in support of IFTs, the continuation of planning flight experiments for evaluating the clutter mitigation architecture, and validation of clutter models.</p> <p>ADVANCED SYSTEMS INNOVATION CELL (ASIC): Beginning in FY 2004, funding for the ASIC effort will reside in the BMD Technology Program Element (0603175C), Project 6010, Advanced Technology.</p> <ul style="list-style-type: none"> - Processed over 150 innovative concepts and proposals in a formal scientific, and engineering, peer review process; prepared briefings, and presented decision briefings to MDA senior leadership. - 7 innovative concepts selected for further investigation and were put forth as POM initiatives. - Currently funded 2 proposals with FY 2002 AS funding. - Provided a form for unique unsolicited proposals from concerned Citizens to make a contribution to missile defense. <p>The ASIC evaluates all internally and externally generated advanced concepts to prove their viability and maintains cognizance over leading edge concepts that could contribute to evolutionary and revolutionary BMD capability enhancements. It is the ASIC team's goal to release an annual Broad Agency Announcement each October and to have each concept the Agency receives reviewed within sixty days.</p> <p>SMALL BUSINESS & INNOVATIVE RESEARCH (SBIR) EVALUATION: Beginning in FY 2004, funding for SBIR Evaluation effort will reside in the BMD Technology Program Element (0603175C), Project 6010, Advanced Technology.</p> <ul style="list-style-type: none"> - Established formal Tri-service review group - Offered 21 new SBIR solicitation topics - Evaluated over 3000 SBIR proposals - Recommended 28 proposals for Phase I contract - Recommended 5 Phase I contracts for Phase II contract - Leveraged BAA topics and Project Hercules into the current SBIR solicitation 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment	
<p>The SBIR Evaluation team leads the development of SBIR/STTR topics, the evaluation, assessment, and recommendation of SBIR/STTR proposals, and monitors SBIR/STTR contracts and the integration of their products into MDA and MDA/AS programs and thrusts.</p>			
	FY 2003	FY 2004	FY 2005
Intelligence Systems Threat	11,502		
RDT&E Articles (Quantity)			
<p>Beginning in FY 2004, funding for the Intelligence Systems Threat effort will reside in the BMD Core Program Element (0603890C).</p> <p>Serve as MDA's liaison to the intelligence community and provide current and projected intelligence information to support all MDA activities. Produce the BMD Threat Assessment, specialty threats, targets analyses intel-based and capabilities-based threat scenarios, and provide management and planning support. MDA/IN supports missile defense developers with a foundation of DIA validated ballistic missile threat data. The foundation consists of: databases, missile system studies, and level 1 (engagement), level 2 (lethality), and level 3 (test target design) missile system studies. As examples:</p> <p>Database include</p> <ul style="list-style-type: none"> --Characteristics --Performance --IOC & service life -- Payloads --Countermeasures --Force levels --Proliferation --Radar and infrared signatures <p>SCENARIOS</p> <p>2003 Accomplishments:</p> <ul style="list-style-type: none"> --ACD Conceptual Threat Systems, Intell-Based Systems --Middle East Crisis Scenario (MECS) 2006 --MDEx threat support --BPEx 02-3 threat support --Integrated Missile Defense Experiment (IMD) II threat scenario --GMD Sim 02A threat support --HWILT threat support --Test Bed- threat specs <p>2004 Planned:</p> <p>Not Applicable. In FY 2004, this effort is funded in PE 0603890C.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603880C Ballistic Missile Defense System Segment	
	FY 2003	FY 2004	FY 2005
Joint Warfighter Support	19,885		
RDT&E Articles (Quantity)			
Beginning in FY 2004, funding for this effort will reside in the BMDS Products Program Element (0603889C), Project 1010, C2BC. FY 2003 Accomplishments: Block 2004: <ul style="list-style-type: none"> - Developed preliminary IMD CONOPS for the BMDS. - Developed TTP and ROE to integrate BMDS elements into Operational Community. - Developed and coordinated deployment of BMDS initial defensive operations. - Interfaced and coordinated BMDS issues with Services, Joint Staff and Allied Forces. - Explored emerging BMDS and BMC2 concepts/options through studies, seminars, SWARFS, workshops, tabletops, wargames and exercises using the JNIC as the hub. - Managed Board of Directors process to support Service integration and transition. - Constructed BMDS curriculum to build knowledge base with Combatant Commanders senior warfighters. 			
	FY 2003	FY 2004	FY 2005
Joint National Integration Center	43,748		
RDT&E Articles (Quantity)			
Beginning in FY 2004, funding for this effort will reside in the BMDS Products Program Element (0603889C), Project 0204, JNIC. The FY 2003 funding provided a core capability, operational support, limited modernization of infrastructure, and personnel. The core capability provided a limited corporate knowledge base comprised of leading technical experts with the capability to respond quickly to customer requirements in the areas of Integrated Missile Defense Analysis, Exercise Support, the Multi-Mission Integration Cell, Wargames, and the Missile Defense Wargame and Analysis Resource (MDWAR). The Operational support provided a secure facility and infrastructure encompassing computers, communications, networks, environmental support, Testbed environments and other capabilities essential for the execution of MDA programs and activities. Limited modernization provided for minor infrastructure upgrades and limited upgrades to selected information technology capabilities throughout the JNIC. Planned modernization was deferred to support growing missions resulting in a degradation of infrastructure and information management system support. The personnel and support category provided a well-trained, highly qualified, government and civilian presence to ensure execution of the JNIC mission in support the MDA. The FY 2003 funding levels allowed the JNIC to continue maintaining these programs at the level of FY 2002 and again with limited modernization.			
	FY 2003	FY 2004	FY 2005
Cooperative Program and Allied Support	2,285		
RDT&E Articles (Quantity)			
Provided the forum to introduce countries and international organizations to the value-added of missile defense in cooperative programs and capabilities by providing protection to their selected critical assets as well as potentially providing support to the international community. These efforts included development and evaluation of non-U.S. operational concepts created in conjunction with supported country as well as evaluation of system and architecture performance. Efforts included but are not limited to bilateral, unilateral and multi-lateral examinations of U.S. and foreign assets in extended air defense scenarios. Provided the basis for developing potential foreign military sales opportunities.			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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	FY 2003	FY 2004	FY 2005
Information Management System	32,020		
RDT&E Articles (Quantity)			

Beginning in FY 2004, funding for this effort will reside in the new BMD Core Program Element (0603890C).

Develop, implement, and operate the MDA Information Management System. Includes decision support and collaboration tools for both mission and business areas of the MDA enterprise.

In FY 2003, efforts included, but was not limited to the following: Complete WAN modernization and compliance with DoD guidance; Transfer BMDO network circuits to service approved networks; Consolidate VDC network and BMDONet maintenance; Design WEB exchange with remote access capability; Develop BMD WAN architecture for enterprise applications; Implement WIN 2000 enterprise; Implement classified remote access capability (VPN); Complete the upgrade of VDC circuits and servers to accommodate associative neuro-networking technology; Complete establishment of Single BMD Web portal; Establish Bulk Email Process; Negotiate with NWS to link their database card catalog to Data Centers Program; Develop Enterprise IM/IT System Strategy; Upgrade Oracle 8I to Facilitate Web Integration; Update infrastructure for transparent/selective access, BMDO Internal Net, BMD Extranet, and Merge Internal/External nets.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

SE&I will implement the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, & evolutionary acquisition through the use of two-year capability blocks.

To bring about the transition to a BMDS, MDA has created the Missile Defense National Team System Engineering and Integration (MDNTS) and the Missile Defense National Team Battle Management/ Command and Control (MDNTB). The MDNTS is composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. The strategy is for the Missile Defense National Team System Engineering & Integration (MDNTS) is to ensure successful development of the BMDS through system definition & analyses, capability allocation, block integration, and verification. The execution of detailed systems engineering and integration is a collaborative effort that is achieved via integrated product teams comprised of individuals from each component of the MDNTS.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Advanced Systems										
Advanced Systems	Various	LMMC/Sparta/SMDC / Boeing/JHU/APL/ON R	30,506					CONT.	30,506	
Subtotal Product Development			30,506	0		0		0	30506	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SE&A/TSE										
MDNTS (I)	CPAF	Boeing/VA	11,757					CONT.	11,757	
Corporate Lethality Prgm	Various	Various	7,600					CONT.	7,600	
CM/CCM	Various	Various	1,600					CONT.	1,600	
SETA Support	CPFF	Sparta/VA	6,485					CONT.	6,485	
SETA Support	CPFF	CSC/VA	5,792					CONT.	5,792	
SETA Support	Various	VRI/VA	1,515					CONT.	1,515	
SETA Support	CPFF	SAIC/VA								
Advanced Systems										
Advanced Systems	Various	Various	20,000						20,000	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Intelligence Systems Threat										
Army Intel Support	MIPR	NGIC, SMDC	1,650						1,650	
Air Force Intel Support		NAIC	870						870	
Program Support		SMDC/ AL	4,000						4,000	
App Support		SPC/ CO	2,480						2,480	
Scenario Pro		MDA/ VA	2,202						2,202	
Wargaming Support		SPC/ CO	300						300	
Information Management System										
Enterprise Info Mgt	MIPR	AMSC/ AL	3,171						3,171	
Enterprise Info Mgt	MIPR	MDDC/ AL	5,593						5,593	
Enterprise Info Mgt	MIPR	JNIC/ CO	2,264						2,264	
Enterprise Info Mgt	MIPR	FEDSIM/ VA	740						740	
Enterprise Info Mgt	CPFF	DRC/ VA	1,114						1,114	
Enterprise Architecture & Eng	BPA	SRA/ VA	4,065						4,065	
Enterprise Architecture & Eng	MIPR	DISA/ VA	1,397						1,397	
Enterprise Info Mgt	Various	Various	2,556						2,556	
Enterprise Architecture & Eng	CPAF	NG	7,153						7,153	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Joint National Integration Center										
JNIC Utilities		50 Space Wing/ CO	906						906	
Subtotal Support Costs			95,210	0		0		0	95210	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Joint Warfighter Support										
Combatant Commanders Experim	Other	Theatre Combatant Commanders	15,175					CONT.	15,175	
Joint National Integration Center										
JNIC	C/CPAF	Northrop Grumman/ CO	34,384						34,384	
Advanced Systems										
Advanced Systems	Various	SMDC/ AL								
Subtotal Test and Evaluation			49,559	0		0		0	49559	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SE&A/TSE										
FFRDC/UARCs/DOE Labs	MIPR	Various	26,595					CONT.	26,595	
Government Personnel Spt		WHS/ Washington, DC	22,182					CONT.	22,182	
Travel		Various	595					CONT.	595	
Advanced Systems										
Advanced Systems	Other	CSC/ SMDC	3,484					CONT.	3,484	
Joint Warfighter Support										
Support Contracts	MIPR	CSC, Vanguard, Sparta/ VA	3,170					CONT.	3,170	
Joint National Integration Center										
JNIC		JNIC/ Colorado Springs, CO	3,305						3,305	
JNIC		USN, Naval Research Laboratory/ Colorado Springs, CO	926						926	
JNIC	CPAF	Vanguard Research, & ARINC/ Colorado Springs, CO	2,915						2,915	
JNIC	MIPR	Mitre Corp/ Colorado Springs, CO	1,312						1,312	
Cooperative Program and Allied Support										
CF Program Support	CPFF	Sparta/ Various	937					CONT.	937	
Information Management System										

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ent. Plans Policies & Analyses	CPFF	EMC/ CA	2,929					CONT.	2,929	
Ent. Plans Policies & Analyses	Various	Various/ VA	1,002						1,002	
Subtotal Management Services			69,352	0		0		0	69352	
Remarks										
Project Total Cost			244,627	0		0			244,627	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Algorithms (AS)	▲																											
Manufacturing Processes and Advanced Materials																												
Adversary Capability Document/Updates (SE)		▲																										
Block ECS/CCS (SE)	▲																											
Block SCS (SE)	▲																											
TOG/Updates (SE)			▲																									
Algorithms to Test (AS)				▲																								
BMD Threat Assessment (IN)			▲																									
BMDS Fusion Toolbox Demonstration (AS)	▲																											
Block SCS (SE)				▲																								
DA Prototype (AS)				▲																								
System Evolution Plan/Updates (SE)			▲																									
BMDS Model (AS)		▲																										
Block ECS/CCS (SE)				▲																								
BMDS Model (AS)				▲																								
Threat Scenarios (IN)	▲	—	—	▲																								

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Other																																
SBIR Topics Released (AS)	▲																															
WAN Architecture Development (CI)	▲	—	—	▲																												
BAA Submission (AS)				▲																												
Combatant Commanders Experiments (TR)	▲	—	—	▲																												
Project Hercules Program Review (AS)				▲																												
SBIR Topics Released (AS)		▲																														
STTR Phase II Invitations (AS)		▲																														
Decision Architecture Reviews (AS)	▲																															
Information Assurance Ops Ctr Def. and Dep. (CI)	▲	—	—	▲																												
SBIR Phase II Invitations (AS)			▲																													
Decision Architecture Reviews (AS)				▲																												
SBIR Phase II Invitations (AS)	▲																															
STTR Topics Released (AS)				▲																												

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Algorithms (AS)	1Q,4Q						
Manufacturing Processes and Advanced Materials							
Adversary Capability Document/Updates (SE)	2Q						
Algorithms to Test (AS)	1Q						
Block ECS/CCS (SE)	1Q						
Block SCS (SE)	1Q						
Government Verification Management Plan (SE)	1Q						
TOG/Updates (SE)	3Q						
Algorithms to Test (AS)	4Q						
BMD Threat Assessment (IN)	3Q						
BMDS Fusion Toolbox Demonstration (AS)	1Q						
Block SCS (SE)	4Q						
DA Prototype (AS)	4Q						
Reviewed and approved Block program definition (SE)	4Q						
System Design Review (SE)	1Q						
System Evolution Plan/Updates (SE)	3Q						
BMDS Model (AS)	2Q						
Block ECS/CCS (SE)	4Q						
Specifications for KE Boost Interceptor (SE)	3Q						
System Design Review (SE)	3Q						
BMDS Model (AS)	4Q						
Threat Scenarios (IN)	1Q-4Q						
Other							
Algorithm Handover Meetings (AS)	1Q						
SBIR Topics Released (AS)	1Q						
WAN Architecture Development (CI)	1Q-4Q						
Algorithm Handover Meetings (AS)	2Q						
BAA Submission (AS)	4Q						
Combatant Commanders Experiments (TR)	1Q-4Q						
Project Hercules Program Review (AS)	4Q						

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
SBIR Topics Released (AS)	2Q						
STTR Phase II Invitations (AS)	2Q						
Algorithm Handover Meetings (AS)	3Q						
Decision Architecture Reviews (AS)	1Q						
Information Assurance Ops Ctr Def. and Dep. (CI)	1Q-4Q						
SBIR Phase II Invitations (AS)	3Q						
Algorithm Handover Meetings (AS)	4Q						
Decision Architecture Reviews (AS)	4Q						
SBIR Phase II Invitations (AS)	1Q						
STTR Topics Released (AS)	4Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1060 Test & Evaluation	340,570	0	0	0	0	0	0
RDT&E Articles Qty	9	0	0	0	0	0	0
<p><i>Note: Beginning in FY 2004, The funding for this effort is moved to the Ballistic Missile Defense Test & Targets Program Element (PE 0603888C) and the Ballistic Missile Defense System Core Program Element (PE 0603890C).</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>In FY 2003 the Test & Evaluation (T&E) Project consolidated all System-wide T&E resources. This supported cohesive facilitation, management and execution of these test activities for a single, integrated BMD System. The T&E project provided the test infrastructure and analytical tools needed by the Missile Defense Agency (MDA) to execute a System-Wide Test Program. Element-unique T&E costs were captured in the respective BMDS element.</p> <p>MDA's testing needs expanded beyond those of the individual BMDS elements. To address this issue, the Responsible Test Organization and the Combined Test Force (RTO and CTF) were initiated to provide a single point of responsibility, authority, and accountability for BMD System testing. The RTO draws together test planning and reporting, corporate range infrastructure, environmental planning, provisioning and mission assurance. It also establishes common, repeatable processes and procedures for test planning. The CTF serves as the execution arm of the RTO focusing on the execution of system-level tests. The CTF is responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing.</p> <p>The BMDS Test Program provides for a cohesive program of testing to include: System Integrated Flight Tests (SIFTs); integration of system objectives onto Element flight tests, the Missile Defense Integrated Exercises (MDIEs), and the Integrated Missile Defense (IMD) Wargames. The BMDS Test Program provides for characterization of BMDS performance as input to block assessments. SIFTs are designed to: measure BMDS integration, assess BMDS capabilities, and provide truth data and validation data for models and simulations. The MDIE utilizes the Missile Defense System Exerciser (MDSE) Hardware-in-the-loop (HWIL) to stimulate system elements. These exercises are designed to perform system capability assessments, measure interoperability, provide verification of element interfaces, and provide initial integration and test of block upgrades. The Missile Defense Wargame Analysis Resource (MDWAR - formerly Wargame 2000) is an Operator-in-the-Loop test tool which supports assessment of BMDS capability and development of BMDS operating concepts. In FY03, the BMDS Test Program imposed system-level objectives onto Element flight tests to support Initial Deployment Operations (IDO) and Block 04 assessments, initiated planning for SIFTs, and conducted MDIE and IMD Wargame exercises. To support the BMDS Test Program development, program objectives, and performance characterization, MDA T&E also provides resources to support mission planning, data collection, analysis, and exploitation for Observation Island and Graystar.</p> <p>The BMDS Measurements Program is an integrated test program defined and established to ensure a coherent, complete, cost effective, and disciplined approach to collecting data/measurements to support characterization of the BMDS mission space. Under the Measurements Program, all MDA measurement requirements which support Block Characterization, Threat Characterization, M&S Validation, Phenomenology, Advanced Concepts, Lethality, Kill Assessment, and Special Tests are collected, prioritized and validated by the Measurements Program Assessment Team (MPAT). Once validated, requirements are allocated to Tests of Opportunity (either Auxiliary Sensor Participation or Piggyback Operations) or used to design the dedicated flight tests (which will all be designated as "Critical Measurements and Countermeasure" (CM/CM) flight tests after FY04). In FY03, the ASFT and ADE flight test campaigns were executed under the Measurements Program. The ASFT objectives were: CM characterization including signatures and phenomenology to support discrimination algorithm development and model validation for Project Hercules; and determining the feasibility and efficacy of CMs. The Aerial Dispersion Experiment (ADE) test was designed to characterize debris dispersion and footprint after ground impact of four liquid propelled rockets. The Lethality and Kill Assessment Test Programs leverage BMD intercept tests of opportunity to characterize post-intercept remnants. This characterization is essential to maintain and improve the core lethality models: PEELS, KIDD, and PEGEM and to identify successful intercepts, perform ground effects analysis, support systems engineering assessments, and facilitate development of real time decision tools to support tactics and engagement doctrines. To support the Measurements and BMDS Test Program development, program objectives, and performance characterization, MDA Test and Evaluation provides resources to support the Data Collection, Analysis, and Exploitation activities of the Optical Data Analysis (ODA), and Radar Data Analysis</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603880C Ballistic Missile Defense System Segment	
<p>(RDA) groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis), explore phenomenology to improve future BMDS systems and new mission areas, and provide characterization and assessment for Measurements and BMDS testing.</p> <p>The Test Resources Program provided the resources for the development, sustainment, and modernization of core corporate T&E infrastructure facilities of the BMDS Test Bed to support system and element-level testing. This included support at BMD-unique ground test facilities:</p> <ul style="list-style-type: none"> - Kinetic Kill Vehicle Hardware in the Loop Simulator (KHILS) at Eglin AFB in Fort Walton Beach, FL - Arnold Engineering and Development Center (AEDC) Hypervelocity Wind Tunnel Number 9 (Tunnel 9) at White Oak, MD - Infrared and Blackbody Standards at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD - Hypervelocity Ballistic Range G Light Gas Gun Von Karman Facilities (VKF) at AEDC in Tullahoma, TN - 7V and 10V Space Chambers at AEDC, Tullahoma, TN - National Hover Test Facility (NHTF) at Edwards AFB, CA - Army Missile Optical Range (AMOR) at Redstone Arsenal, AL - Aero-Optic Evaluation Center (AOEC) at Calspan-University of Buffalo Research Center (CUBRC), NY - Holloman High Speed Test Track (HHSTT) at Holloman AFB, NM <p>BMD-unique range assets at various DoD test ranges:</p> <ul style="list-style-type: none"> - White Sands Missile Range (WSMR) in Las Cruces, NM including Ft. Wingate Launch Complex near Gallup, NM - Reagan Test Site (RTS) at the United States Army Kwajalein Atoll - Pacific Missile Range Facility (PMRF) and Kauai Test Facility (KTF) at Kauai, HI - Wake Island Air Station Launch Complex - Naval Air Warfare Center, Weapons Division, Pt Mugu, CA - Kodiak Launch Complex (AADC) - Vandenburg Air Force Base - Wallops Island <p>Airborne sensors, data collection assets, and special test equipment included:</p> <ul style="list-style-type: none"> - High Altitude Observatory I (HALO-I) - High Altitude Observatory II (HALO-II) - Wide-body Airborne Sensor Platform (WASP) - Sea-Lite Beam Director (SLBD), based at White Sands Missile Range, Las Cruces, NM - Remote Area Safety Aircraft - P-3s <p>All of these assets provided valuable program risk reduction and test implementation capability in support of BMDS activities. Individual BMDS elements paid only the direct costs associated with their specific test efforts. Recommended test infrastructure improvements resulting from the FY 2002 Test Bed Infrastructure Study and the on-going Target Requirements Study were also implemented through the Test Resources Program. The Test Resources effort also supported the development of target requirements and the certification that targets satisfy test objectives.</p> <p>The core Modeling and Simulations (M&S) Program provided for the development, maintenance, upgrades, verification and validation integrated into evolutionary block upgrades for new capabilities and spiral development within the block to support the acquisition strategy. BMD System core models included the engineering, phenomenology, threat, lethality, scene generation, and multi spectrum data products required to validate these tools in common and general use in all elements of the BMDS. Hardware in the Loop (HIL) Tools supported MDIE Exercises for engineering,</p>		

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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development, and test of BMDS integration and interoperability. Operator in the loop tools supported wargaming exercises and the development of Concepts of Operations (CONOPS) and Tactics, Techniques and Procedures (TTPs). Highly aggregated construction models along with medium and high fidelity construction models provided the capability to conduct long, medium, and short term BMD studies, analysis, trade space options, doctrine development, logistics support and feasibility studies. This project also funded the development of applicable standards, improved automated support tools, information assurance, vulnerability assessments, a standards-based V&V program, improved conceptual models, implementation of the High Level Architecture, and verification, validation, and accreditation activities required to ensure credibility of the analytical tools. The International M&S Program supported over 15 international initiatives including the Israel Arrow Program. Programs such as a Russian Cooperative Modeling and Simulation program are also funded within this project.

The Facilities, Siting and Environmental program provided guidance, environmental impact analyses and documentation, real property facility siting, acquisition, and facility operational support for the BMD systems. This project planned, programmed, budgeted, and provided oversight to facility acquisition through the Military Construction (MILCON) and RDT&E construction programs. This project provided guidance and supported Environmental Safety and Occupational Health (ESOH) Programs, including the Environmental Assessment and Environmental Impact Statement process, environmental compliance, pollution prevention, and other environmental efforts. This project provided leadership and consultation to facilitate environmental stewardship and compliance of all BMDS activities with federal, state, local, DOD and international last treaties and regulations.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
System Test & Assessment	110,730		
RDT&E Articles (Quantity)	6		

FY 2003 RDT&E Articles: Two (2) Black Brant XI missiles for ASFT, Four (4) liquid propelled rockets for ADE

FY 2003 Accomplishments:

- The BMDS Test Program includes Missile Defense Integrated Exercises (MDIEs), the System Integrated Flight Tests (SIFTs), and the Integrated Missile Defense (IMD) Wargames.
- Planned System-level participation in Aegis BMD Flight Mission 6.
 - Imposed System-level objectives onto IFT-9 and IFT-10 to support IDO/IDC and Block 2004 assessments.
 - Initiated planning for SIFTs to support Block 2004 assessments.
 - MDIE program conducted pathfinder ground testing geared to supporting pre-IDC/IDO testing.
 - MDIE program performed interactive test planning activities for pre-IDO/IDC testing.
 - Expanded MDSE to Block 2004 System Elements.
 - Continued US-Israeli interoperability testing and development of a US/Russian Federation Cooperative M&S Initiative.
 - Planned, executed and reported IMD 03-1 & 2 Wargames.
 - Planned IMD 04 Series Wargames.
 - Supported data collects by Observation Island and Gray Star missions.

BMDS Measurements Program Accomplishments included:

- Completed execution of the Aerial Dispersion Experiments (ADE) with successful launch of four missiles.
- Successfully completed execution of the Advanced Systems Flight Test (ASFT) in May/June 03. Conducted analysis and exploitation of data for release to users.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment	
<p>- Conducted test planning for future BMDS Measurements Program flight test campaigns including CMCM-1. These missions incorporated requirements for: Systems Engineering assessments and ground effects analysis; improved Scene Generation, updated threat models, discrimination algorithm development and model validation; and assessment, characterization, feasibility and efficacy of countermeasures/counter-counter measures along with element or system degradation assessment.</p> <p>- The Lethality Test Program continued monitoring the lethality Ground and Live Fire Test and Evaluation activities associated with various program elements, and designing flight test experiments leveraging BMD intercepts for the collection of lethality ground effect data to improve the System Lethality models.</p> <p>- The Kill Assessment Test Program developed Impact Database for U.S. and Arrow Programs, developed Impact Model for Optical Energy, and made multiple field data collections.</p> <p>- Supported data planning, collection, and analysis of optical and radar data, and explored phenomenology for critical BMDS missions areas that support enhancements to Strategic Scene Generation Model (SSGM) and development of the Battlespace Environments and Signatures Toolkit (BEST).</p>			
	FY 2003	FY 2004	FY 2005
Test Resources	120,833		
RDT&E Articles (Quantity)	3		
<p>FY 2003 RDT&E Articles: Two (2) Lance Targets for use in Mobile Launch Platform Demonstration; complete Development of HALO-II</p> <p>FY 2003 Accomplishments</p> <ul style="list-style-type: none"> - Continued to maintain the core test infrastructure (Ground Test Facilities, Airborne Sensors, Test Ranges). - Conducted MDA-Wide study to identify the test infrastructure needed to support the BMDS Test Bed and developed an investment plan to support the element BMDS Block Build. - Incorporated the Data Centers Programs as part of the core test infrastructure to support BMDS data/knowledge management, access, and distribution of all BMDS test, experiment, and large-scale M&S exercise data. - Successfully conducted multiple airborne sensor data collection missions in support of the BMDS with the HALO-I platform. - Successfully completed Initial Operation Capability (IOC) of the HALO-II airborne sensor platform and conducted data collection missions in support of the BMD system and element level testing. - Continued the development of the Wide-body Airborne Sensor Platform (WASP) airborne sensor system to support IR and visible data collection for BMDS system and element testing. Successfully conducted system integration lab testing and sensor support hardware and software including communication and data link testing. - Completed Phase 1 of the Mobile Target Launch Capability (MTLC) study. Defined "high-level" requirements for and technical BMD system test benefits of a mobile target sea-launch capability. Phase 2 will be an analysis of potential sea-launch platform options. - Conducted a Mobile Launch Platform (MLP) Proof-of-Principal demonstration. Successfully launched two Lance missiles from the MLP demonstrating that the MLP can be towed to a launch point and conduct target launch operations. - Pacific Range Support Team (PRST): In close coordination with each of the participating DoD test ranges, chartered the PRST. The PRST formally teams the Pacific ranges in providing comprehensive, coordinated test range support for BMD system testing across the ranges. - Range Safety Standardization Program: Developed the framework and sponsored the working groups under which the DoD ranges supporting BMD system testing will develop a single range flight safety process and procedures across the ranges to be utilized for BMD system testing. This will reduce MDA testing risks by eliminating the need to develop and procure multiple flight safety systems to comply with multiple range standards. - Transportable Telemetry Systems (TTS): Defined MDA requirements for transportable telemetry systems to support BMD system testing - Funded procurement of two systems. - Incorporated the electro-optical sensor capabilities of the Innovative Science and Technology Experimentation Facility (ISTEF), located at Cape Canaveral, FL, to assess plume phenomenology of boosting rocket systems - Develop working relationship with AADC to maintain KLC for MDA testing and support MDA target launches. 			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment				
	FY 2003		FY 2004		FY 2005				
Modeling & Simulation	103,896								
RDT&E Articles (Quantity)									
FY 2003 Accomplishments									
<ul style="list-style-type: none"> - Developed and maintained a validated set of System Core models and simulations (M&S) and M&S support activities - Maintained the Advanced Research Center/Simulation Center (ARC/SC) and the MDA Data Centers in direct support of the System-Wide Test Program, System Engineering Program, BMD Architecture development, Project Hercules, Joint Warfighter wargaming, National Teams, and international Cooperative M&S efforts. - Continued to mature legacy environment and signature software codes for BEST. - Continued the Lethality M&S development upgrade in concert with the CLP. - Expanded International collaborative M&S initiatives with international cooperative agreements. 									
	FY 2003		FY 2004		FY 2005				
Facilities, Siting & Environmental	5,111								
RDT&E Articles (Quantity)									
FY 2003 Accomplishments									
<p>Provided environmental program guidance, compliance, planning and NEPA support, real property facility, acquisition, facility operations, and maintenance/repair support for the BMDS.</p> <ul style="list-style-type: none"> - Planned, programmed, budgeted, and provided oversight to facility acquisition through the Military Construction (MILCON) and RDT&E construction programs - Initiated Programmatic Environmental Impact Statement (PEIS) and conducted public scoping hearing - Finalized 26 Environmental Documents - Responsible for the management and oversight of facility, planning, design and construction activities valued at over \$420 million to support the BMDS IDC and Increase Range Infrastructure to support BMDS test and development 									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603880C Ballistic Missile Defense System Segment	
<p>Beginning in FY04, the MDA Deputy for Test and Assessment will execute the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.</p> <p>The Deputy, TE, as the Director of the RTO, will function as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO will perform planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO will have the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO will collaborate with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.</p> <p>The CTF is an embedded execution organization within the RTO. The CTF will focus on the execution of system-level tests. The CTF will also be responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.</p> <p>Test and Infrastructure programs will be executed utilizing a diverse acquisition strategy to take advantage of private industry competitive forces and existing DoD agency, FFRDCs, and international coalition partner capabilities. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Assessment										
System Integrated Flight Tests	Various	Various including USASMDC	9,689						9,689	
Critical Measurements Program	Various	Various	28,203						28,203	
Missile Def Integ Exercises	Various	Various	9,421						9,421	
Special Program Tests	Various	USASMDC/ Huntsville, AL	4,997						4,997	
Radar Exploitation	Various	USASMDC/ Huntsville, AL	2,311						2,311	
Corporate Data Collect & Analy	Various	Redstone Ars, Quantico/ AL, VA	5,128						5,128	
Optical Data Analysis	Various	Various	4,796						4,796	
Radar Data Analysis	Various	Various	3,066						3,066	
Advanced Systems Flight Tests	Various	Various	12,841						12,841	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
BMDs Wargames	Various	JNIC/ Colorado Springs, CO	3,044						3,044	
Lethality	Various	Various	2,312						2,312	
Kill Assessment	Various	USASMDC/ Huntsville, AL	2,369						2,369	
Arrow-MDSE	Various	Various	2,221						2,221	
International Programs	Various	Various	750						750	
Test Planning	MIPR	Various/ NJ, Wash D.C., TN	587						587	
IFT-10 Pre/Post Analy & Exec	Various	Navy	5,864						5,864	
Test Resources										
Ground Test Facilities	Various	Army & Air Force/ NY, AL, FL, MD, TN, CA, NM	19,044						19,044	
Test Ranges	Various	Various/ HI, NM, Marshall Is	39,487						39,487	
Airborne Sensors	C/Various	Raytheon, Aeromet, Boeing/ CA, OK, WA	50,966						50,966	
Targets Cert & Req'ts	Various	USASMDC, POET/ HSV AL, Wash D.C.	797						797	
RDT&E Construction		TBD	115						115	
Modeling & Simulation										
International Coop M&S	Various	Various	8,228						8,228	
BMD System Core M&S	Various	Army, JNIC et al/ AL, CO	33,868						33,868	
BMD Eng/Leth M&S	Various	Army, Air Force, Navy	26,183						26,183	
System Model Program Support	Various	Army	6,193						6,193	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Adv. Res Ctr & Sim Ctr	Various	USASMDC/ Huntsville, AL	10,658						10,658	
High Performance Computing	Various	USASMDC, PEO/ Huntsville, AL	10,576						10,576	
Facilities, Siting & Environmental										
Facilities & Siting	Various	Various	73						73	
Environmental Compliance	Various	Various	75						75	
BMD Prog. EIS	CPFF	ICF/ Arlington, VA	1,577						1,577	
Subtotal Test and Evaluation			305,439	0		0		0	305,439	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Assessment										
Gov` t Personnel & Spt		USASMDC/ Huntsville	3,028						3,028	
Support Contracts	C/FFP	SPARTA, TASC/ CA, MA	9,576						9,576	
TE Travel		MDA/ Wash D.C.	527						527	
Test Resources										
SMDC Govt Personnel		USASMDC/ Hunstville, AL	2,152						2,152	
SETA Support	C/FFP	TASC, SPARTA/ MA, CA	8,272						8,272	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Modeling & Simulation										
Gov't Project Personnel		USASMDC/ Huntsville, AL	1,600						1,600	
Support Contract	FFP	Booz Allen Hamilton et al/ CA	6,590						6,590	
Facilities, Siting & Environmental										
Support Contracts	C/FFP	ICF, SciComm/ VA, MD	3,386						3,386	
Subtotal Management Services			35,131	0		0		0	35131	
Remarks										
Project Total Cost			340,570	0		0			340,570	
Remarks The Test & Evaluation project distributes the majority of its funding to Executing Agents (i.e. the Air Force, Army, Navy, Joint National Integration Center (JNIC), and DTRA) for further dissemination. These Executing Agents will use Military Interdepartmental Purchase Requests (MIPRs) and/or in-house contract vehicles to accomplish the tasks specified.										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Advanced Systems Flight Tests		▲																										
BEST Development	▲	—	—	▲																								
BMDS Wargaming		▲	—	▲																								
MDIE	▲	—	—	▲																								
Test Asset Upgrades																												
HALO II Development Complete	▲																											

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Advanced Systems Flight Tests	2Q						
Aerial Dispersion Experiment (ADE)	2Q-3Q						
BEST Development	1Q-4Q						
Blue Velvet Testing	1Q						
Measurements Programs	1Q-4Q						
Mobile Launch Platform Demonstration	1Q						
BMDS Wargaming	2Q-3Q						
LRALT Characterization	4Q						
MDIE	1Q-4Q						
Studies & Analyses							
Target Roadmap Study	1Q-2Q						
BMDS Supplement. Programmatic Env Impact Statement	1Q-4Q						
Test Asset Upgrades							
HALO II Development Complete	1Q						
Range Safety Standardization Program	1Q-4Q						
Other							
Transfer of Wake Island to Air Force	1Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1070 Producibility & Manufacturing Technology	17,833	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Beginning in FY 2004, funding for this effort will reside in the new Ballistic Missile Defense System Core Program Element (0603890C).

A. Mission Description and Budget Item Justification

The Producibility and Manufacturing Technology (MP) program provides manufacturing technologies and implementation strategies that benefit the Ballistic Missile Defense System (BMDS). These include near term insertion programs that demonstrate capabilities for multiple applications across the BMDS encompassing risk reduction, cost reduction/avoidance and performance enhancement. These programs are identified by utilizing systems engineering, analyses, and assessments as a basis for offering potential remediation of a BMDS area of concern. MP provides tools, strategies for improving the processes in support of the spiral development for the BMDS to meet block upgrade goals.

MP serves as the Missile Defense Agency's (MDA) source for industrial reliability, manufacturing, producibility and capability assessments. MP completes assessments and reports to the Director key industrial base issues associated with developing and acquiring missile defense to include identifying gaps in industrial capabilities for component production. MP supports Program Directors/Program Managers in accomplishing manufacturing and industrial investment strategies for system affordability and technology insertion opportunities including utilization of commercial practices and technologies. MP efforts include working with the Services, Industry (Systems Integration Contractor to subsystem vendors) and other government agencies to leverage current and future projects that will lead to more reliable and affordable components to benefit the BMDS.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Producibility	11,776		
RDT&E Articles (Quantity)			

The MDA/MP program identifies and funds projects that address producibility for the near term insertion into the BMDS. This includes sensors, propulsion, and electronics, production improvements and reliability enhancements, and materials that provide a basis for cost reduction activities for the BMDS. The FY 2003 producibility projects include developing composite components; canisters and missile structures; proof of production processes for Advanced Optical Processor (AOP); demonstration of hardware for Very Long Wave Infrared Focal Plane Array (VLWIRFPA); Complete Proof of Production Process for Two Color Infrared Focal Plane Array (Two Color IRFPA); and initial tests for the Angle-Angle Range Intensity (AARI) Laser Radar (LADAR).

FY 2003 Accomplishments:

AARI LADAR - Successfully accomplished field testing of the AAR Ladar at the AMOR facility. Testing resulted in demonstrated operational capabilities. AAR Ladar successfully transitioned BMDS customers (TE and TC) for incorporation into ongoing BMDS efforts.

AOP - Efforts resulted in successful completion of a field demonstration system and completion of the ALCOR test plan. Transition progress was made through an agreement and funding line with MIT Lincoln Labs for future LexDev HWIL integration and test efforts. BMDS Element customers (AS and GMD) and Industry (Lockheed-Martin NESS & MFC, Raytheon) are tracking progress.

VLWIRFPA - Successful manufacturing and producibility efforts resulted in an improved FPA process yield of 10X , from 2% to 20%. Further engineering and analysis discovered radiation life limit for space environment.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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Composite Canister - The maturation and validation of material, design, producibility, and fabrication techniques resulted in successful transition. The composite canister has been adopted by Lockheed Martin (LM) for the THAAD. LM is making the necessary capital investments for production of the composite canisters.

Two Color IRFPA - Efforts resulted in the successful completion of Critical Design Review (CDR).

MP continued to identify and assess new projects that address producibility aspects for near term insertion into the BMDS.

	FY 2003	FY 2004	FY 2005
Manufacturing Technology	6,057		
RDT&E Articles (Quantity)			

MDA/MP's objective is to identify and fund manufacturing technologies and processes that benefit the BMDS by engaging in initiatives that reduce the risk and cycle time associated with the transition from R&D to production. Manufacturing technology identifies innovative and proven processes that simplify the manufacturability and improve the reliability of complex BMDS element components. MDA/MP leverages DoD, Services, Government Agencies, and Industry programs to assess these processes and determine the viability and impact to the BMDS. Manufacturing Technology focuses on the reduction of risks, costs, and cycle times associated with the development of BMDS elements. The FY 2003 Manufacturing Technology projects include design and component test risk reduction for midcourse Divert and Attitude Control System (DACS), propulsion, lasers, and radars.

FY 2003 Accomplishments:

DACS - The maturation of a successful design, producibility and testing effort resulted in insertion of Throttleable DACS (TDACS) as an alternate path/risk reduction effort. TDACS successfully transitioned to the Element customer (AEGIS BMD) where an integrated solution is being co-funded and managed by AB, Industry, and MP.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

Producibility and Manufacturing Technology adheres to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. It leverages existing industry and government efforts to include the missile defense elements. This is accomplished by assessing baseline systems, identifying high-risk areas and performing analyses to recommend to the Director what the proper course of action is to improve quality and reliability.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Producibility										
AOP		SMDC/ AL	2,513					CONT.	2,513	TBD
2ColorIRFPA		Navy/ PA	2,100					CONT.	2,100	TBD
VLWIRFPA		SAF/AQ/ NM	2,000					CONT.	2,000	TBD
LADAR	MIPR	Fibertek, Inc/ VA	1,000					CONT.	1,000	TBD
Composites/Canisters	Various	Various/ Various	548					CONT.	548	TBD
Producibility	Various	Services/ TBD	309					CONT.	309	TBD
Manufacturing Technology										
DACS		Aerojet/ CA	2,695					CONT.	2,695	TBD
Subtotal Support Costs			11,165	0		0		0	11165	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Manufacturing Technology										
DACS	Other	Aerojet/ CA	0					CONT.		
Man Tech	Various	Various/ Various	806					CONT.	806	
Subtotal Test and Evaluation			806	0		0		0	806	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Manufacturing Technology										
SETA	Various	Sparta, Andrulis/ VA	1,000					CONT.	1,000	TBD
Management Services	Various	Various/ Various	112					CONT.	112	TBD
Producibility										
SETA	Various	Sparta, Andrulis/ VA	1,000					CONT.	1,000	TBD
Subtotal Management Services			2,112	0		0		0	2112	
Remarks										
Project Total Cost			14,083	0		0			14,083	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Producibility							
2ColorIRFPA - Character Test	1Q						
Canister - MANTECH Program for Selected Prototypes	2Q						
2ColorIRFPA - Build 1st FPA on new ROIC	1Q						
LADAR - AMOR Image Test	1Q						
AOP - Development Specification	1Q						
Manufacturing							
DACS - Insertion Polan for Braided C-Sic	3Q						
DACS - Initiate Composite Case for Gas Generator	1Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1090 Program-Wide Support	39,684	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Transferred in FY 2004 and out to BMD System Engineering & Integration Program Element 0603887C, BMD Test & Targets Program Element 0603888C, and BMD Products Program Element 0603889C.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	39,684		
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
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APPROPRIATION/BUDGET ACTIVITY						R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)						0603880C Ballistic Missile Defense System Segment			

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603880C Ballistic Missile Defense System Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324
0707 Theater High Altitude Area Defense (THAAD) Block 2004	0	686,925	592,838	154,167	0	0	0
0807 Theater High Altitude Area Defense (THAAD) Block 2006	0	29,385	239,147	534,581	790,527	91,314	0
0907 Theater High Altitude Area Defense (THAAD) Block 2008	0	0	1,810	204,329	231,731	388,503	323,663
2016 Israeli Arrow Program	124,594	0	0	0	0	0	0
0401 Israeli Arrow Program	0	143,151	87,290	79,001	78,954	79,001	79,062
2090 Program-Wide Support	9,499	0	0	0	0	0	0
0602 Program-Wide Support	0	15,066	16,663	20,970	16,445	11,182	7,599

Note: THAAD is included in Program Element (PE) 0604861C for FY 2003 and transitions to this Terminal Defense Segment (TDS) PE 0603881C for FY 2004 and out.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The MDA develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters as quickly as possible while allowing for rapid insertion of emerging technology in the most affordable manner. These capability blocks will subsequently build on and be integrated with predecessor blocks. Block capabilities are built by using complete elements and their individual components to integrate a single BMDS and provide layered defense against ballistic missiles during all flight phases, Boost, Midcourse, and Terminal, using multiple basing modes and phenomenology.

As an integral part of the total BMDS, the Terminal Defense Segment (TDS) Program Element (PE) funds the Terminal-related element portions of Blocks 2004, 2006, and 2008 and other Terminal-related mission area investment activities. The TDS elements and activities include Theater High Altitude Area Defense (THAAD) and the Israeli Arrow Program. The Patriot Advanced Capability (PAC) 3 element is also a part of the Terminal Defense mission, however, it is funded by the U.S. Army beginning in FY 2004. The BMDS elements in Terminal Defense pursue development and selective upgrades of missile defense capabilities that engage short to medium-range ballistic missiles in the late mid course and terminal phase of their trajectory.

The Terminal Defense Elements provide the final opportunity to engage short to medium-range ballistic missiles not engaged or destroyed in the boost or mid-courses of trajectory. Upon direction of the Ballistic Missile Defense System (BMDS) Command and Control/Battle Management Communications (C2BMC), the THAAD, AEGIS BMD, and fielded Patriot Systems provide the only capability to defend deployed U.S. forces from short to medium-range ballistic missiles, and protect broadly dispersed assets and population centers or selected U.S. sites (Homeland Defense) from short to medium-range ballistic missile attacks. The THAAD element enhances the Missile Defense Agency's Terminal Defense System by deepening, complementing, and extending the BMDS battlespace and capability to engage and negate ballistic missiles and asymmetric threats in both the late mid-course (exo-atmospheric engagements) and terminal phase (endo-atmospheric engagements) of their trajectory and adds significant capability to the BMDS as the threat missiles transition from the mid-course to terminal phase. The THAAD element contributes to the BMDS by providing uncued, cued, and launch on remote engagement sequence capability. Integrated with the AEGIS BMD and PATRIOT Systems, the rapidly deployable THAAD element improves the BMDS overall effectiveness by engaging missiles as they transition from exo- to endo- atmospheric flight where the reentry vehicles are more vulnerable. The flow down of BMD System capability

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MDA Exhibit R-2 RDT&E Budget Item Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603881C Ballistic Missile Defense Terminal Defense Segment	
<p>specifications resulting from the Missile Defense National Team efforts in Command & Control/Battle Management Communications (C2BMC) and Systems Engineering & Integration will guide the integration of the TDS into the BMD System and the BMDS C2BMC architecture.</p> <p>Consistent with the MDA block management framework, the THAAD system element consists of Blocks 2004, 2006, and 2008:</p> <p>Block 2004: Block 2004 represents the design and development of a significant, fundamental THAAD capability against short to medium-range Ballistic Missiles (BMs) and asymmetric threats and demonstration of exo and high endo intercept capability against a limited target set. The rapidly deployable Block 2004 THAAD element will have the following block objectives: - Test Missile with Exo and High Endo Algorithms; -Radar with Initial Discrimination Capability; and - C2BMC with Limited TADIL-J and Defense Design Planner. Block 2004 develops THAAD uncued, cued (from any TADIL-J, Link 16 source) engagement sequence group capability. THAAD Block 2004 also provides the cueing capability for PATRIOT cued and AEGIS cued engagement sequence along with providing AEGIS the capability to conduct launch on remote engagement sequences. Flight testing for Block 2004 begins in 1st quarter, FY 2005, and continues through 1st quarter, FY 2006 with a total of 5 flight tests.</p> <p>Block 2006: Block 2006 represents the second incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block builds on the core, near-term ballistic missile and asymmetric threat defense capability provided to the BMDS by THAAD Block 2004. Additionally, THAAD Block 2006 will initiate fielding to support the BMDS infrastructure. This block continues the concept of being rapidly deployable and expands the capabilities of the THAAD system to address improved Exo and Endo capability against increasingly complex targets. The Block 2006 THAAD element will have robust radar discrimination, capability in stressing Exo and Endo battlespace, Salvo firing doctrine, and operate in a full spectrum of tactical missile environments and survivability. Block 2006 also includes C2BMC embedded training, automated defense planning, and extensive interoperability. Block 2006 THAAD adds to capability for AEGIS to conduct remote engagement sequences to the Block 2004 baseline engagement sequence groups. Block 2006 flight testing begins in 3rd quarter, FY 2006 and continues through 1st quarter, FY 2008 with a total of 5 flight tests.</p> <p>Block 2008: Block 2008 represents the third incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block continues the concept of being rapidly deployable and builds on the core, ballistic missile and asymmetric threat defense capability provided to the BMDS by THAAD Block 2006. This block demonstrates the capabilities of the THAAD system in endo- and exo- atmospheric battlespace against the full threat set. Block 2008 flight testing begins in 2nd quarter, FY 2008 and ends in 2nd quarter, FY 2009 with a total of 6 flight tests.</p> <p>The Arrow system (developed jointly by the U.S. and Israel) is another one of the TDS' mission area investments and provides Israel an indigenous capability to defend against short and medium range ballistic missiles and helps ensure U.S. freedom of action in future contingencies. Arrow also provides protection against ballistic missile attacks to U.S. forces deployed to the region. The Arrow program consists of the following major efforts:</p> <p>The Arrow Deployability Program (ADP), funding completed in FY02, continues the acquisition of an Israel's third Arrow battery. The Arrow System Improvement Program (ASIP) is a block upgrade of the Arrow Weapon System to enhance its capabilities against evolving regional threats. ASIP also includes the development of Arrow co-manufacturing capability and the enhancement of Arrow's interoperability with U.S. ballistic missile defense systems (BMDS) via a Joint Tactical Information Data System (JTIDS)/Link-16 common communication architecture. The Arrow System Improvement Program (ASIP) will develop upgrades to the existing Arrow Weapon System to allow Arrow to address more stressing ballistic missile threats. Related Arrow activities include Caravan Flight test Campaign in U.S., the Israeli Test Bed (ITB), and studies via the Israeli Systems Architecture and Integration (ISA&I) effort that assess the Arrow performance relative to both existing and emerging threats.</p> <p>Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. This includes funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.</p>		

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	136,399	810,440	924,356
Current President's Budget (FY 2005 PB)	134,093	874,527	937,748
Total Adjustments	-2,306	64,087	13,392
Congressional Specific Program Adjustments	0	74,000	0
Congressional Undistributed Adjustments	0	-9,913	0
Reprogrammings	497	0	13,392
SBIR/STTR Transfer	-2,803	0	0

THAAD is included in the Theater High-Altitude Area Defense System Program Element (PE) 0604861C for FY 2002 and FY 2003 and is transferred to this PE, BMD Terminal Defense Segment Program Element (PE) 0603881C, for FY 2004 and out.

Arrow FY04 Appropriation \$80 million increase.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0707 Theater High Altitude Area Defense (THAAD) Block 2004	0	686,925	592,838	154,167	0	0	0
RDT&E Articles Qty	0	11	12	7	0	0	0
<i>Note: FY 2002 and FY 2003 funding for this activity was in PE 0604861C.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The Theater High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). The Terminal Defense Elements provide the final opportunity to engage short to medium-range ballistic missiles not engaged or destroyed in the boost or mid-course phase of trajectory. The THAAD element contributes to the BMDS by providing uncued, cued, and launch on remote engagement sequence capability. THAAD enhances the Missile Defense Agency's Terminal Defense Segment by deepening, complementing, and extending the BMDS battlespace and capability to engage and negate ballistic missiles and asymmetric threats in both the later mid-course and terminal phases of their trajectory. THAAD's highly mobile capability provides BMDS the ability to defend against short to medium-range ballistic missiles and asymmetric threats for protection of U.S. and allied armed forces, broadly dispersed assets and population centers and selected U.S. sites (Homeland Defense) against ballistic missile attacks. THAAD, in conjunction with the fielded Patriot System, provides the Terminal Defense System layer. As part of its ongoing contract efforts, the Block 04 THAAD program supports the MDA objective of enhancing the BMDS capability.</p> <p>Five major components (missiles, launchers, radar(s), Command and Control / Battle Management (C2BM), and THAAD-specific support equipment) will be integrated into the THAAD element and BMDS. THAAD will follow the Missile Defense Agency's (MDA) capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks, using both THAAD System and components to address National Team gap analysis of Engagement Support Groups, identifying and documenting both system and component capabilities and planning for the integration and implementation of both THAAD System and component capabilities.</p> <p>Block 2004: Block 2004 represents the design and development of a significant, fundamental THAAD capability against short to medium-range Ballistic Missiles (BMs) and asymmetric threats and demonstration of exo and high endo intercept capability against a limited target set. The rapidly deployable Block 2004 THAAD element will have the following block objectives: - Test Missile with Exo and High Endo Algorithms; - Radar with Initial Discrimination Capability; - C2/BM with Limited TADIL-J and Defense Design Planner. Block 2004 develops THAAD uncued, cued (from any TADIL-J, Link 16 source) engagement sequence group capability. THAAD Block 2004 also provides the cueing capability for PATRIOT cued and AEGIS cued engagement sequence along with providing AEGIS the capability to conduct launch on remote engagement sequences. Flight testing for Block 2004 begins in 1st quarter, FY 2005, and continues through 1st quarter, FY 2006 with a total of 5 flight tests.</p> <p>RDT&E Articles for Development Tests (DT):</p> <ul style="list-style-type: none"> - FY 2004 (Delivery Schedule): 1 Full-up Missile; 3 Engineering Development Unit (EDU) Missiles; 4 Ground Test Units (GTU) Missiles; 2 Launchers w/ Missile Round Pallet (MRP) and 1 additional MRP for a total of 11 RDT&E articles. - FY 2004 (Buy Schedule): 4 Full-up Missiles; 1 EDU; 3 MRPs; 3 C2BM Tactical Station Group (TSG) for a total of 11 RDT&E articles. - FY 2005 (Delivery Schedule): 3 Full-up Missiles; 3 Launchers w/MRP; 3 additional MRPs; 2 C2BM TSGs and 1 Radar for a total of 12 RDT&E articles. - FY 2005 (Buy Schedule): 2 Full-up Missiles; 1 GTU; 1 TSG and 1 additional MRPs for a total of 5 RDT&E articles. - FY 2006 (Delivery Schedule): 4 Full-up Missiles; 1 EDU; 1 GTU; 1 C2BM TSG for a total of 7 RDT&E articles. 							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Missile)		277,730	129,253
RDT&E Articles (Quantity)		8	3
<p>FY 2003 Accomplishments are shown in PE 0604861C.</p> <p>FY 2004 Planned Program:</p> <p>RDT&E Articles for Developmental Test (DT):</p> <ul style="list-style-type: none"> - FY 2004 (Delivery Schedule): 1 Full-up Missile; 3 Engineering Development Unit (EDU) Missiles; and 4 Ground Test Units (GTU) Missiles for a total of 8 RDT&E articles. - FY 2004 (Buy Schedule): 4 Full-up Missiles and 1 EDU Missiles for a total of 5 RDT&E articles. - Support completion of Block 2004 Element Design Readiness Review. - Complete Missile hardware and software development for first flight and initiate fabrication, assembly and test of hardware for future flight tests. - Initiate System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) activities for Missile. - Deliver Missile software (Build 4.0 for Flight Test 1 and Build 5.0 for Flight Test 2). <p>FY 2005 Planned Program:</p> <p>RDT&E Articles for Development Test:</p> <ul style="list-style-type: none"> - FY 2005 (Delivery Schedule): 3 Full-up Missiles. - FY 2005 (Buy Schedule): 2 Full-up Missiles; 1 GTU for a total of 3 RDT&E articles. - Support first two missile tests (Flight Test 1 and Flight Test 2) at White Sands Missile Range (WSMR). - Continue System Integration Laboratory Hardware-In-Loop activities for Missile. - Continue fabrication, assembly and test of hardware for future flight tests. - Deliver Missile software for Seeker Characterization Flight at WSMR (Build 6.0 for Flight Test 3). - Support first intercept of a Hera target with autonomous THAAD system at WSMR (Flight Test 4). 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603881C Ballistic Missile Defense Terminal Defense Segment		
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Radar)		148,657	244,196
RDT&E Articles (Quantity)			1
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: - Support completion of Block 2004 Element Design Readiness Review. - Continue Radar hardware and software development for first intercept. - Initiate System Integration Laboratory (SIL) Hardware-In-Loop activities for Radar. FY 2005 Planned Program: RDT&E Articles for Developmental Test (DT): - FY 2005 (Delivery Schedule): One Radar - Continue System Integration Laboratory Hardware-In-Loop activities for Radar. - Complete Radar antenna #1. - Deliver Radar software for Seeker Characterization Flight at White Sands Missile Range (WSMR) (Build 4.1 for Flight Test 3) - Support first intercept of a Hera target with autonomous THAAD system at WSMR (Flight Test 4).			
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Launcher)		17,496	7,478
RDT&E Articles (Quantity)		3	6
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: RDT&E Articles for Developmental Test (DT): - FY 2004 (Delivery Schedule): Two Launchers w/MRP and 1 additional Missile Round Pallets for a total of 3 RDT&E articles. - FY 2004 (Buy Schedule): 3 Launchers; 3 additional Missile Round Pallets for a total of 6 RDT&E articles. - Support completion of Block 2004 Element Design Readiness Review. - Continue software development for Flight Test 3. - Initiate fabrication, assembly, and test of Launcher hardware. - Initiate System Integration Laboratory (SIL) Hardware-In-Loop activities for Launcher.			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<p>FY 2005 Planned Program:</p> <p>RDT&E Articles for Developmental Test (DT):</p> <ul style="list-style-type: none"> - FY 2005 (Delivery Schedule): 3 Launchers w/MRP and 3 additional Missile Round Pallets for a total of 6 RDT&E articles. - FY 2005 (Buy Schedule): 1 additional Missile Round Pallets. - Support first two missile tests at White Sands Missile Range (WSMR). - Continue System Integration Laboratory Hardware-In-Loop activities for Launcher. - Deliver Launcher software for Seeker Characterization Flight at WSMR (Build 3.0 for Flight Test 3) - Support first intercept of a Hera target with autonomous THAAD system at WSMR (Flight Test 4). 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (C2BMC)		50,438	33,963
RDT&E Articles (Quantity)			2
<p>FY 2003 Accomplishments are shown in PE 0604861C.</p> <p>FY 2004 Planned Program:</p> <p>RDT&E Articles for Developmental Test (DT):</p> <ul style="list-style-type: none"> - FY 2004 (Buy Schedule): 3 C2BMC Tactical Station Groups (TSG) - Support completion of Element Design Readiness Review. - Initiate fabrication, assembly, and test of C2BM hardware. - Continue software development. - Initiate System Integration Laboratory (SIL) Hardware-In-Loop activities for C2BM. <p>FY 2005 Planned Program:</p> <p>RDT&E Articles for Developmental Test (DT):</p> <ul style="list-style-type: none"> - FY 2005 (Delivery Schedule): 2 C2BM Tactical Station Groups - Formal release of C2BM Build 4.0 software for System Integration Laboratory (SIL) Testing at White Sands Missile Range (WSMR). - Continue SIL Hardware-In-The-Loop (HWIL) activities for C2BM. - Support first integrated flight test (Flight Test 3) at White Sands Missile Range (WSMR), as well as Flight Test 4 and Flight Test 5. - Continue fabrication, assembly, integration, and test of C2BMC TSGs. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603881C Ballistic Missile Defense Terminal Defense Segment		
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Integrated Logistics Support)		16,774	11,638
RDT&E Articles (Quantity)			
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: - Procure GFE to support total program requirements. - Maintain an Integrated Logistics Support program. - Conduct supportability analysis. - Develop support strategy, support documentation, and training material. - Develop and procure training devices and Peculiar Support Equipment. - Conduct training to support soldier participation in the Block 2004 Flight Test program. FY 2005 Planned Program: - Procure GFE to support total program requirements. - Maintain an Integrated Logistics Support program. - Conduct supportability analysis. - Develop support strategy, support documentation, and training material. - Develop and procure training devices and Peculiar Support Equipment. - Conduct training to support soldier participation in the Block 2004 Flight Test program.			
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Sys Level Prog Mgmt)		77,995	63,225
RDT&E Articles (Quantity)			
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: - Oversee and participate in Block 2004 Element Design Readiness Review. - Provide leadership and direction to program. - Ensure program integration with BMDS National Team.			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Support Controlled Flight Test 1 and Flight Test 2, seeker characterization flight, and first HERA intercept at WSMR. - Continue to provide guidance and management to program. - Continue program integration with BMDS. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Weapon Sys Engr & Integ Team)		58,933	28,884
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments are shown in PE 0604861C.</p> <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Conduct Block 2004 Element Critical Design Review. - Assess Block 2004 capabilities using comprehensive, end-to-end digital simulation. - Support Flight Test mission planning. - Complete development/integration of the system integration Hardware-in-the-Loop facility. - Begin integration of Components in the system integration Hardware-in-the-Loop facility. - Participate in wargames, exercises and interoperability demonstrations. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Support Controlled Flight Test 1, Flight Test 2, seeker characterization flight, and first Hera intercept at White Sands Missile Range (WSMR). - Begin validation of the end-to-end digital simulation using Flight Test data. - Complete integration of an autonomous THAAD system in the system integration Hardware-in-the-Loop facility. - Support pre-flight testing in the system integration Hardware-in-the-Loop facility. - Support Flight Test data analysis. - Continue validation of the end-to-end digital simulation using Flight Test data. - Begin validation of the system integration Hardware-in-the-Loop facility using Flight Test data. - Begin integration of Flight Test 5 flight hardware and software in the system integration Hardware-in-the-Loop facility. - Participate in wargames, exercises and interoperability demonstrations. - Update assessment of Block 2004 Element capability using comprehensive, end-to-end digital simulation. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P (Ground and Flight Test Support)		30,207	25,787
RDT&E Articles (Quantity)			
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: - Flight Test Planning - Continue integration into White Sands Missile Range (WSMR) and Pacific Missile Range Facility (PMRF). - Test Range Facilities Activation - System Integration Laboratory (SIL) Element Verification Testing. - Launch & Test Support Equipment (L&TSE) validation and range integration. - Support early Developmental Flight tests at White Sands Missile Range (WSMR). - Component delivery and integration; Target integration planning. - Ground Test Planning - Continue planning for Block Qualification Testing (BQT). - Provide hardware for Safety tests; transition planning. - Lethality - Planning for sled test program and Scaled Light Gas Gun (LGG) Test planning. FY 2005 Planned Program: - Flight Test Planning - Continue integration into PMRF. - Transition planning/execution from WSMR to PMRF. - Support four flight tests at WSMR. - Ground Test Planning - Continue planning for Block Qualification Testing (BQT) and transition planning. - Lethality (Capability Development/Development Tests) - Conduct sled tests and continue planning for light gas gun test.			
	FY 2003	FY 2004	FY 2005
Block 2004 Government Test & Evaluation		8,695	48,414
RDT&E Articles (Quantity)			
FY 2003 Accomplishments are shown in PE 0604861C. FY 2004 Planned Program: - Flight Test Planning - Continue integration into White Sands Missile Range (WSMR) and Pacific Missile Range Facility (PMRF). - Ground Test Planning - Continue planning for Block Qualification Test (BQT). - Lethality - Planning for sled test program at Holloman Air Force Base.			

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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FY 2005 Planned Program:

- Support all four tests at WSMR.
- Flight Test Planning - Continue integration into Pacific Missile Range Facility.
- Ground Test Planning - Continue planning for Block Qualification Testing (BQT).
- Lethality - Conduct sled tests and check out tests and continue planning for light gas gun test.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603881C Ballistic Missile Defense Terminal Defense Segment				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The THAAD Block 2004 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 103-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 50% complete. Current development activities supporting THAAD Block 2004 can be used to provide an initial capability to protect deployed U. S. and allied forces, or selected U.S. sites.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD Block 2004 ACD&P (Missile)										
	SS/CPAF	LMSSC/ Various		277,730	1/3Q	129,253	1/2Q		406,983	
THAAD Block 2004 ACD&P (Radar)										
	SS/CPAF	LMSSC and Raytheon/ Various		148,657	1/3Q	244,196	1/2Q		392,853	CONT.
THAAD Block 2004 ACD&P (Launcher)										
	SS/CPAF	LMSSC/ Various		17,496	1/3Q	7,478	1/2Q		24,974	CONT.
THAAD Block 2004 ACD&P (C2BMC)										
	SS/CPAF	LMSSC and Raytheon/ Various		50,438	1/3Q	33,963	1/2Q		84,401	CONT.
THAAD Block 2004 ACD&P (Integrated Logistics Support)										
	SS/CPAF	LMSSC/ Various		16,774	1/3Q	11,638	1/2Q		28,412	CONT.
THAAD Block 2004 ACD&P (Sys Level Prog Mgmt)										
	SS/CPAF	LMSSC/ Various		77,995	1/3Q	63,225	1/2Q		141,220	CONT.
THAAD Block 2004 ACD&P (Weapon Sys Engr & Integ Team)										
	SS/CPAF	LMSSC/ Various		58,933	1/3Q	28,884	1/2Q		87,817	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD Block 2004 ACD&P (Ground and Flight Test Support)										
	SS/CPAF	LMSSC/ Various		30,207	1/3Q	25,787	1/2Q		55,994	
Subtotal Product Development			0	678,230		544,424		0	1222654	
Remarks Lockheed contract DASG60-00-C-0072 was awarded 4 Aug 00. Prior year funds are in Project 2011.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2004 Government Test & Evaluation										
TEST PLANNING	MIPR	WSMR/ AMCOM		8,695	1/2Q	48,414	1/2Q		57,109	CONT.
Subtotal Test and Evaluation			0	8,695		48,414		0	57109	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services			0	0		0		0	0	
Remarks										
Project Total Cost			0	686,925		592,838			1,279,763	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Conduct Block 2004 Flight Test 1									Δ																			
Conduct Block 2004 Flight Test 2										Δ																		
Conduct Block 2004 Flight Test 3											Δ																	
Conduct Block 2004 Flight Test 4												Δ																
Conduct Block 2004 Flight Test 5													Δ															
BLOCK 2004																												
Element Design Readiness Review (DRR)						Δ																						
Flt 1 Missile Delivered to WSMR								Δ																				
Flt 1 Missile S/W Final Release Integrated at SIL							Δ																					
Flt 3 Missile S/W Final Release Integrated at SIL										Δ																		
Flt 3 Missile Delivered to WSMR											Δ																	
C2BMC Tactical Station Grp (TSG) Integ at SIL										Δ																		
C2BMC S/W B4 Final Release Integrated at SIL											Δ																	
Launcher #2 (Prototype) Integrated at WSMR							Δ																					
Launcher S/W B3 Final Release Integrated at SIL										Δ																		

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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																																
Launcher #3 Integrated at WSMR									Δ																							
Radar #1 Integration and Test Complete										Δ																						
Radar S/W B4.1 Final Release Integrated at SIL										Δ																						
Soldier-in-the-Loop Training Course 1 Complete								Δ																								
Soldier-in-the-Loop Training Course 2 Complete												Δ																				
Active Leak Sensor Prototype Delivered to Troy, AL								Δ																								
Flt 1 SIL Final Integration							Δ																									
Flt 2 SIL Final Integration								Δ																								
Flt 3 SIL Final Integration											Δ																					
Flt 4 SIL Final Integration												Δ																				
Block Process Validation (BPV) Complete												Δ																				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Conduct Block 2004 Flight Test 1			1Q				
Conduct Block 2004 Flight Test 2			2Q				
Conduct Block 2004 Flight Test 3			3Q				
Conduct Block 2004 Flight Test 4			4Q				
Conduct Block 2004 Flight Test 5				1Q			
BLOCK 2004							
Element Design Readiness Review (DRR)		2Q					
LNTSE #1 Integrated at SIL		2Q					
WSMR Activation Complete		2Q					
Kill Vehicle (KV) Qual Tests Complete		4Q					
Range Safety Qual Test Complete		3Q					
Missile Environments Phase I Complete		4Q					
Flt 1 Missile Delivered to WSMR		4Q					
Flt 1 Missile S/W Engr Release Integrated at SIL		2Q					
Flt 1 Missile S/W Final Release Integrated at SIL		3Q					
Flt 3 Missile S/W Engr Release Integrated at SIL			1Q				
Flt 3 Missile S/W Final Release Integrated at SIL			1Q				
Flt 3 Missile Delivered to WSMR			3Q				
C2BMC S/W B4 Formal Qual Test Complete		4Q					
C2BMC Tactical Station Grp (TSG) Integ at SIL			1Q				
C2BMC TSG Available BQT				2Q			
C2BMC S/W B4 Engr Release Integrated at SIL		4Q					
C2BMC Block Process Validation (BPV) Complete		4Q					
C2BMC S/W B4 Final Release Integrated at SIL			2Q				
Launcher #2 (Prototype) Integrated at WSMR		1Q					
Launcher S/W B3 Eng Release Integrated at SIL		4Q					
Launcher S/W B3 Final Release Integrated at SIL			1Q				
Launcher Block Process Validation (BPV) Complete			1Q				
Launcher #3 Integrated at WSMR			1Q				
Radar #1 Integration and Test Complete			2Q				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Radar S/W B4.1 Engr Release Integrated at SIL		4Q					
Radar Block Process Validation (BPV) Complete		2Q					
Radar S/W B4.1 Final Release Integrated at SIL			2Q				
Soldier-in-the-Loop Training Course 1 Complete		4Q					
Soldier-in-the-Loop Training Course 2 Complete			4Q				
Active Leak Sensor Prototype Delivered to Troy, AL		4Q					
Flt 1 SIL Final Integration		3Q					
Flt 2 SIL Final Integration		4Q					
Flt 3 SIL Final Integration			2Q				
Flt 4 SIL Final Integration			3Q				
Block Process Validation (BPV) Complete			3Q				

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE						
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603881C Ballistic Missile Defense Terminal Defense Segment						
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0807 Theater High Altitude Area Defense (THAAD) Block 2006	0	29,385	239,147	534,581	790,527	91,314	0
RDT&E Articles Qty	0	0	0	4	14	1	2

A. Mission Description and Budget Item Justification

The Theater High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). The Terminal Defense Elements provide the final opportunity to engage all ranges of ballistic missiles not engaged or destroyed in the boost or mid-course phase of trajectory. The THAAD element contributes to the BMDS by providing uncued, cued, and launch on remote engagement sequence capability. Integrated with the AEGIS BMD and PATRIOT Systems, the rapidly deployable THAAD element improves the BMDS overall effectiveness by engaging missiles as they transition from exo- to endo- atmospheric flight where the reentry vehicles are more vulnerable. The flow down of BMD System capability specifications resulting from the Missile Defense National Team efforts in Command & Control/Battle Management Communications (C2BMC) and Systems Engineering & Integration will guide the integration of the TDS into the BMD System and the BMDS C2BMC architecture. Block 06 THAAD further enhances the Missile Defense Agency's Terminal Defense Segment by deepening, complementing, and extending the BMDS battlespace and capability to engage and negate ballistic missiles and asymmetric threats in both the later mid-course and terminal phases of their trajectory. Block 06 THAAD's highly mobile capability provides BMDS the ability to defend against all ranges of ballistic missiles and asymmetric threats protects U.S. and allied armed forces, broadly dispersed assets and population centers and selected U.S. sites (Homeland Defense) against ballistic missile attacks. The Block 06 THAAD Element allows for coordinated engagements with BMDS via the BMDS C2BMC network. THAAD, in conjunction with the fielded Patriot System provides the Terminal Defense layer. As part of its ongoing contract efforts, the Block 06 THAAD program supports the MDA objective of enhancing the BMDS capability. The THAAD Block 06 program is funded to support the Agency's objective of putting the BMDS on alert and the objective to develop procedures and logistics to perform and sustain concurrent testing and operations. A THAAD firing unit consisting of 24 missiles, one radar, three launchers, and one C2BMC will be procured beginning in FY07.

Five major components (missiles, launchers, radar(s), Command and Control Battle Management Communications (C2BMC), and THAAD-specific support equipment will be integrated into the THAAD element and the Ballistic Missile Defense System (BMDS). THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks, using both THAAD System and components to address National Team gap analysis of Engagement Support Groups, identifying and documenting both system component capabilities and planning for the integration and implementation of both THAAD System and component capabilities.

Block 2006: Block 2006 represents the second incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block builds on the core, near-term ballistic missile and asymmetric threat defense capability provided to the BMDS by THAAD Block 2004. Additionally, THAAD Block 2006 will initiate fielding to support the BMDS infrastructure. This block continues the concept of being rapidly deployable and expands the capabilities of the THAAD system to address improved Exo and Endo capability against increasingly complex targets. The Block 2006 THAAD element will have robust radar discrimination, capability in stressing Exo and Endo battlespace; Salvo firing doctrine; and operate in a full spectrum of tactical missile environments and survivability. Block 2006 also includes C2BMC embedded training, automated defense planning, and extensive interoperability using Link-16 and Joint Mission Management Network (JMMN) and United States Message Text Format (USMTF) message set with BMDS and forward base engagement coordination with other BMDS elements. Block 2006 THAAD adds to capability for AEGIS to conduct remote engagement sequences to the Block 2004 baseline engagement sequence groups. Block 2006 flight testing begins in 3rd quarter, FY 2006 and continues through 1st quarter, FY 2008 with a total of 5 flight tests.

RDT&E Articles for Development Tests (DT):

- FY 2005 (Buy Schedule): 1 Full-up Missile; 1 Ground Test Unit; 1 Radar; 2 Engineering Development Units; 1 additional Missile Round Pallet (MRP) for a total of 6 RDT&E articles.
- FY 2006 (Delivery Schedule): 4 additional MRPs.
- FY 2006 (Buy Schedule): 7 Full-up Missiles; 1 EDU; 3 C2BMC Tactical Station Groups; 4 MRPs for a total of 15 RDT&E articles.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<p>- FY 2007 (Delivery Schedule): 8 Full-up Missiles; 1 GTU; 3 EDUs; 1 Radar; 1 additional MRP for a total of 14 RDT&E articles.</p> <p>- FY 2008 (Delivery Schedule): 1 C2BMC TSG.</p> <p>- FY 2009 (Delivery Schedule): 2 C2BMC TSGs.</p>			
<u>B. Accomplishments/Planned Program</u>			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Missile)		15,037	91,833
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <p>- Initiate upgrades to the Missile software.</p> <p>FY 2005 (Buy Schedule): 1 Full-up Missile; 1 Ground Test Unit; 2 Engineering Development Units.</p> <p>FY 2005 Planned Program:</p> <p>- Continue upgrades to the Missile software.</p> <p>- Conduct System Integration Laboratory (SIL) Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing.</p> <p>- Initiate fabrication, assembly, and test of Missile hardware in preparation for Block 2006 flight testing and missile rounds required for Missile Block Qualification Testing (BQT) and insensitive munitions testing.</p>			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Radar)		3,038	57,077
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <p>- Initiate upgrades to the Radar software.</p> <p>FY 2005 Planned Program:</p> <p>RDT&E Articles for Developmental Test (DT):</p> <p>FY 2005 (Buy Schedule): 1 Radar.</p> <p>- Continue upgrades to the Radar software.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<ul style="list-style-type: none"> - Begin fabrication, assembly, and test of radar hardware for Radar #2. - Conduct System Integration Laboratory Hardware-in-the-Loop integration activities for hardware and software in preparation for Block 2006 flight testing. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Launcher)		265	5,688
RDT&E Articles (Quantity)			
FY 2004 Planned Program: <ul style="list-style-type: none"> - Begin preparation for fabrication, assembly, and test of Launcher hardware for first Block 2006 flight testing. FY 2005 (Buy Schedule): 1 additional Missile Round Pallet (MRP). FY 2005 Planned Program: <ul style="list-style-type: none"> - Complete fabrication, assembly, and test of Launcher hardware for Block 2006 Flight Testing and Block Qualification Testing (BQT). - Conduct System Integration Laboratory (SIL) Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing. - Initiate upgrade to Launcher software. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Integrated Logistics Support (ILS)		1,204	5,667
RDT&E Articles (Quantity)			
FY 2004 Planned Program: <ul style="list-style-type: none"> - Maintain an Integrated Logistics Support program. - Conduct supportability demonstrations on Launcher and C2BMC. - Continue from Block 2004 development of support documentation and training for Soldier in the Loop. - Continue from Block 2004 development and procurement of additional training devices and Peculiar Support Equipment. - Conduct training to support the Block 2006 Test program. FY 2005 Planned Program: <ul style="list-style-type: none"> - Maintain an Integrated Logistics support program. - Initiate Contractor Logistic support for Block 2006. - Conduct supportability demonstrations on Radar. - Continue development of support documentation for Staff Planners and other Military Occupational Specialty (MOS) Training. - Initiate the development, design and procurement of additional training devices and Peculiar Support Equipment to support Block 2006. - Conduct training to support the Block 2006 Flight Test program. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Sys Level Prog Mgmt)		4,542	31,534
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Conduct Threat Vulnerability Assessment. - Conduct Test Planning and Range Operations for Block 2006 flight testing. - Provide management, leadership, and planning for all Block 2006 activities. - Support BMDS National Team efforts through: <ul style="list-style-type: none"> -- Conducting gap analysis to provide cues for other BMDS elements, extending the effective battlespace of the BMDS, enhancing tracking and discrimination to allow possible identification of threat kill vehicles and providing track and discrimination data to other elements and the C2BMC to be used for hit/kill assessment. -- Coordinating with the National Team to identify and document both THAAD system and component capabilities in the capabilities specification. -- Planning the integration and implementation of THAAD and its components in the BMDS. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Continue Threat Vulnerability Assessment. - Continue Test Planning and Range Operations for Block 2006 flight testing. - Provide management, leadership, and planning for all Block 2006 activities. - Support BMDS National Team efforts through: <ul style="list-style-type: none"> -- Conducting gap analysis to provide cues for other BMDS elements, extending the effective battlespace of the BMDS, enhancing tracking and discrimination to allow possible identification of threat kill vehicles and providing track and discrimination data to other elements and the C2BMC to be used for hit/kill assessment. -- Coordinating with the National Team to identify and document both THAAD system and component capabilities in the capabilities specification. -- Planning the integration and implementation of THAAD and its components in the BMDS. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Weapon Sys Engr & Integ Team)		1,970	14,950
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Plan for System Integration Lab (SIL) Hardware-in-the-Loop Block 2006 integration. - Support BMDS National Team efforts. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Provide Weapon System Engineering support for the Radar Build 4.2 and C2BMC Build 5 CDRs. - Conduct System Integration Lab (SIL) Hardware-in-the-Loop Block 2006 integration. - Perform System Analysis Block 6 Scenarios and Designs. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<ul style="list-style-type: none"> - Perform Parametric Performance Assessments. - Support BMDS National Team efforts. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (Ground and Flight Test Support)		1,192	12,924
RDT&E Articles (Quantity)			
FY 2004 Planned Program: <ul style="list-style-type: none"> - Support Block Qualification Testing (BQT) planning. - Conduct Pacific Missile Range Facility (PMRF) integration. FY 2005 Planned Program: <ul style="list-style-type: none"> - Support Block Qualification Testing (BQT) planning. - Launch & Test Support Equipment (L&TSE) transfer and range integration. - Component integration planning to support flight tests at PMRF. - Target integration planning for Block 2006 flight testing. - Conduct four flight tests at WSMR. 			
	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P (C2BMC)		2,137	19,474
RDT&E Articles (Quantity)			
FY 2004 Planned Program: <ul style="list-style-type: none"> - Continue with the architectural design phase for the defined Build 5 functionality. - Conduct the Build 5 architectural design incremental design review. FY 2005 Planned Program: <ul style="list-style-type: none"> - Complete the Build 5 detailed design phase for build 5 functionality. - Conduct Block 2006 Product Management. - Initiate System Engineering, Integration and Test for Flight Test. - Prepare to conduct the Build 5 Critical Design Review (CDR). - Complete Integration and Test environment Tools for Block 2006 Software. 			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<u>D. Acquisition Strategy</u> THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The THAAD Block 2006 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 103-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 50% complete. Block 2006 development activities could be used to provide a significant capability to protect deployed U.S. and allied forces, specified civilian population centers, or selected sites within the U.S.		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD Block 2006 ACD&P (Missile)										
	SS/CPAF	LMSSC/ Various		15,037	1/3Q	91,833	1/2Q		106,870	CONT.
THAAD Block 2006 ACD&P (Radar)										
	SS/CPAF	LMSSC/ Various		3,038	1/3Q	57,077	1/2Q		60,115	CONT.
THAAD Block 2006 ACD&P (Launcher)										
	SS/CPAF	LMSSC/ Various		265	1/3Q	5,688	1/2Q		5,953	CONT.
THAAD Block 2006 ACD&P (C2BMC)										
	SS/CPAF	LMSSC/ Various		2,137	1/3Q	19,474	1/2Q		21,611	CONT.
THAAD Block 2006 ACD&P Integrated Logistics Support (ILS)										
	SS/CPAF	LMSSC/ Various		1,204	1/3Q	5,667	1/2Q		6,871	CONT.
THAAD Block 2006 ACD&P (Sys Level Prog Mgmt)										
	SS/CPAF	LMSSC/ Various		4,542	1/3Q	31,534	1/2Q		36,076	CONT.
THAAD Block 2006 ACD&P (Weapon Sys Engr & Integ Team)										
	SS/CPAF	LMSSC/ Various		1,970	1/3Q	14,950	1/2Q		16,920	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD Block 2006 ACD&P (Ground and Flight Test Support)										
	SS/CPAF	LMSSC/ Various		1,192	1/3Q	12,924	1/2Q		14,116	
Subtotal Product Development			0	29,385		239,147		0	268532	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	29,385		239,147			268,532	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Conduct Block 2006 Flight Test 6															Δ													
Conduct Block 2006 Flight Test 7															Δ													
Conduct Block 2006 Flight Test 8																			Δ									
Conduct Block 2006 Flight Test 9																				Δ								
Conduct Block 2006 Flight Test 10																					Δ							
BLOCK 2006																												
Pacific Missile Test Range Activation															Δ													
Flt 6 Missile Delivered to Range															Δ													
Flt 10 Missile Delivered to Range																						Δ						
Flt 10 Missile S/W Engr Release Integrated at SIL																						Δ						
Flt 10 Missile S/W Final Release Integrated at SIL																							Δ					
C2BMC B5 Design Readiness Review (DRR)																												
C2BMC B5 S/W Final Release Integrated at SIL																								Δ				
Launcher Available for Block Qualification Test																												
Launcher B4 S/W Final Release Integrated at SIL																												

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Conduct Block 2006 Flight Test 6				3Q			
Conduct Block 2006 Flight Test 7				4Q			
Conduct Block 2006 Flight Test 8					3Q		
Conduct Block 2006 Flight Test 9					4Q		
Conduct Block 2006 Flight Test 10						1Q	
BLOCK 2006							
Launcher Block Qualification Test (BQT)					2Q-4Q	1Q	
Pacific Missile Test Range Activation				1Q			
Flt 6 Missile Delivered to Range				3Q			
Flt 10 Missile Delivered to Range						1Q	
Flt 10 Missile S/W Engr Release Integrated at SIL					2Q		
Flt 10 Missile S/W Final Release Integrated at SIL					4Q		
C2BMC TSG Available for Block Qualification Test						4Q	
C2BMC B5 Design Readiness Review (DRR)			2Q				
C2BMC B5 S/W Engr Release Integrated at SIL					3Q		
C2BMC B5 S/W Final Release Integrated at SIL					4Q		
Launcher Available for Block Qualification Test			1Q				
Launcher B4 S/W Engr Release Integrated at SIL					3Q		
Launcher B4 S/W Final Release Integrated at SIL					4Q		
Radar #2 Delivered To WSMR for Integration				4Q			
Radar Prime Power Unit #1 Delivered					1Q		
Radar #2 Integration Complete at WSMR					1Q		
Radar #2 E3 Testing Complete					2Q		
Radar #2 Available for Block Qualification Test					2Q		
Radar Prime Power Unit #2 Delivered					4Q		
Radar B4.2 S/W Design Readiness Review (DRR)		4Q					
Radar Data Collection Mission #1 Complete				3Q			
Radar B4.2 S/W Engr Release Integrated at SIL					1Q		
Radar B4.2 S/W Final Release Integrated at SIL					2Q		
C2BMC Block Qualification Test (BQT)					2Q-4Q	1Q	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Radar Block Qualification Test					2Q-4Q	1Q	
Missile Block Qualification Test					4Q	1Q	

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0907 Theater High Altitude Area Defense (THAAD) Block 2008	0	0	1,810	204,329	231,731	388,503	323,663
RDT&E Articles Qty	0	0	0	0	0	12	4

A. Mission Description and Budget Item Justification

The Theater High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). The Terminal Defense Elements provide the final opportunity to engage all ranges of ballistic missiles not engaged or destroyed in the boost or mid-course phase of trajectory. Block 08 THAAD further enhances the Missile Defense Agency's Terminal Defense Segment by deepening, complementing, and extending the BMDS battlespace and capability to engage and negate ballistic missiles and asymmetric threats in both the later mid-course and terminal phases of their trajectory. Block 08 THAAD's highly mobile capability provides BMDS the ability to defend against all ranges of ballistic missiles and asymmetric threats; and protects U.S. and allied armed forces, broadly dispersed assets and population centers and selected U.S. sites (Homeland Defense) against ballistic missile attacks. The Block 08 THAAD Element allows for coordinated engagements with BMDS via the BMDS C2BMC network. THAAD, in conjunction with the fielded Patriot System, provides the Terminal Defense layer. As part of its ongoing contract efforts, the Block 08 THAAD program supports the MDA objective of enhancing the BMDS capability. Depending on the specific mission the MDA directs for THAAD; however, the Block 08 program is postured to support the Agency's objective of putting the BMDS on alert and the objective to develop procedures and logistics to perform and sustain concurrent testing and operations.

Five major components (missiles, launchers, radar(s), Command and Control Battle Management Communications (C2BMC), and THAAD-specific support equipment will be integrated into the THAAD element and Ballistic Missile Defense System (BMDS). THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

Block 2008: Block 2008 represents the third incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block continues the concept of being rapidly deployable and builds on the core, ballistic missile and asymmetric threat defense capability provided to the BMDS by THAAD Block 2006. Block 2008 THAAD element also includes RF-linked launchers for improved defended area and self defense against intercontinental ballistic missiles, capability to launch THAAD interceptors on remote cues from other BMDS elements, and improved survivability, maintainability, and crew operator training capability. This block demonstrates the capabilities of the THAAD system in endo- and exo-atmospheric battlespace against the full threat set. Block 2008 flight testing begins in 2nd quarter, FY 2008 and ends in 2nd quarter, FY 2009 with a total of up to 6 flight tests.

RDT&E Articles for Development Tests (DT):

- FY 2006 (Buy Schedule): 8 Full-up Missiles; 1 Radar for a total of 9 RDT&E articles.
- FY 2007 (Buy Schedule): 4 Full-up Missiles; 5 Launchers w/Missile Round Pallets (MRPs) for a total of 9 RDT&E articles.
- FY 2008 (Delivery Schedule): 10 Full-up Missiles; 2 Launchers w/ MRPs for a total of 12 RDT&E articles.
- FY 2009 (Delivery Schedule): 2 Full-up Missiles; 1 Launcher w/ MRP; 1 Radar for a total of 4 RDT&E articles.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
THAAD Block 2008 ACD&P (Sys Level Prog Mgmt)			1,810
RDT&E Articles (Quantity)			

FY 2005 Planned Program:

- Provide management, leadership, and planning for all Block 2008 activities.

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<u>D. Acquisition Strategy</u> THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. Part of the THAAD Block 2008 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 103-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 50% complete. Block 2008 development activities could be used to provide a significant capability to protect deployed U.S. and allied forces, dispersed assets, specified population centers, or wide areas of the U.S.		

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD Block 2008 ACD&P (Sys Level Prog Mgmt)										
	SS/CPAF	LMSSC/Various				1,810	1/2Q		1,810	CONT.
Subtotal Product Development			0	0		1,810		0	1810	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		1,810			1,810	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Block 2008 Flight Test 11						2Q	
Block 2008 Flight Test 12						3Q	
Block 2008 Flight Test 13							1Q
Block 2008 Flight Test 14							1Q
Block 2008 Flight Test 15							2Q
Block 2008 Flight Test 16							2Q
BLOCK 2008							
Second SIL Line Operational					3Q		
Flt 11 Missile Delivered to PMRF						1Q	
Flt 16 Missile Delivered to OCONUS Range							1Q
Insensitive Munitions/Hazards Testing						1Q-2Q	
Radar #3 Integration and Test Complete						4Q	
Radar #3 Available for Element Demonstrations						4Q	
Radar Prime Power Unit #3 Delivered						4Q	
Radar B4.2 Maintenance Release for RDC #2						2Q	
Radar Data Collection Mission #2						2Q	
Radar B4.2 Final Maintenance Release							1Q
C2BMC TSG Available for Operational Assessment						1Q	
Launcher Available for Block Qualification Test						4Q	
Launcher Available for Operational Assessment							1Q
Element Demonstrations						4Q	1Q-4Q
Weapon System Characterization TIM Complete							2Q
Weapon Sys Element Char Complete							3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2016 Israeli Arrow Program	124,594	0	0	0	0	0	0
RDT&E Articles Qty	42	0	0	0	0	0	0
<i>Note: The FY04-09 funding for ARROW is captured in PE 0603881C in Project 0401.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>This project provides funding for the Arrow system development, to include the Arrow System Improvement Program (ASIP), testing of the Arrow Weapon System in the U.S., enhancement of Arrow interoperability with U.S. ballistic missile defense systems, Israeli Systems Architecture and Integration (ISA&I) studies to assess Arrow's effectiveness against emerging threats, and Israeli Test Bed (ITB) experiments to evaluate human-in-the-loop battle management and command, control, and communications. The United States derives considerable benefits from its participation in these projects. The presence of a ballistic missile defense system in Israel developed under this project helps ensure U.S. freedom of action in future contingencies and provides protection against ballistic missile attacks to U.S. forces deployed to the region. The cooperative effort also provides risk reduction and alternative technologies for U.S. ballistic missile defense programs as well as phenomenology and kill assessment data. The ASIP effort will enhance the performance of the Arrow Weapon System (AWS) to defeat longer-range and more robust Tactical Ballistic Missile (TBM) threats expected to be introduced in the Middle East in the near future. The ASIP also includes baseline testing of the AWS at a U.S. test range against today's existing TBM threats as well as testing of the enhanced AWS against longer range threats. The ITB and ISA&I efforts will continue to support AWS and ASIP development as well as to define future missile defense architectures to maintain pace with emerging threats.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Arrow System Improvement Program (ASIP)	54,996						
RDT&E Articles (Quantity)	2						
<p>FY 2003: Continued ASIP Phase II to develop and test technologies to improve Arrow Weapon System performance to defend Israel from emerging TBM threats. ASIP includes technology development, enhanced interoperability and preparatory activities for conducting flight tests of the baseline AWS at a U.S. test range. Developed and tested enhanced Israel Missile Defense Architecture (IMDA) Link-16 interoperability capabilities. Conducted Arrow developmental flight test in Israel. Continue enhancing and testing Arrow interoperability capability.</p>							
	FY 2003		FY 2004		FY 2005		
Arrow Enhanced Component Production	25,294						
RDT&E Articles (Quantity)							
<p>FY 2003: Continued the development of Arrow component production capability in the U.S. to accelerate Israeli acquisition of Arrow interceptors.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
	FY 2003	FY 2004	FY 2005
Israeli Test Bed (ITB)	3,400		
RDT&E Articles (Quantity)			
FY 2003: Conducted Israeli Test Bed (ITB) experiments to evaluate battle management concepts and to assess interoperability between AWS and U.S. BMDS elements. ITB also evaluated ASIP performance specifications against future threats and assess Arrow enhanced interoperability between Israeli and U.S. missile systems. Supported EUCOM/IAF revisions to the combined OPLAN and CSOP. Conducted experiments of planned Arrow block upgrades to the AWS to assess their impacts on EUCOM/IAF combined operations.			
	FY 2003	FY 2004	FY 2005
Israeli Systems Architecture and Integration (ISA&I)	1,900		
RDT&E Articles (Quantity)			
FY 2003: Continued Israeli Systems Architecture and Integration (ISA&I) assessment to develop options for 2015 Israeli Missile Defense architectures. Assessed Arrow performance against emerging regional TBM threats and identified growth path refinements necessary for the Arrow missile defense system to remain an effective ballistic missile defense for the State of Israel. Evaluated Israeli architecture studies to assess near-term U.S. missile defense systems and their impact on future Israeli missile defense architectures.			
	FY 2003	FY 2004	FY 2005
Program Support	934		
RDT&E Articles (Quantity)			
FY 2003: Developed hardware-in-the-loop test tools for assessment of interoperability. Developed draft security plans and classification guides. Developed Arrow background/foreground data rights update for ADP and initial draft ASIP and Arrow co-production Master Technology Lists.			
	FY 2003	FY 2004	FY 2005
Arrow Missile Production	38,070		
RDT&E Articles (Quantity)	40		
FY 2003: Cooperatively produce Arrow missiles to meet Israel's defense requirements. Initiated procurement of long-lead items and developed tooling and test equipment for transfer to the U.S. co-producer. The cooperative production program will consist of the manufacture of certain Arrow components in the U.S. with other components manufactured in Israel. Missile final assembly will take place in Israel.			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment	
<u>D. Acquisition Strategy</u> ASIP - Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to IAI and other ASIP contractors. MDA Targets Office contracts for production and instrumentation of targets for U.S. flight testing. Arrow Enhanced Components Production - IMoD contracts on behalf of U.S. government to IAI. IAI subcontracts to Boeing for development of U.S. production capability. Arrow Missile Production - IMoD contracts on behalf of U.S. government to IAI. IAI subcontracts to Boeing for manufacture of U.S. components. IAI manufactures Israeli components and performs final assembly. Israeli Test Bed - SMDC contracts to Tadiran. Israeli System Architecture and Integration - MDA contracts to WALES, Ltd.		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Arrow System Improvement Program (ASIP)										
Arrow System Improvement Program (ASIP)		IAI/ Israel	102,000					110,000	212,000	
Arrow Enhanced Component Production										
Arrow Enhanced Component Production		Boeing/IAI/ Alabama/Israel	38,655						38,655	
Israeli Test Bed (ITB)										
Israeli Test Bed (ITB)	FFP	Tadiran/ Israel	5,600					7,091	12,691	
Israeli Systems Architecture and Integration (ISA&I)										
Israeli Systems Architecture and Integration (ISA&I)	FFP	Wales, Ltd/ Israel	3,411					4,368	7,779	
Arrow Missile Production										
Arrow Missile Prod	Various	Boeing/IAI/ Alabama/Israel								
Subtotal Product Development			149,666	0		0		0	271125	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Support										
Program Support	Various	Various/ Alabama / Virginia	5,000					2,000	7,000	
Subtotal Support Costs			5,000	0		0		0	7000	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			154,666	0		0			278,125	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Production Milestones																												
Cooperative Production Initiated			▲																									
ASIP Production Initiated																							△					
Integrated Flight Test																												
ASIP Flight Tests in Israel		▲			▲					△			△		△		△											
ASIP Flight Tests in U.S.								△	△																			
ASIP Follow-on Flight Test																						△	△	△	△	△	△	△
Enhanced Arrow Tests in U.S.																							△	△				
Other																												
Missile Defense Architecture				▲																								
Missile Defense Architecture Assessment					△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Communications																												
Interoperability Tests w/MDSE	▲				▲				△				△		△		△		△				△					
Interoperability Field Demonstration		▲								△							△		△							△		
Program Milestones																												
ITB Experiments (Three each year)	△	△	△																									△

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Milestones							
Cooperative Production Initiated	3Q						
ASIP Production Initiated						4Q	
Integrated Flight Test							
ASIP Flight Tests in Israel	2Q	1Q	2Q	1Q,3Q	1Q		
ASIP Flight Tests in U.S.		3Q-4Q					
ASIP Follow-on Flight Test						1Q-4Q	1Q-4Q
Enhanced Arrow Tests in U.S.						3Q-4Q	
ASIP Flight Test in Israel	2Q			1Q,3Q	1Q		
Other							
Missile Defense Architecture	4Q						
Missile Defense Architecture Assessment		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Communications							
Interoperability Tests w/MDSE	1Q	1Q,4Q		1Q,4Q	4Q	4Q	
Interoperability Field Demonstration	2Q		2Q		2Q		2Q
Program Milestones							
ITB Experiments (Three each year)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
ASIP Phase II	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
ASIP Phase III						1Q-4Q	
ASIP Follow-On Development						4Q	1Q-4Q
ASIP Follow-On Feasibility Study						1Q-4Q	

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0401 Israeli Arrow Program	0	143,151	87,290	79,001	78,954	79,001	79,062
RDT&E Articles Qty	0	59	14	7	7	7	7
<i>Note: The FY03 funding for ARROW is captured in PE 0603881C in Project 2016.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>This project provides funding for the Arrow system development, to include the Arrow System Improvement Program (ASIP), testing of the Arrow Weapon System in the U.S., enhancement of Arrow interoperability with U.S. ballistic missile defense systems, Israeli Systems Architecture and Integration (ISA&I) studies to assess Arrow's effectiveness against emerging threats, and Israeli Test Bed (ITB) experiments to evaluate human-in-the-loop battle management and command, control, and communications. The United States derives considerable benefits from its participation in these projects. The presence of a ballistic missile defense system in Israel developed under this project helps ensure U.S. freedom of action in future contingencies and provides protection against ballistic missile attacks to U.S. forces deployed to the region. The cooperative effort also provides risk reduction and alternative technologies for U.S. ballistic missile defense programs as well as phenomenology and kill assessment data. The ASIP effort will enhance the performance of the Arrow Weapon System (AWS) to defeat longer-range and more robust Tactical Ballistic Missile (TBM) threats expected to be introduced in the Middle East in the near future. The ASIP also includes baseline testing of the AWS at a U.S. test range against today's existing TBM threats as well as testing of the enhanced AWS against longer range threats. The ITB and ISA&I efforts will continue to support AWS and ASIP development as well as to define future missile defense architectures to maintain pace with emerging threats.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Arrow System Improvement Program (ASIP)		55,000	56,478				
RDT&E Articles (Quantity)		8	2				
<p>FY 2004: Conduct Arrow developmental flight test in Israel in preparation for intercept testing in the U.S. against representative regional Tactical Ballistic Missile (TBM) threats. Conduct developmental flight test in Israel. Continue ASIP Phase II to develop and test technologies to improve Arrow Weapon System performance to defend Israel from emerging TBM threats. Continue enhancing Arrow interoperability. Obtain Joint Interoperability Test Command certification of the IMDA interoperability enhancements.</p> <p>FY 2005: Continue ASIP Phase II to develop and test technologies to improve Arrow Weapon System performance to defend Israel for emerging TBM threats. Conduct Arrow flight test in Israel. Conduct Arrow flight test in Israel. Continue enhancing Arrow interoperability development and validation to include engagement coordination.</p> <p>RDT&E Articles: (Eight Missiles Total) Three Block III Arrow II test missiles for intercept testing, One Black Sparrow test missile target; and two liquid fuel test missile targets and two air-launched short-range target missiles for U.S. Arrow testing.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603881C Ballistic Missile Defense Terminal Defense Segment		
	FY 2003	FY 2004	FY 2005
Arrow Enhanced Component Production		4,000	
RDT&E Articles (Quantity)		1	
<p>FY 2004: Complete the development of Arrow production capability to produce Arrow components in the U.S. to accelerate Israeli acquisition of Arrow interceptor missiles. Provide components to Israel for final interceptor integration. Produce sufficient component quantities in the U.S. to qualify production processes and transition Arrow co-production of the Arrow Missile Production Program (AMPP).</p> <p>RDT&E Articles: One proof of concept co-produced Arrow II missile.</p>			
	FY 2003	FY 2004	FY 2005
Israeli Test Bed (ITB)		3,400	3,400
RDT&E Articles (Quantity)			
<p>FY 2004: Conduct ITB experiments to support development of centralized battle management. Assess Arrow interoperability between Israeli and U.S. missile defense systems. Provide support to U.S. European Command and Israeli Air Force (EUCOM/IAF) to conduct ITB experiments to support the addition of the operational AWS and block upgrades into the combined Operations Plan (OPLAN) and Combined Standard Operating Procedures (CSOP). Conduct experiments of planned Arrow block upgrades to the AWS and assess their impacts on EUCOM/IAF combined operations.</p> <p>FY 2005: Conduct ITB experiments to support development of centralized battle management. Evaluate ASIP performance specifications against future threats and assess Arrow enhanced interoperability between Israeli and U.S. missile defense systems. Support EUCOM/IAF revisions to the combined OPLAN and CSOP. Conduct experiments of planned Arrow block upgrades to the AWS and assess their impacts on EUCOM/IAF combined operations.</p>			
	FY 2003	FY 2004	FY 2005
Israeli Systems Architecture and Integration (ISA&I)		1,960	1,960
RDT&E Articles (Quantity)			
<p>FY 2004: Develop initial Israeli Missile Defense System (IMDS) architecture and system level design.</p> <p>FY 2005: Assess IMDS performance against emerging regional TBM threats. Refine growth path options necessary for the Arrow missile defense system to remain an effective ballistic missile defense for the State of Israel. Evaluate Israeli architecture studies to assess near-term U.S. missile defense systems and their impact on contributing to future Israeli missile defense architectures.</p>			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
	FY 2003		FY 2004		FY 2005				
Program Support				1,000	934				
RDT&E Articles (Quantity)									
<p>FY 2004: Develop and maintain ASIP and co-production security plans and classification guides. Modify Missile Defense System Exerciser (MDSE) to support interoperability assessment. Manage and support ITB modifications and experiments. Complete documentation of background/foreground data rights for ASIP, Arrow co-production, and update the ITB Master Technology List. Maintain security plans and classification guides. Manage and support ITB modifications and experiments.</p> <p>FY 2005: Continue documentation of background/foreground data rights for ASIP, Arrow co-production, and ITB. Maintain security plans and classification guides. Manage and support ITB modifications and experiments. Support Missile Defense System Exerciser testing centralizes at the Joint National Integration center.</p>									
	FY 2003		FY 2004		FY 2005				
Arrow Missile Production				77,791	24,518				
RDT&E Articles (Quantity)				50	12				
<p>FY 2004: Cooperatively produce Arrow missiles to meet Israel's defense requirements. The cooperative production program will consist of the manufacture of certain Arrow components in the U.S. with other components manufactured in Israel. Missile final assembly will take place in Israel.</p> <p>RDT&E Articles: Fifty Arrow II missiles.</p>									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

ASIP - Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to IAI and other ASIP contractors. MDA Targets Office contracts for production and instrumentation of targets for U.S. flight testing.

Arrow Enhanced Components Production - IMoD contracts on behalf of U.S. government to IAI. IAI subcontracts to Boeing for development of U.S. production capability.

Arrow Missile Production - IMoD contracts on behalf of U.S. government to IAI. IAI subcontracts to Boeing for manufacture of U.S. components. IAI manufactures Israeli components and performs final assembly.

Israeli Test Bed - SMDC contracts to Tadiran.

Israeli System Architecture and Integration - MDA contracts to WALES, Ltd.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Arrow Enhanced Component Production										
Arrow Enhanced Component Production		Boeing/IAI/Ala/Israel	38,655	4,000					42,655	
Arrow System Improvement Program (ASIP)										
Arrow System Improvement Program (ASIP)		IAI/Israel	102,000	55,000	1Q	56,350	1Q	110,000	323,350	
Israeli Test Bed (ITB)										
Israeli Test Bed (ITB)	FFP	Tadiran/Israel	5,600	3,400	1Q	3,400	1Q	7,091	19,491	
Israeli Systems Architecture and Integration (ISA&I)										
Israeli Systems Architecture and Integration (ISA&I)	FFP	Wales, Ltd/Israel	3,411	1,960	1Q	2,022	1Q	4,368	11,761	
Arrow Missile Production										
Arrow Missile Production	Various	Boeing/IAI/Ala/Israel	38,070	77,791		24,518			140,379	
Subtotal Product Development			187,736	142,151		86,290		0	537636	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Support										
Program Support	Various	Various/Ala/Va	5,000	1,000	1Q	1,000	1Q	2,000	9,000	
Subtotal Support Costs			5,000	1,000		1,000		0	9000	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			192,736	143,151		87,290			546,636	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)																	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment											
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Production Milestones																												
Cooperative Production Initiated			▲																									
ASIP Production Initiated																							△					
Integrated Flight Test																												
ASIP Flight Tests in Israel		▲			▲					△			△		△		△											
ASIP Flight Tests in U.S.								△	△																			
ASIP Follow-on Flight Test																							△	△	△	△	△	△
Enhanced Arrow Tests in U.S.																								△	△			
Other																												
Missile Defense Architecture				▲																								
Missile Defense Architecture Assessment					△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Communications																												
Interoperability Tests w/MDSE	▲				▲				△				△		△		△		△				△					
Interoperability Field Demonstration		▲								△							△		△							△		
Program Milestones																												
ITB Experiments (Three each year)	△	△	△																									△

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Milestones							
Cooperative Production Initiated	3Q						
ASIP Production Initiated						4Q	
Integrated Flight Test							
ASIP Flight Tests in Israel	2Q	1Q	2Q	1Q,3Q	1Q		
ASIP Flight Tests in U.S.		3Q-4Q					
ASIP Follow-on Flight Test						1Q-4Q	1Q-4Q
Enhanced Arrow Tests in U.S.						3Q-4Q	
Other							
Missile Defense Architecture	4Q						
Missile Defense Architecture Assessment		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Communications							
Interoperability Tests w/MDSE	1Q	1Q,4Q		1Q,4Q	4Q	4Q	
Interoperability Field Demonstration	2Q		2Q		2Q		2Q
Program Milestones							
ITB Experiments (Three each year)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
ASIP Phase II	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
ASIP Phase III						1Q-4Q	
ASIP Follow-On Feasibility Study						1Q-3Q	
ASIP Follow-On Development						4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2090 Program-Wide Support	9,499	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 2090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	9,499	0	0
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)						R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment			
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	15,066	16,663	20,970	16,445	11,182	7,599
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 2090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	0	15,066	16,663
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

Project: 0602 Program-Wide Support

MDA Exhibit R-2A (PE 0603881C)

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603881C Ballistic Missile Defense Terminal Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment						
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	3,056,035	3,724,066	4,384,775	3,067,800	3,087,147	1,881,298	1,802,257
3011 Block 2004 Test Bed	369,455	0	0	0	0	0	0
0708 Ground-Based Midcourse Defense (GMD) Block 2004 Test Bed/Initial Defensive Capability (IDC)	0	1,342,816	861,059	0	0	0	0
3012 GMD Dev & Test Bed Upgrades	2,121,573	0	0	0	0	0	0
0808 Ground-Based Midcourse Defense (GMD) Block 2004/2006 Development	0	1,587,089	2,331,881	2,131,180	2,113,342	0	0
0908 Ground-Based Midcourse Defense (GMD) Block 2008 Development	0	0	0	0	0	1,236,413	1,237,596
3020 Sea-Based Midcourse Defense (SMD)	386,200	0	0	0	0	0	0
0709 AEGIS Ballistic Missile Defense Block 2004	0	640,892	965,800	177,600	0	0	0
0809 AEGIS Ballistic Missile Defense Block 2006	0	23,585	106,494	674,667	776,288	50,325	0
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	0	20,100	144,700	533,840	434,577
0009 AEGIS Ballistic Missile Defense Block 2010	0	0	0	0	7,753	30,000	94,414
0402 Japanese Cooperative Program	0	53,382	72,457	24,806	0	0	0
3050 Segment Common Engineering and Integration	99,358	0	0	0	0	0	0
3090 Program-Wide Support	79,449	0	0	0	0	0	0
0602 Program-Wide Support	0	76,302	47,084	39,447	45,064	30,720	35,670

A. Mission Description and Budget Item Justification

The goal of the Ballistic Missile Defense System (BMDS) is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability. The developed and fielded elements of the Midcourse segment comprise most of the critical components in meeting these goals in the near-term.

Implementation of the BMDS requires the development of biennial block capabilities where the subsequent block capabilities will build on and be integrated into the predecessor blocks. By incorporating spiral development, operational capabilities will be enhanced in planned, sequential increments to meet expected and evolving threats. In Block 2004, the Midcourse segment will develop and field an Initial Defensive Capability (IDC) consisting of ground-based and sea-based interceptors, sensors, and battle management systems. The Block 2006 will enhance the operational capabilities of the BMDS with the fielding of additional interceptors, sensors, battle management hardware, and software upgrades. Future blocks will not only enhance the Midcourse segment but will also incorporate Boost and Terminal phase systems from other MDA elements.

The midcourse segment systems capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the Midcourse Defense systems within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the Midcourse Defense interceptors against a target. Consistent with the BMDS block development strategy, additional ESGs are incorporated into blocks as sensor systems become available. Block 2004 includes six BMDS ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs

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<p>(Beale and Fylingdales), and Engage on Sea-Based X-Band radar. These are the focus of IDC. Block 2006 incorporates two additional BMDS ESGs (Engage on UEWR (Thule) and Launch on DSP/SBIRS). Block 2008 incorporates three additional BMDS ESGs (Engage on Forward-Based X-Band Radar (FBX), Launch/Engage on EO/IR, and Launch/Engage on THAAD). ESGs are embedded into Midcourse Defense Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases. In addition, continuing development activities including interceptor surveillance testing, EKV and SBX upgrades, and sea launched interceptors enable improvements to all ESGs and increase warfighter confidence.</p> <p>In addition, the Block 2004 IDC provides a robust, flexible Test Bed to support the continuing development and testing of new and evolving BMDS technologies. This concurrent operations and testing capability supports a wide range of flight and ground test scenarios, multiple basing modes, and phenomenology. The BMDS Test Bed will incorporate capabilities to evaluate (1) countermeasures, (2) multiple target and interceptor test launch sites, (3) flexible engagement scenarios, (4) enhanced test infrastructure, and (5) a wide range of sea and land-based radar sensors.</p> <p>The flow down of Ballistic Missile Defense System (BMDS) capability specifications resulting from Missile Defense National Team efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program Operations Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.</p> <p>Consistent with the MDA block management framework, the Ground-based Midcourse Element of the BMDS consists of Blocks 2004, 2006, and 2008:</p> <ol style="list-style-type: none"> 1) The Block 2004 represents the early development and fielding of the IDC including ground-based interceptors, an upgraded Cobra Dane radar, upgraded Early Warning Radars, a Sea-Based X-Band Radar, In-Flight Interceptor Communications Systems (IFICS) data terminals (IDT), Fire Control and Communication Nodes, and communications networks including fiber and satellite communications systems. 2) The Block 2006 includes continued development and fielding of ground-based capabilities, integrated testing of the multi-layered BMDS components, implementing the concept of a rotatable pool of interceptors to ensure latest capabilities are fielded, and researching the option of emplacing GBIs on a sea-based platform. As a follow-on to the initial capability provided in Block 2004, MDA is fielding additional ground-based interceptors, UEWRs, IDTs. These enhancements broaden the area of coverage of the initial BMDS. Additionally, it will continue the development of enhanced capabilities to detect, track, intercept, and defeat ballistic missile threats. 3) The Block 2008(covered under Project 0908) includes integrated testing of the multi-layered BMDS components and continued development of ground-based capabilities, countermeasures mitigation, multi-sensor fusion, advanced discrimination, enhanced EKV technologies, and additional GFC capabilities. <p>The Aegis Ballistic Missile Defense (Aegis BMD) element of the Midcourse Defense Segment (MDS) of the Ballistic Missile Defense System (BMDS) provides for the capability for U.S. Navy Surface Combatants to detect, track, intercept, and destroy Short Range Ballistic Missiles (SRBMs) to Intermediate Range Ballistic Missiles (IRBMs) in the terminal and midcourse phases of the battlespace while forward deployed or on Fleet Missile Defense Patrol in defense of the nation, deployed U.S. forces, friends, and allies. The extent of Aegis BMD capability against short range missiles in the terminal phase is being explored. The Aegis BMD element builds upon the existing Aegis Weapons System (AWS) and the Standard Missile (SM) infrastructure deployed in Aegis Cruisers and Destroyers.</p> <p>System development and testing will be integrated with the BMDS Test Bed and architecture fully supporting the Missile Defense Agency's (MDA) capability based acquisition approach for BMD. Each technological advance in Aegis BMD will be evaluated by the Government and industry team for upgrades to the BMDS Test Bed/architecture in accordance with annual MDA decision reviews.</p> <p>The Aegis BMD System element consists of five (5) major efforts:</p> <ol style="list-style-type: none"> 1) Block 2004 - will be technically capable of initial defensive operations. 2) Block 2006 - focuses on development of improved prototype radar discrimination. 3) Block 2008 - focuses on development of a fully integrated radar system. 4) Block 2010 - integrates with the Navy developed Aegis Open Architecture System. 5) Japan Cooperative Research - continues cooperative research in Ballistic Missile Defense with the Japan Defense Agency (JDA). 		

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603882C Ballistic Missile Defense Midcourse Defense Segment

Aegis BMD element objectives include the following:

- 1) Provide BMD from configured Aegis Cruisers and Destroyers against short through intermediate range ballistic missiles using capability based spiral development.
- 2) Demonstrate through live fire testing (using SM-3 guided missiles controlled by BMD modified AWS) each hit-to-kill capability improvement against more difficult ballistic missiles.
- 3) Develop the forward sensor capabilities of the Aegis AN/SPY-1 Radar integrated into the BMDS.
- 4) Demonstrate forward sensor capabilities in Ground-based Midcourse Defense (GMD) Integrated Flight Tests (IFTs).
- 5) Modify existing Aegis Cruisers and Destroyers and provide SM-3 missiles.
- 6) Develop and demonstrate enhanced discrimination capabilities.
- 7) Conduct a Short Range Ballistic Missile (SRBM) low exo-atmospheric experiment to test the ability to expand the Aegis BMD element engagement volume to lower engagement altitudes.
- 8) Continue the U.S./Japan Cooperative Research.
- 9) Expand the Aegis based defense of ballistic missiles by integrating and testing the BMDS interceptor being developed by the Missile Defense Agency (MDA).

Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	3,103,844	3,613,266	3,841,412
Current President's Budget (FY 2005 PB)	3,056,035	3,724,066	4,384,775
Total Adjustments	-47,809	110,800	543,363
Congressional Specific Program Adjustments	0	153,000	0
Congressional Undistributed Adjustments	0	-42,200	0
Reprogrammings	-8,520	0	543,363
SBIR/STTR Transfer	-39,289	0	0

Additional funding of \$543.363 million in FY 2005 is for expanded capability to the BMDS system as directed by OSD.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3011 Block 2004 Test Bed	369,455	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: This Project has been restructured beginning in FY 2004 to Project 0708. This restructure represents MDA's Block development and management framework for the BMDS.

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the Ballistic Missile Defense System (BMDS) consists of a series of block development efforts supporting the midcourse phase of the BMDS. The goals of the BMDS are (1) to complete, verify, and test the BMDS; (2) to place an operational capability on alert by September 30, 2004; (3) to enhance these fielded capabilities when appropriate; and (4) to perform concurrent operations and testing of a BMDS. The elements being developed and fielded in the Midcourse segment will comprise most of the critical components meeting these goals in the near-term.

GMD system capability is measured by Engagement Sequence Groups (ESG) which define the sequence of events used to enable the weapon to engage a target. The ESGs provide the structure for measuring the level of performance and integration maturity of the GMD system within the BMDS. Engagement sequence identifies the sensors that support four functions (acquire/cue, commit, update, and discriminate) required to launch the GMD GBI against a target. Four BMDS ESGs (Engage on AEGIS, Launch on AEGIS, Engage on Cobra Dane, Engage on UEWRs and Engage on Sea-Based X-Band radar) are the focus of IDC. ESGs are embedded into GMD Integrated Test Program. Possible measures of effectiveness include: defended area, launch area denied, probability of engagement success, battlespace, track times, quality of engagement sequence, and depth of fire. Robustness and capability of the BMDS will be enhanced as the number of operationally available ESGs increases.

The GMD Block 2004 effort provides for the fielding of the Initial Defensive Capability (IDC) directed by the President in December 2002. The IDC initiative provides missile fields and infrastructure, ground based interceptors, In-Flight Interceptor Communication System (IFICS) Data Terminals (IDT), communication networks, and sensors, as augmented by BMDS Test Bed developmental assets initiated under Project 3011. The GMD system employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. Block 2004 will deliver and field the initial infrastructure, field the initial increment of interceptors, and provide for initial sustainment infrastructure for the IDC.

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

- Missile Fields and Infrastructure. The IDC consists of two (2) missile fields at Fort Greely, AK and operational silos at Vandenberg AFB, CA. The BMDS Test Bed provides for the construction of the first missile field with operating infrastructure at Fort Greely, which is to be completed in 2004. Six (6) common silos, launch site components, and command launch equipment will be fielded in the first missile field. The IDC initiative provides for the construction of the second missile field at Fort Greely, which is to be completed in 2005. Ten (10) common silos, launch site components, and command launch equipment will be fielded in the second missile field. Additionally, IDC provides for the modification of four (4) common silos, launch site components, and command launch equipment at Vandenberg AFB in 2004.
- Ground Based Interceptors (GBI). The IDC consists of up to 20 GBI. A GBI consists of a booster and exo-atmospheric kill vehicle (EKV). The BMDS Test Bed provides up to ten (10) boosters and five (5) EKVs to field an initial five (5) GBIs at Fort Greely in 2004. The IDC initiative provides an additional ten (10) boosters and fifteen (15) EKVs to field up to four (4) GBIs at Vandenberg AFB, CA, in 2004, and up to eleven (11) additional GBIs at Fort Greely in 2005.
- IDTs. The IDC consists of five (5) IDTs at multiple sites. The BMDS Test Bed provides an IDT at Fort Greely, Shemya (AK), and VAFB in 2004 and an onboard IDT on the Sea-Based X-Band Radar to be fielded in 2005. The IDC initiative provides for an IDT at a NE Tier location in 2006. An additional IDT is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.
- GMD Communications Network (GCN). The GCN consists of fiber optic land lines interconnected to satellite communications, both DSCS and MILSTAR. The CONUS Net connects Fort Greely and VAFB to the Joint National Integration Center (JNIC) at Shriever AFB as well as Hardware-in-the-Loop facilities in Huntsville. The BMDS Test Bed provides two (2) GMD Fire Control and Communications (GFC/C) Nodes located at Fort Greely and Shriever AFB. The IDC initiative provides a Communications Node Equipment (CNE) extension at a NE CONUS location. The Shriever

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<p>AFB and GCN are also connected to the Cheyenne Mountain Operations Center (CMOC) through remote workstations. The BMDS Test Bed provides satellite communications systems consisting of DSCS terminals at Fort Greely and Shemya and a MILSTAR terminal at Fort Greely. An additional DSCS terminal is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.</p> <p>- Sensors. The IDC consists of four (4) radars at multiple sites. The BMDS Test Bed provides for an upgraded Cobra Dane radar on Shemya, an Upgraded Early Warning Radar at Beale AFB in 2004 and a Sea-Based X-Band radar in 2005, and communications interface to the Aegis SPY-1 radars. The IDC initiative provides for an Upgraded Early Warning Radar at Fylingdales, United Kingdom in 2005. An additional prototype X-band radar, Ground-Based Radar Prototype (GBR-P), is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the flight test program.</p> <p>Block 2004 provides a robust, flexible Test Bed to support the continuing development and testing of new and evolving BMDS technologies. This concurrent operations and testing capability supports a wide range of flight and ground test scenarios, multiple basing modes, and phenomenology. This multi-part Test Bed leverages initial GMD developmental hardware and software assets to validate the IDC operational concept and to provide increased realism for BMDS testing. The BMDS Test Bed will incorporate capabilities to evaluate: countermeasures; a wide range of sea and land-based radar sensors; more realistic test and evaluation through geographically dispersed assets and an operationally representative environment to check out component hardware and software integration, multiple target and interceptor test launch sites, flexible engagement scenarios, full spectrum of testing to demonstrate system performance including distributed, integrated ground testing; enhanced test infrastructure; and validation of construction, transportation, site activation, and logistics concepts supporting future fielding options.</p> <p>The flow down of Ballistic Missile Defense System (BMDS) capability specifications resulting from Missile Defense National Team efforts in Command and Control, Battle Management, and Communications (C2BMC) and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program-Wide Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.</p>			
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Ground-Based Interceptor (GBI)	101,194		
RDT&E Articles (Quantity)			
DISCUSSION. The Ground-Based Interceptor consists of an Exo-atmospheric Kill Vehicle (EKV) and a launch vehicle.			
Note: This effort has been moved to Project 0708 in FY 2004 and 2005.			
FY 2003 Accomplishments:			
- Continued acquisition of five (5) EKV's and ten (10) dual booster strategy boost vehicles for Fort Greely.			
- Continued acquisition of six (6) common silos, launch site components for Fort Greely.			
- Continued acquisition of command launch equipment and other support equipment for Fort Greely.			
	FY 2003	FY 2004	FY 2005
Cobra Dane Upgrade	35,079		
RDT&E Articles (Quantity)			
DISCUSSION. Cobra Dane is an existing radar used to detect and track ballistic missile launches. This project upgrades both hardware and software to improve overall performance.			

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<p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Initiated hardware installation. - Completed initial software build. - Completed facility modifications. 			
	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	33,741		
RDT&E Articles (Quantity)	0		
<p>DISCUSSION. The GMD Fire Control and Communications (GFC/C) component enables control and operation of the GMD Element as a single, integrated system. The communications component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communication System (IFICS).</p> <p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Completed IFICS fabrication. - Completed Test Exerciser. - Continued acquisition of IDTs for Shemya and Fort Greely. - Initiated acquisition of relocatable IDC and Test Bed IDT for VAFB. - Continued External System Interface (ESI) hardware procurement for AEGIS. - Continued acquisition of GCN communication equipment and network for CONUS Ring and other IDC/Test Bed sites. - Continued acquisition of GMD Fire Control and Communications Remote Work Stations. - Continued acquisition of GMD Fire Control and Communications Node equipment. 			
	FY 2003	FY 2004	FY 2005
RDT&E Test Bed Construction	136,658		
RDT&E Articles (Quantity)			
<p>DISCUSSION. This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data. Missile Defense System Test Bed Facilities, Phase III (Project Number MDA-504) and Missile Defense System Test Bed - Extended Test Range Facilities Phase III (Project Number DMA-506). Project Number MDA 506 was initially authorized in FY 2002 as the Missile Defense System Test Bed - Kodiak Facilities. The BMDS test range program has evolved to include other locations and this project title has been changed to "Missile Defense System Test Bed - Extended Test Range Facilities" to reflect this development. The 1391s have been updated to reflect the latest construction costs. RDT&E funding initially allocated to planning and design efforts have been redistributed to the construction efforts.</p> <p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005.</p>			

Project: 3011 Block 2004 Test Bed

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<p>FY 2003 Activities:</p> <ul style="list-style-type: none"> - Completed construction on major facilities (readiness & control station, entry control, missile assembly building, IDT, utility and water buildings and interceptor storage igloo). - Initiated and completed construction on minor facilities including, EKV fuel storage buildings and security positions. - Initiated and completed construction on Electronic Security System at Fort Greely. - Continued construction of site access and interior site roads. Continued construction of the drainage system. - Completed preparation of facilities for equipment installation at Fort Greely. - Continued construction of Eareckson Air Station (Shemya) facilities. - Initiated COBRA DANE facility modification. 			
	FY 2003	FY 2004	FY 2005
Element Engineering and Integration	31,074		
RDT&E Articles (Quantity)			
<p>DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integration of the components of the 2004 IDC and Test Bed. Defines element-level capabilities, test requirements and objectives, and develops element-level assessments. Provides engineering, integration, and operations planning supporting an initial defensive operational capability. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to complement the BMDS Systems Engineering capability by providing detailed insight and analysis into component technical and design-specific issues.</p> <p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Continued IDC and Test Bed planning, design, and scheduling. - Continued planning for IDC and Test Bed sub-system checkout (SSCO) and system integration and checkout (SICO) at Fort Greely. - Conducted Reagan Test Site SSCO. - Continued acquisition of Embedded Test Node hardware. 			
	FY 2003	FY 2004	FY 2005
Element Test & Evaluation (T&E)	13,023		
RDT&E Articles (Quantity)			
<p>DISCUSSION. GMD Test and Evaluation provides critical risk reduction and measurement of system performance for all GMD element components. It utilizes of a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance.</p> <p>The Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, and minimizes the duplication of test resources and the time required to execute required testing.</p> <p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005.</p>			

Project: 3011 Block 2004 Test Bed

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FY 2003 Accomplishments:

- Continued systems/elements test planning, design, and scheduling.
- Conducted IDC/Test Bed Integrated Ground Test.
- Continued planning for sub-system checkout (SSCO), system integration and checkout (SICO), and Systems Test Readiness Review (STRR).
- Initiated acquisition of Mission Control Centers (flight and ground).

	FY 2003	FY 2004	FY 2005
Site Activation	18,686		
RDT&E Articles (Quantity)			

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

Note: This effort has been moved to Project 0708 in FY 2004 and 2005.

FY 2003 Accomplishments:

- Continued to develop and verify site layout and facility requirements definition for IDC/Test Bed infrastructure.
- Continued Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Completed coordination of facility acceptance and equipment installation.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing

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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground-Based Interceptor (GBI)										
GBI	SS/CPAF	Boeing/ Various	158,889	0		0		CONT.	158,889	CONT.
Cobra Dane Upgrade										
Cobra Dane Upgrades	SS/CPAF	Boeing/ Various	11,600	0		0		CONT.	11,600	CONT.
GMD Fire Control & Communications										
GFC/C	SS/CPAF	Boeing/ Various	51,190	0		0		CONT.	51,190	CONT.
Element Engineering and Integration										
Element Engr & Integration	SS/CPAF	Boeing/ Various	47,812	0		0		CONT.	47,812	CONT.
Element Test & Evaluation (T&E)										
Element T&E	SS/CPAF	Boeing/ Various	17,500	0		0		CONT.	17,500	CONT.
Subtotal Product Development			286,991	0		0		0	286991	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
RDT&E Test Bed Construction										
Facility Construction	MIPR	COE/ AK	2,278,521	0		0		CONT.	2,278,521	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Kodiak Construction	MIPR	COE/ AK	2,800	0		0		CONT.	2,800	CONT.
Site Activation										
Site Activation	SS/CPFF	Boeing/ AK	54,285	0		0		CONT.	54,285	CONT.
Subtotal Support Costs			2,335,606	0		0		0	2335606	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			2,622,597	0		0			2,622,597	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Test Bed																																	
Begin Installing Interceptors								△	△																								
DSCS Terminal - EAS							△	△	△																								
Milstar Terminal - FGA							△	△	△																								
COBRA DANE Upgrades	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△																	
Completion of Initial Test Bed Capability								△																									
Test Bed Upgrade Decision Point								△	△	△	△	△																					
Drill 6 silo holes - Greely	▲																																
GCN- CONUS Ring and Test Bed sites	△	△	△	△	△	△	△	△																									
Initiate Test Bed Testing								△																									
GMD Battle Mgt Fire Ctrl & Comm Node - JNIC/CMOC	△	△	△	△	△	△	△	△																									
GMD Fire Control & Comms Node - Greely							△	△																									
IFICS - Greely	△	△	△	△	△	△	△	△																									
GBI Components I&CO								△																									
IFICS - Eareckson, Air Station, AK	△	△	△	△	△	△	△	△																									
Sea-Based Test XBR (SBX) Planning & Acquisition	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△																	

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Early Warning Radars (EWR)																												
Beale Upgrades (UEWR)	△				△				△				△															
Milestones																												
Decision Points (also see 3012)	△				△				△																			
Software																												
Install GBIs for 2nd Missile Field- Greely					△				△																			
Install GBIs - VAFB					△				△																			
Refurbish Silos - VAFB					△				△																			
Conduct Missile Field 2 Site Activation - Greely					△				△				△															
Install Upgrades to NE Tier EWR					△				△				△															
Install #6 GBI- Greely					△				△																			
Install NE CONUS IDT					△				△				△															

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Test Bed							
Begin Installing Interceptors		3Q-4Q					
DSCS Terminal - EAS		1Q-4Q					
Milstar Terminal - FGA		1Q-4Q					
COBRA DANE Upgrades	1Q-4Q	1Q-4Q	1Q-4Q				
Completion of Initial Test Bed Capability		4Q					
Test Bed Upgrade Decision Point		3Q-4Q	1Q-3Q				
Drill 6 silo holes - Greely	1Q						
GCN- CONUS Ring and Test Bed sites	1Q-4Q	1Q-3Q					
Initiate Test Bed Testing		3Q					
GMD Battle Mgt Fire Ctrl & Comm Node - JNIC/CMOC	1Q-4Q	1Q-3Q					
GMD Fire Control & Comms Node - Greely		1Q-3Q					
IFICS - Greely	1Q-4Q	1Q-3Q					
GBI Components I&CO		3Q					
IFICS - Eareckson, Air Station, AK	1Q-4Q	1Q-3Q					
Sea-Based Test XBR (SBX) Planning & Acquisition	1Q-4Q	1Q-4Q	1Q-4Q				
Early Warning Radars (EWR)							
Beale Upgrades (UEWR)	1Q-4Q	1Q-4Q	1Q-4Q				
Milestones							
Decision Points (also see 3012)	1Q-4Q	1Q-4Q	1Q-3Q				
Software							
Install GBIs for 2nd Missile Field- Greely		4Q	1Q-4Q	1Q			
Install GBIs - VAFB		1Q-4Q					
Refurbish Silos - VAFB		1Q-4Q					
Conduct Missile Field 2 Site Activation - Greely		1Q-4Q	1Q-4Q	1Q			
Install Upgrades to NE Tier EWR		1Q-4Q	1Q-4Q				
Install #6 GBI- Greely		1Q-4Q					
Install NE CONUS IDT		1Q-4Q	1Q-4Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0708 Ground-Based Midcourse Defense (GMD) Block 2004 Test Bed/Initial Defensive Capability (IDC)	0	1,342,816	861,059	0	0	0	0
RDT&E Articles Qty	0	46	46	1	0	0	0

Note: This project was previously captured in Project 3011 in FY 2003.

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the Ballistic Missile Defense System (BMDS) consists of a series of block development efforts supporting the midcourse phase of the BMDS. The goals of the BMDS are (1) to complete, verify, and test the BMDS; (2) to place an operational capability on alert by September 30, 2004; (3) to enhance these fielded capabilities when appropriate; and (4) to perform concurrent operations and testing of a BMDS. The elements being developed and fielded in the Midcourse segment will comprise most of the critical components meeting these goals in the near-term.

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

The GMD Block 2004 effort provides for the fielding of the Initial Defensive Capability (IDC) directed by the President in December 2002. The IDC initiative provides missile fields and infrastructure, ground based interceptors, In-Flight Interceptor Communication System (IFICS) Data Terminals (IDT), communication networks, and sensors, as augmented by BMDS Test Bed developmental assets initiated under Project 3011. The GMD system employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. Block 2004 will deliver and field the initial infrastructure, field the initial increment of interceptors, and provide for initial sustainment infrastructure for the IDC.

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

- Missile Fields and Infrastructure. The IDC consists of two (2) missile fields at Fort Greely, AK and operational silos at Vandenberg AFB, CA. The BMDS Test Bed provides for the construction of the first missile field with operating infrastructure at Fort Greely, which is to be completed in 2004. Six (6) common silos, launch site components, and command launch equipment will be fielded in the first missile field. The IDC initiative provides for the construction of the second missile field at Fort Greely, which is to be completed in 2005. Ten (10) common silos, launch site components, and command launch equipment will be fielded in the second missile field. Additionally, IDC provides for the modification of four (4) common silos, launch site components, and command launch equipment at Vandenberg AFB in 2004.
- Ground Based Interceptors (GBI). The IDC consists of up to 20 GBI. A GBI consists of a booster and exo-atmospheric kill vehicle (EKV). The BMDS Test Bed provides up to ten (10) boosters and five (5) EKVs to field an initial five (5) GBIs at Fort Greely in 2004. The IDC initiative provides an additional ten (10) boosters and fifteen (15) EKVs to field up to four (4) GBIs at Vandenberg AFB, CA, in 2004, and up to eleven (11) additional GBIs at Fort Greely in 2005.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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- IDTs. The IDC consists of five (5) IDTs at multiple sites. The BMDS Test Bed provides an IDT at Fort Greely, Shemya (AK), and VAFB in 2004 and an onboard IDT on the Sea-Based X-Band Radar to be fielded in 2005. The IDC initiative provides for an IDT at a NE Tier location in 2006. An additional IDT is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.

- GMD Communications Network (GCN). The GCN consists of fiber optic land lines interconnected to satellite communications, both DSCS and MILSTAR. The CONUS Net connects Fort Greely and VAFB to the Joint National Integration Center (JNIC) at Shriever AFB as well as Hardware-in-the-Loop facilities in Huntsville. The BMDS Test Bed provides two (2) GMD Fire Control and Communications (GFC/C) Nodes located at Fort Greely and Shriever AFB. The IDC initiative provides a Communications Node Equipment (CNE) extension at a NE CONUS location. The Shriever AFB and GCN are also connected to the Cheyenne Mountain Operations Center (CMOC) through remote workstations. The BMDS Test Bed provides satellite communications systems consisting of DSCS terminals at Fort Greely and Shemya and a MILSTAR terminal at Fort Greely. An additional DSCS terminal is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the BMDS flight test program.

- All components are integrated into the BMDS C2BMC Element in order to provide the deliberate planning tools and crisis action tools to evolve courses of action based upon a common view of the threat, available global resources, and warning order objectives.

- Sensors. The IDC consists of four (4) radars at multiple sites. The BMDS Test Bed provides for an upgraded Cobra Dane radar on Shemya, an Upgraded Early Warning Radar at Beale AFB in 2004 and a Sea-Based X-Band radar in 2005, and communications interface to the Aegis SPY-1 radars. The IDC initiative provides for an Upgraded Early Warning Radar at Fylingdales, United Kingdom in 2005. An additional prototype X-band radar, Ground-Based Radar Prototype (GBR-P), is located at the Reagan Test Site (RTS) as part of the BMDS Test Bed and will continue to support the flight test program.

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

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

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Ground-Based Interceptor (GBI)		219,202	5,342
RDT&E Articles (Quantity)		27	0

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

FY 2003 Accomplishments:(Funded in Project 3011)

- Continued acquisition of five (5) interceptors with ten (10) dual booster strategy boost vehicles for Fort Greely.
- Continued acquisition of six (6) common silos, launch site components for Fort Greely.
- Continued acquisition of command launch equipment and other support equipment for Fort Greely.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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FY 2004 Planned Accomplishments:

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

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

FY 2005 Planned Accomplishments:

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

	FY 2003	FY 2004	FY 2005
Cobra Dane Upgrade		34,812	0
RDT&E Articles (Quantity)		1	0

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

FY 2003 Accomplishments: (Funded in Project 3011)

- Initiated hardware installation.
- Completed initial software upgrade build.
- Completed facility modification.

FY 2004 Planned Accomplishments:

RDT&E Test Articles: Acquisition of hardware and software upgrades to the Cobra Dane Radar was initiated in FY 2002 for delivery in FY 2004.

- Completes follow-on software upgrade build.
- Completes installation and initial checkout.
- Completes final checkout (Initial COBRA DANE upgrade complete).

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	FY 2003	FY 2004	FY 2005
Beale Early Warning Radar Upgrade		30,988	19,597
RDT&E Articles (Quantity)		1	
<p>DISCUSSION.</p> <p>Note: This effort was initiated under Project 3012 in FY 2002 and 2003.</p> <p>The Beale Early Warning Radar (EWR) is an existing large, fixed, phased-array surveillance radar used to detect, track, and count individual targets early in their trajectory. The planned Beale upgrades provide the capability of not only detecting, but also providing precise tracking early enough to significantly expand the battlespace for the ground based interceptors. The Beale upgrades include both hardware and software enhancements to improve overall performance, execute BMDS functionally and, connect to the BMDS.</p> <p>FY 2003 Accomplishments:(Funded in Project 3012)</p> <ul style="list-style-type: none"> - Continued flight and ground test support. - Completed prototype string hardware. - Completed Beale facility design. - Completed Beale facility modification. - Completed acquisition of Beale receiver-exciter and processors. <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of various upgrades to the Beale EWR was initiated in FY 2002 for delivery in FY 2004.</p> <ul style="list-style-type: none"> - Continues Flight and Ground Test support. - Continues development and fielding of UEWR Software Builds. - Completes Beale Integration and Test. - Completes Beale Sub-system Checkout. - Completes delivery of Beale Upgrade initial capability. - Initiates ITWAA integration and certification. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Continues Flight and Ground Test support. - Continues development and fielding of UEWR Software Builds. - Completes ITWAA integration and certification 			
	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications		45,763	7,239
RDT&E Articles (Quantity)		8	1
<p>DISCUSSION. The GMD Fire Control and Communications (GFC/C) component enables integrated control and operation of the GMD Element within the BMDS. The communications component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communication System (IFICS). The GCN includes fiber optic landlines connected to satellite</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>communications, both DSCS and Milstar. The DSCS terminals will be acquired and installed at Fort Greely and Shemya. Based on congressional directions, completion of the installation of the two DSCS terminals at Shemya has been accelerated into FY04 as a risk reduction effort for the IDC. The GCN also consists of an existing DSCS terminal at RTS supporting flight test requirements. A Milstar terminal will be installed at Fort Greely.</p> <p>FY 2003 Accomplishments: (Funded in Project 3011)</p> <ul style="list-style-type: none"> - Completed IFICS fabrication. - Completed Test Exerciser. - Continued acquisition of IDTs for Shemya and Fort Greely. - Initiated acquisition of relocatable IDT at VAFB. - Continued External System Interface (ESI) hardware procurement for AEGIS. - Continued acquisition of GCN communication equipment and network for CONUS Ring and other Test Bed sites. - Continued acquisition of GMD Fire Control and Communications Remote Work Stations. - Continued acquisition of GMD Fire Control and Communications Node equipment. - Initiates acquisition and installation of a Milstar terminal at Fort Greely. <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of IFICS Data Terminals (IDT), one (1) for Shemya and one (1) for Greely, was initiated in FY 2002 for delivery in FY 2004. Acquisition of a third IFICS Data Terminal (IDT) was initiated for Vandenberg AFB in FY 2003 for delivery in FY 2004. An additional IDT is acquired for the SBX and is included in that accomplishment narrative. Acquisition of GMD Fire Control and Communications Nodes for Fort Greely and Shriever AFB with remote operator workstations at Cheyenne Mountain Operations Center (CMOC) was initiated in FY 2002 for delivery in FY 2004. Acquisition of an External System Interface (initially for the Aegis SPY-1 radar) was initiated in FY 2003 for delivery in FY 2004. Acquisition of two DSCS terminals for Shemya and one (1) for Fort Greely, was initiated in FY 2003 for delivery in FY 2004.</p> <ul style="list-style-type: none"> - Completes installation and checkout at Fort Greely. - Completes acquisition of IDTs for Shemya and Fort Greely. - Completes initial IDT installation and checkout, Shemya and Fort Greely. - Completes acquisition of relocatable IDT at VAFB. - Completes External System Interface (ESI) acquisition, installation, and checkout for AEGIS. - Completes acquisition of GCN communication equipment and network for CONUS Ring. - Completes acquisition of GMD Fire Control and Communications Remote Work Stations. - Completes acquisition of GMD Fire Control and Communications Node equipment. - Acquires and completes the installation of the two DSCS terminals at Shemya (per congressional direction) and one terminal at Fort Greely. - Continues installation of a Milstar terminal at Fort Greely. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of a Milstar terminal for Fort Greely, was initiated in FY 2003 for delivery in FY 2005.</p> <ul style="list-style-type: none"> - Completes installation of a Milstar terminal at Fort Greely. 		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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	FY 2003	FY 2004	FY 2005
RDT&E Test Bed Construction		38,135	0
RDT&E Articles (Quantity)			
<p>DISCUSSION. This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data. Missile Defense System Test Bed Facilities, Phase III (Project Number MDA-504) and Missile Defense System Test Bed - Extended Test Range Facilities Phase III (Project Number DMA-506). Project Number MDA 506 was initially authorized in FY 2002 as the Missile Defense System Test Bed - Kodiak Facilities. The BMDS test range program has evolved to include other locations and this project title has been changed to "Missile Defense System Test Bed - Extended Test Range Facilities" to reflect this development. The 1391s have been updated to reflect the latest construction costs. RDT&E funding initially allocated to planning and design efforts have been redistributed to the construction efforts.</p> <p>FY 2003 Activities:(Funded in Project 3011)</p> <ul style="list-style-type: none"> - Completed construction on major facilities (readiness & control station, entry control, missile assembly building, IDT, utility and water buildings and interceptor storage igloo). - Initiated and completed construction on minor facilities including, EKV fuel storage buildings and security positions. - Initiated and completed construction on Electronic Security System at Fort Greely. - Continued construction of site access and interior site roads. Continued construction of the drainage system. - Completed preparation of facilities for equipment installation at Fort Greely. - Continued construction of Eareckson Air Station (Shemya) facilities. - Initiated COBRA DANE facility modification. <p>FY 2004 Planned Activities:</p> <ul style="list-style-type: none"> - Completes equipment installation for missile field, IDTs and DSCS at Fort Greely. - Completes construction on site access and interior site roads and drainage system. - Completes construction on facilities (IDT, COBRA DANE, DSCS, and Test Support Facilities) at Eareckson Air Station (Shemya). 			
	FY 2003	FY 2004	FY 2005
Sea-Based X-Band Radar (SBX)		370,014	168,465
RDT&E Articles (Quantity)			2
<p>DISCUSSION.</p> <p>Note: This effort was initiated under Project 3012 in FY 2002 and 2003. The SBX development was initiated in FY 2002. This acquisition is necessary to ensure that a Test XBR is ready to be integrated into the Ballistic Missile Defense System Test Bed in the fourth quarter of FY 2005. The SBX provides high-resolution tracking and discrimination data to the GMD fire control, thereby significantly enhancing BMDS performance.</p> <p>The Sea-Based Test X-Band Radar (SBX) is a Midcourse Defense sensor that will support the IDC and Integrated Flight Tests and will provide the capability of exercising all GMD sensor functions (weapon task plan, in-flight target update, target object map and kill assessment). The SBX will include an IFICS Data Terminal. The SBX will be a relocatable, phased-array (half populated) radar. The ability of the SBX to be relocated enables full use of extended test range capabilities for all land and air target launches, provides more realistic siting, and facilitates operationally realistic testing. The SBX will be mounted on a modified, sea-going, semi-submersible platform similar to the oil drilling platforms currently in use worldwide.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>FY 2003 Accomplishments: (Funded in Project 3012)</p> <ul style="list-style-type: none"> - Initiated acquisition of long-lead items associated with the radar. - Initiated acquisition of main radar structure. - Initiated acquisition of radar electronic components. - Initiated construction of operations and support structures and facilities for platform. - Initiated acquisition of operations and support equipment for platform. <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Completes fabrication of main radar structure. - Completes installation of radar structure. - Completes acquisition and initiates installation of radar electronic components. - Completes fabrication of operations and support structures and facilities for platform. - Continues acquisition of operations and support equipment for platform. - Initiates installation of radar electronic components. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of one (1) Sea-Based Test X-Band Radar (SBX) was initiated in FY 2002 for delivery in FY 2005. Acquisition of one (1) IFICS Data Terminal (IDT), fixed to the SBX platform, was initiated in FY 2002 for delivery in FY 2005.</p> <ul style="list-style-type: none"> - Completes installation of radar electronic components. - Completes acquisition of operations and support equipment for platform. - Completes integration and checkout of Sea-based X-band Radar. 			
	FY 2003	FY 2004	FY 2005
Initial Defensive Capability (Ground-Based Interceptors (GBI))		340,663	469,901
RDT&E Articles (Quantity)		9	42
<p>DISCUSSION. The Ground-Based Interceptor consists of an Exo-atmospheric Kill Vehicle (EKV) and a Booster Vehicle. These Interceptors represent an enhancement to the basic Block 2004 of five (5) Ground Based Interceptor (GBI) Test Bed capability by adding: Eleven (11) GBIs at Fort Greely by FY 2005, and four (4) GBIs at Vandenberg AFB (VAFB) in FY 2004. This effort will provide the United States with a fielded Initial Defensive Capability (IDC) against ballistic missile threats.</p> <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Articles: Acquisition of 5 EKV's is initiated in FY 2004 for delivery in FY 2004. Refurbishment of 2 silos with 2 sets of command launch equipment at VAFB was initiated in FY 2002 for delivery in FY 2004.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<ul style="list-style-type: none"> - Acquires and installs five EKV's (4 EKV's for VAFB and 1 for Fort Greely; boosters previously acquired). - Initiates acquisition of up to ten (10) EKV's for Fort Greely. - Initiates acquisition of up to ten (10) Boosters for Fort Greely. - Initiates acquisition of additional common silos for Fort Greely. - Completes refurbishment of two (2) silos at VAFB. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Articles: Acquisition of up to 10 EKV's and up to 10 Boosters is initiated in FY 2004 for delivery in FY 2005. Acquisition of 10 silos and 10 sets of command launch equipment was initiated in FY 2004 for delivery in FY 2005. Refurbishment of 1 silo with 1 set of command launch equipment at VAFB was initiated in FY 2004 for delivery in FY 2005.</p> <ul style="list-style-type: none"> - Completes acquisition and installation of up to 10 Boosters for Fort Greely. - Completes acquisition and installation of up to 10 EKV's for Fort Greely. - Completes acquisition and installation of common silos for Fort Greely. - Completes refurbishment of one (1) silo at VAFB. 			
	FY 2003	FY 2004	FY 2005
Initial Defensive Capability (UEWR & IDT)		65,286	42,216
RDT&E Articles (Quantity)		0	1
<p>DISCUSSION: The Fylingdales UEWR provides GMD fire control access and increased early warning capability for potential threat objects launched from north and east of CONUS. Processor upgrades, along with the associated GMD Communications Network (GCN) connectivity, are planned for full implementation of the Fylingdales UEWR by FY 2005. The IDT provides the capability for midcourse communications with eastbound interceptors from existing Test Bed assets. The IDT shall be located in accordance with a siting analysis to provide favorable communications with launched interceptors. The NE Tier IDT is deferred from FY05 to FY06 to fund critical IDC GBI requirements.</p> <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Initiates acquisition of UEWR hardware. - Initiates installation of UEWR hardware. - Begins installation of UEWR software. - Initiates IT/WAA integration and certification for the UEWR. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Completes acquisition of UEWR hardware. - Completes installation of UEWR hardware. - Completes installation of UEWR software. - Completes Integrated Tactical Warning and Attack Assessment and certification for the UEWR. - Initiates acquisition of IDT. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Initial Defensive Capability (RDT&E Construction)		116,437	134,597
RDT&E Articles (Quantity)			
<p>DISCUSSION. This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data. The 1391s have been updated to reflect the latest construction costs for the Initial Defensive Capability.</p> <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Initiates construction of 10 common silos and supporting facilities at Fort Greely. - Initiates and completes site facility designs for IDT [NE Tier, CONUS] and UEWR [Fylingdales, UK]. - Initiates facilities construction for UEWR [Fylingdales, UK]. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Completes construction of 10 common silos and supporting facilities at Fort Greely. - Completes facilities construction for UEWR [Fylingdales, UK]. - Initiates facilities construction for IDT [NE Tier, CONUS] 			
	FY 2003	FY 2004	FY 2005
Element Engineering and Integration		29,786	10,624
RDT&E Articles (Quantity)			
<p>DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integration of the components of the 2004 Test Bed. Defines element-level capabilities, test requirements and objectives, and develops element-level assessments. Provides engineering, integration, and operations planning supporting the Initial Defensive Capability. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to support and complement the BMDS Systems Engineering capability by providing detailed insight and analysis into component technical and design-specific issues.</p> <p>FY 2003 Accomplishments: (Funded in Project 3011)</p> <ul style="list-style-type: none"> - Continued Test Bed planning, design, and scheduling. - Continued planning for Test Bed sub-system checkout (SSCO) and system installation and checkout (SICO) at Fort Greely. - Conducted Reagan Test Site SSCO. - Continued acquisition of Embedded Test Node hardware. <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Conducts sub-system checkout (SSCO) assessments for Shemya (Cobra Dane), Boulder, Buckley, Vandenberg Air Force Base (VAFB), ESI (Aegis Weapon System Radar), Beale UEWR, Fort Greely Interceptor site, and Test IDT capability. - Conducts Test Bed systems integration and checkouts (SICO). - Completes acquisition and installation of Embedded Test Node hardware. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>FY 2005 Planned Accomplishments: - Completes system integration test and checkout.</p>			
	FY 2003	FY 2004	FY 2005
Element Test & Evaluation (T&E)		14,636	3,078
RDT&E Articles (Quantity)			
<p>DISCUSSION. GMD Test and Evaluation provides critical risk reduction and measurement of system performance for all GMD element components. It utilizes a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance. The GMD Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, and minimizes the duplication of test resources and the time required to execute required testing.</p> <p>FY 2003 Accomplishments:(Funded in Project 3011) - Continued systems/elements test planning, design, and scheduling. - Conducted Test Bed Integrated Ground Test. - Continued planning for sub-system checkout (SSCO), system installation and checkout (SICO), and Systems Test Readiness Review (STRR). - Initiated acquisition of Mission Control Centers (flight and ground).</p> <p>FY 2004 Planned Accomplishments: - Supports SSCO assessments for Shemya (Cobra Dane), Boulder, Buckley, Vandenberg Air Force Base (VAFB), ESI (Aegis Weapon System Radar), Beale UEWR, Fort Greely interceptor site, and Test Bed IDT capability. - Conducts Test Bed Integrated Ground Test. - Supports systems check-outs (SCO) and test readiness reviews. - Completes acquisition of Mission Control Centers (flight and ground).</p> <p>FY 2005 Planned Accomplishments: - Completes Systems Test Readiness Review documentation.</p>			
	FY 2003	FY 2004	FY 2005
Community Impacts		6,585	
RDT&E Articles (Quantity)			
<p>DISCUSSION.</p> <p>FY 2004 Planned Accomplishments: - Completes community impact mitigation efforts including education programs, and social service grants.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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	FY 2003	FY 2004	FY 2005
Site Activation		30,509	
RDT&E Articles (Quantity)			

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

FY 2003 Accomplishments:(Funded in Project 3011)

- Continued to develop and verify site layout and facility requirements definition for IDC (including Test Bed) infrastructure.
- Continued Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Continued facility acceptance and equipment installation coordination.

FY 2004 Planned Accomplishments:

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

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

D. Acquisition Strategy

GMD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial GMD parts of the BMDS Test Bed NLT 4th Quarter FY 2004 as an early BMDS Test Bed and deliver capability block upgrades as early as practical. In addition, the President has directed that the Test Bed be enhanced with additional interceptors and two sensor upgrades. These enhancements will be folded into ongoing development and implementation of the core Test Bed, and take advantage of all development up to this time. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities. The development approach has been enhanced to include (1) adding test infrastructure and improving test management to allow more operationally challenging representative flight tests and providing for increased testing against more challenging targets, and (2) increasing the fidelity of the project simulations.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground-Based Interceptor (GBI)										
Ground-Based Interceptor (GBI)	SS/CPAF	Boeing/ Various	0	219,202	1Q	5,342	2Q	CONT.	224,544	CONT.
Cobra Dane Upgrade										
Cobra Dane Upgrade	SS/CPAF	Boeing/ Various	0	34,812	1Q	0		CONT.	34,812	CONT.
Beale Early Warning Radar Upgrade										
Beale UEWR	SS/CPAF	Boeing/ Various	0	30,988	1Q	19,597	1/2Q	CONT.	50,585	CONT.
GMD Fire Control & Communications										
GMD Battle Management (Fire Control) & Comms	SS/CPAF	Boeing/ Various	0	45,763	1Q	7,239	1/2Q	CONT.	53,002	CONT.
Sea-Based X-Band Radar (SBX)										
Sea-Based X-Band Radar (SBX)	SS/CPAF	Boeing/ Various	0	370,014	1Q	168,465	1Q	CONT.	538,479	CONT.
Initial Defensive Capability (Ground-Based Interceptors (GBI))										
IDC (GBI)	SS/CPAF	Boeing/Various		340,663	1Q	469,901	1/2Q	CONT.	810,564	CONT.
Initial Defensive Capability (UEWR & IDT)										
IDC (UEWR & IDT)	SS/CPAF	Boeing/ Various	0	65,286	1Q	42,216	1/2Q	CONT.	107,502	CONT.
Element Engineering and Integration										
Element Engr & Integration	SS/CPAF	Boeing/ Various	0	29,786	1Q	10,624	1/2Q	CONT.	40,410	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Element Test & Evaluation (T&E)										
Element T&E	SS/CPAF	Boeing/ Various	0	14,636	1Q	3,078	1/2Q	CONT.	17,714	CONT.
Subtotal Product Development			0	1,151,150		726,462		0	1877612	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
RDT&E Test Bed Construction										
Construction	MIPR	COE/ AK	0	38,135	1Q	0		CONT.	38,135	CONT.
Initial Defensive Capability (RDT&E Construction)										
Construction	MIPR	COE/AK/CA	0	116,437	1Q	134,597	1Q	CONT.	251,034	CONT.
Community Impacts										
Community Impacts	C/CPAF	Various/ AK	0	6,585	1Q	0		CONT.	6,585	CONT.
Site Activation										
Site Activation	SS/CPFF	Boeing/ Various	0	30,509	1Q	0		CONT.	30,509	CONT.
Subtotal Support Costs			0	191,666		134,597		0	326263	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	1,342,816		861,059			2,203,875	
Remarks The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Test Bed																																	
Begin Installing Interceptors								△	△																								
DSCS Terminal - EAS							△	△	△																								
Milstar Terminal - FGA							△	△	△																								
COBRA DANE Upgrades	△																																
Completion of Initial Test Bed Capability												△																					
Test Bed Upgrade Decision Point																△																	
Drill 6 silo holes - Greely	▲																																
GCN- CONUS Ring and Test Bed sites	△																																
Initiate Test Bed Testing												△																					
GMD Battle Mgt Fire Ctrl & Comm Node - JNIC/CMOC	△																																
GMD Fire Control & Comms Node - Greely																																	
IFICS - Greely	△																																
GBI Components I&CO																																	
IFICS - Eareckson, Air Station, AK	△																																
Sea-Based Test XBR (SBX) Planning & Acquisition	△																																

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Test Bed							
Begin Installing Interceptors		3Q-4Q					
DSCS Terminal - EAS		1Q-4Q					
Milstar Terminal - FGA		1Q-4Q					
COBRA DANE Upgrades	1Q-4Q	1Q-4Q	1Q-4Q				
Completion of Initial Test Bed Capability		4Q					
Test Bed Upgrade Decision Point		3Q-4Q	1Q-3Q				
Drill 6 silo holes - Greely	1Q						
GCN- CONUS Ring and Test Bed sites	1Q-4Q	1Q-3Q					
Initiate Test Bed Testing		3Q					
GMD Battle Mgt Fire Ctrl & Comm Node - JNIC/CMOC	1Q-4Q	1Q-3Q					
GMD Fire Control & Comms Node - Greely		1Q-3Q					
IFICS - Greely	1Q-4Q	1Q-3Q					
GBI Components I&CO		3Q					
IFICS - Eareckson, Air Station, AK	1Q-4Q	1Q-3Q					
Sea-Based Test XBR (SBX) Planning & Acquisition	1Q-4Q	1Q-4Q	1Q-4Q				
Early Warning Radars (EWR)							
Beale Upgrades (UEWR)	1Q-4Q	1Q-4Q	1Q-4Q				
Milestones							
Decision Points (also see 3012)	1Q-4Q	1Q-4Q	1Q-3Q				
Software							
Install GBIs - VAFB		1Q-4Q					
Install GBIs for 2nd Missile Field- Greely		4Q	1Q-4Q	1Q			
Refurbish Silos - VAFB		1Q-4Q					
Conduct Missile Field 2 Site Activation - Greely		1Q-4Q	1Q-4Q	1Q			
Install Upgrades to NE Tier EWR		1Q-4Q	1Q-4Q				
Install #6 GBI- Greely		1Q-4Q					
Install NE CONUS IDT			1Q-4Q	1Q-4Q			

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3012 GMD Dev & Test Bed Upgrades	2,121,573	0	0	0	0	0	0
RDT&E Articles Qty	10	0	0	0	0	0	0

Note: This Project has been restructured beginning in FY 2004 to Project 0808. This restructure represents MDA's block development and management framework for the BMDS.

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the Ballistic Missile Defense System (BMDS) is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The goals of the BMDS are (1) to complete, verify, and test the BMDS; (2) to place an operational capability on alert by September 30, 2004; (3) to enhance these fielded capabilities when appropriate; and (4) to perform concurrent operations and testing of a BMDS. The elements being developed and fielded for the Midcourse segment will comprise most of the critical components in meeting these goals in the near-term. Project 0808 provides the development for the GMD hardware and software components for the BMDS. This development consists of a series of block development efforts.

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

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

Block 2004 (contained in Projects 3011, 0708, 3012, and 0808) consists of the early development of the initial GMD hardware and software components of the BMDS IDC and Test Bed. This includes the development of the ground-based interceptor, specifically the booster and EKV; X-Band radar technologies, including the GBR-P; fire control and communications technologies, including the In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs); test range resources; and future fielding planning.

Block 2006 (contained in Projects 3012 and 0808) consists of the continuing development and fielding of capabilities to detect, track, intercept, and defeat ballistic missile threats. This also includes fielding of the Missile Defense Plan II (MDP-II). MDP-II fields additional interceptors (up to 20), UEWs, IDTs, a second Sea-Based X-Band radar, and a third site. Block 2006 also includes continuing development and evolution of the wide range of software supporting the IDC and assessment, test, and evaluation of alternative GBI basing options. A basing concept under study examines the option of mounting GBIs on a sea-based relocatable platform to enhance responsiveness to emerging threats.

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

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>- The GMD is developing boosters from two vendors to support the IDC. This risk reduction initiative will help ensure that reliable components are readily available for future fielding and testing requirements. Because of the dual booster development initiative, significant delays and turbulence to the IDC and test programs were avoided when the provider of the upper stage (CSD) for the BV+ booster (Lockheed) suffered significant damage to their propellant mixer in an explosion. Near-term booster acquisitions were shifted to the other booster supplier (OSC) avoiding delays to the IDC and flight test program. The Orbital (OSC) Boost Vehicle (OBV) and the BV+ will be the launch vehicles for the Exo-atmospheric Kill Vehicle (EKV). Both boosters are in development with booster verification flight tests planned in FY 2004.</p> <p>- The EKV is a "Hit-to-Kill" payload designed to acquire, discriminate, track, and intercept targets in the midcourse phase of flight. The key components and technologies of the EKV include the acquisition and tracking sensors, the on-board maneuvering system, and the on-board vehicle C3 systems. Component development is on going and is demonstrated as part of the block improvement process in the Integrated Flight Test program.</p> <p>- The sensor development program is a mix of enhancements to existing radar assets and development of new radar capabilities. The program will continue the software upgrades to the Early Warning Radars at Beale and Fylingdales, and the Cobra Dane radar at Shemya. The program continues planning for potential upgrades to other Early Warning Radar (EWR) sites. The key elements of the upgrades are the software builds to improve the effectiveness of the radars. A broad range of X-Band Radar (XBR) technologies will continue in development to support the SBX. The Ground Based Radar Prototype (GBR-P) located at the Ronald Reagan Test Site (RTS), at Kwajalein, is being used as part of the Integrated Flight Test program, and serves as a demonstration platform for these evolving radar technologies.</p> <p>- The GMD Fire Control and Communications component is an integrated communications network of nodes, to enable the GMD element to function as part of the BMDS. This includes: -- Various communications links (e.g., CONUS ring, Alaska leased lines and Satellite Communications (SATCOM) to Shemya, Fort Greely, and In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs). -- GMD Fire Control and Communications Nodes [Fort Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC)] -- In-Flight Interceptor Communications System Data Terminal (IDTs) at various locations.</p> <p>These FC&C development initiatives continue on these technologies and components meeting future block capability requirements. This effort will be developed as part of the BMDS overarching BMC/C2 architecture.</p> <p>- One of the most significant activities supported by this project is the component and systems level testing. The integrated flight and ground tests; the component level developmental testing; modeling and simulation; and the Verification, Validation, and Accreditation testing are critical to the successful fielding of all IDC components. The GMD test program is designed to demonstrate a broad range of GMD component development efforts. These incremental capabilities include multiple launches against multiple threat targets as the block capabilities mature. These components under test include boosters, EKVs, launch infrastructure, sensors, and interfaces with other BMDS elements. Additionally, the test program will incorporate Aegis Weapon System (AWS) radars to support GMD integrated flight test program. The test regimen will significantly expand to include operational interceptors both for ground and flight testing. These will subsequently be replaced with new interceptors from the ongoing production line to ensure the most technically capable GBI inventory while ensuring backward compatibility to the maximum extent possible. This rotatable pool of GBI assets provides GMD the capability to maintain youngest average age for interceptors on alert. GMD will continuously evaluate the capabilities of available interceptors through this inventory surveillance program to be initiated in FY06 to ensure that the newest, most technologically capable missiles are on Alert. Older GBIs will be used for the Integrated Flight Test Program (up to 3 IFTs per year) to verify/validate maturing component capability improvements.</p> <p>- Software is another key area of development supporting the BMDS. Software development supports the Upgraded Early Warning radars, the X-Band radars, the IDTs, EKV on-board processing and interfaces, the GBI systems interfaces, system-wide communications interfaces and nodes, and fire control. This software must support not only the operational BMDS but also the systems-wide testing during ground and flight tests.</p> <p>- Planning continues to provide a capability to respond to additional future fielding orders in the shortest time possible. This includes site surveys and activation planning, silo design and planning, facility planning, environmental impact studies and assessments, logistics planning, and operational procedures</p>		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Ground Based Interceptor (GBI)	623,900		
RDT&E Articles (Quantity)	8		
<p>DISCUSSION. The GBI development program funds the development of booster and EKV technologies. It also provides developmental assets for flight-testing. GMD has successfully demonstrated a hit-to-kill capability in five (5) separate flight tests</p> <p>FY 2003 Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKV and boost vehicles) was initiated in FY 2001 for delivery in FY 2003. Acquisition of 4 boost vehicles (Booster Verification Flights) was initiated in FY 2001 for delivery in FY 2003.</p> <ul style="list-style-type: none"> - Conducted booster/EKV integration, ground/system tests, and Integrated Flight Tests. - Completed acquisition of boosters for Booster Verification flights. - Conducted Booster Verification flights. - Continued Objective Booster development. - Continued common silo and common command launch equipment development. - Initiated refurbishment 2 silos at VAFB and equip for flight test. - Continued development of EKV technologies to improve system discrimination, performance, and producibility in the areas of on-board sensors and processors, software/algorithms, vehicle maneuvering, and C3 systems. - Continued modeling and simulation development. 			
	FY 2003	FY 2004	FY 2005
X Band Radar Technology Development	87,142		
RDT&E Articles (Quantity)			
<p>DISCUSSION. X-Band radar technologies provide high-resolution tracking and discrimination data to the GMD fire control and subsequently the EKV thereby significantly enhancing the tracking and discrimination capabilities of the system. This effort develops highly sophisticated software algorithms to enhance target discrimination and material and component enhancements to improve power output and sensitivity. This technology forms the basis for the SBX.</p> <p>FY 2003 Accomplishments</p> <ul style="list-style-type: none"> - Continued XBR systems integration into Test Bed Architecture. - Continued development of a systems design and ground testing program to measure systems effectiveness. - Completed XBR Receiver/Exciter, Beam Steering Group software testing. - Continued to develop and field XBR Software Builds. - Continued flight and ground test support. - Continued operation and maintenance of GBR-P. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Sea-Based X-Band Radar	228,000		
RDT&E Articles (Quantity)			
<p>DISCUSSION. The Sea-Based Test X-Band Radar (SBX) is a Midcourse Defense sensor that will support the IDC and Integrated Flight Tests and provides the capability of exercising all GMD sensor functions (weapon task plan, in-flight target update, target object map and kill assessment). The SBX will include an IFICS Data Terminal. The SBX will be a relocatable, phased-array (half populated) radar. The ability of the SBX to be relocated enables full use of extended test range capabilities for all land and air target launches, provides more realistic siting, and facilitates operationally realistic testing. The SBX will be mounted on a modified, sea-going, semi-submersible platform similar to the oil drilling platforms currently in use.</p> <p>Note: This effort has been moved to Project 0708 in FY 2004 and 2005. The SBX development was initiated in FY 2002 with the acquisition of long-lead items associated with the radar. This acquisition is necessary to ensure that the XBR is ready to be integrated into the Ballistic Missile Defense System IDC and Test Bed in the fourth quarter of FY 2005.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Initiated acquisition of the sea-based platform. - Initiated acquisition of main radar structure. - Initiated acquisition of radar electronic components. - Initiated construction of operations and support structures and facilities for platform. - Initiated acquisition of operations and support equipment for platform. 			
	FY 2003	FY 2004	FY 2005
Upgraded Early Warning Radar (UEWR) Development	36,452		
RDT&E Articles (Quantity)			
<p>DISCUSSION. Upgraded Early Warning Radars (UEWRs) are large, fixed, phased-array surveillance radars used to detect, track, and count individual targets early in their trajectory. UEWRs are also effective in cueing the higher resolution X-Band radars to the location and trajectory of incoming targets. The planned upgrades provide precise tracking early enough to significantly expand the battlespace for the ground-based interceptors. This program will provide for the development of enhanced EWR software.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Continued flight and ground test support. - Continued planning for potential future UEWR sites. 			

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Beale Early Warning Radar Upgrade	64,900		
RDT&E Articles (Quantity)			
DISCUSSION. The Beale Early Warning Radar (EWR) is a large, fixed, phased-array surveillance radar used to detect, track, and count individual targets early in their trajectory. The planned Beale upgrades provide the capability of not only detecting, but provide precise tracking early enough to significantly expand the battlespace for the ground based interceptors into the early stages of flight. The Beale upgrades include both hardware and software enhancements to improve overall performance.			
Note: This effort has been moved to Project 0708 in FY 2004 and 2005.			
FY 2003 Accomplishments:			
<ul style="list-style-type: none"> - Continued flight and ground test support. - Completed prototype string hardware. - Completed Beale facility Design. - Completed Beale facility modification. - Completed acquisition of Beale receiver-exciter and processors. 			
	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	218,201		
RDT&E Articles (Quantity)			
DISCUSSION. The GMD Fire Control and Communications (GFC/C) enables control and operation of the GMD Element as part of the BMDS. The communications component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communication Systems (IFICS).			
FY 2003 Accomplishments:			
<ul style="list-style-type: none"> - Continued flight and ground test support. - Continued development and installation of ESI software builds. - Continued development and installation of IFICS software builds. - Initiated development and installation of Test Exercise software builds. - Continued development and installation of GMD software builds. 			
	FY 2003	FY 2004	FY 2005
Element Engineering & Integration	175,916		
RDT&E Articles (Quantity)			
DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integrating the functional components of the 2004 IDC and Test Bed. Defines element-level test requirements and objectives and develops element-level assessments and capability-based requirements. Provides engineering, integration, and operations planning supporting an initial defensive			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
operational capability. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to support and complement the BMDS systems engineering capability by providing detailed insight and analysis into component technical and design-specific issues.			
FY 2003 Accomplishments:			
<ul style="list-style-type: none"> - Completed Integration Phase 2 (IP-2) and Integrated Assessment Review (IAR). - Completed IP-3 Integrated Technical Review (ITR). - Completed IP-4 Integrated Design Review (IDR). - Conducted software management and specialty engineering. - Conducted software verification and validation. - Conducted modeling and simulation development. - Conducted system analyses, integration, and verification. - Supported integrated ground tests and specialty testing. - Conducted pre- and post-flight test analyses. 			
	FY 2003	FY 2004	FY 2005
Element Test and Evaluation	252,578		
RDT&E Articles (Quantity)	2		
DISCUSSION. GMD Test and Evaluation utilizes a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources providing critical risk reduction and measurement of system performance for all GMD element components. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance.			
The GMD Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, and minimizes the duplication of test resources and the time required to execute required testing.			
FY 2003 Accomplishments:			
RDT&E Test Articles: Acquisition of 2 targets initiated in 2001 for delivery in FY 2003.			
<ul style="list-style-type: none"> - Conducted Integrated Flight Tests (IFT). <ul style="list-style-type: none"> -- Successfully conducted IFT-9. -- Conducted IFT-10, but did not meet test expectations due to the failure of a component causing the EKV not to separate from the booster. -- Successfully conducted booster verification test, BV-6, the first flight of the Orbital (OSC) Boost Vehicle (OBV). - Performed pre- and post-test analyses. - Continued operation and maintenance of System Test Lab, Prime Contractor Integrated Laboratory (PCIL), and Integrated Systems Test Center (ISTC). - Continued ground and flight test planning, design, and scheduling. - Performed analyses to define target requirements. - Established Element Test Objectives. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Program Planning and Management	130,542		
RDT&E Articles (Quantity)			
DISCUSSION.			
FY 2003 Accomplishments:			
<ul style="list-style-type: none"> - Provided government program office staff and infrastructure for the management of the GMD Program. - Provided technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities. - Provided requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution. - Continued program management, subcontract management, quality assurance, and technical and testing oversight. 			
	FY 2003	FY 2004	FY 2005
Logistics Planning, Production and Protection	249,887		
RDT&E Articles (Quantity)			
DISCUSSION. GFX represents the materiel and services provided to the prime contractor in support of the GMD development and test efforts. It includes Government Furnished Equipment (GFE), Information (GFI), Facilities (GFF), and Services (GFS) (including communication leases).			
FY 2003 Accomplishments:			
<ul style="list-style-type: none"> - Continued to coordinate and provide GFX (over 700 lines items) to the prime contractor to support IDC and Test Bed activations and GMD test program. - Continued to provide management efforts to activate a logistics support system to include site support activations and validation, logistical support requirements, and IDC and Test Bed readiness reviews. - Conducted quality assurance planning and implementation. - Continued to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDC and extended Test Bed sites as required. - Continued to provide functional support for production, quality, configuration and change management. - Conducted sustainment, fielding, siting, and facility planning. - Conducted reliability and maintainability analyses. - Continued to provide program protection to the IDC and Test Bed including physical security. 			
	FY 2003	FY 2004	FY 2005
Site Activation	54,055		
RDT&E Articles (Quantity)			
DISCUSSION. This effort provides a broad range of site design and layout, facility requirements, and environmental management activities.			

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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603882C Ballistic Missile Defense Midcourse Defense Segment				

FY 2003 Accomplishments:
 - Continued Block 2004 IDC/Test Bed activation.
 - Updated IDC/Test Bed site activation plans.
 - Continued siting, NEPA, and ESH analysis for Block 2004 Test Bed.
 - Initiated siting and Joint Spectrum Center (JSC) Electromagnetic Interference (EMI) analysis for SBX.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Based Interceptor (GBI)										
GBI	SS/CPAF	Boeing/ Various	837,556	0		0		CONT.	837,556	CONT.
X Band Radar Technology Development										
	SS/CPAF	Boeing/ Various	88,484	0		0		CONT.	88,484	CONT.
Sea-Based X-Band Radar										
	SS/CPAF	Boeing/ Various	41,900	0		0		CONT.	41,900	CONT.
Upgraded Early Warning Radar (UEWR) Development										
	SS/CPAF	Boeing/ Various	22,660	0		0		CONT.	22,660	CONT.
Beale Early Warning Radar Upgrade										
	SS/CPAF	Boeing/ Various	107,900	0		0		CONT.	107,900	CONT.
GMD Fire Control & Communications										
	SS/CPAF	Boeing/ Various	392,166	0		0		CONT.	392,166	CONT.
Element Engineering & Integration										
	SS/CPAF	Boeing/ Various	136,713	0		0		CONT.	136,713	CONT.
Element Test and Evaluation										
	SS/CPAF	Boeing/ Various	114,954	0		0		CONT.	114,954	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Logistics Planning, Production and Protection										
	SS/CPAF	Boeing / Various	21,325	0		0		CONT.	21,325	CONT.
Subtotal Product Development			1,763,658	0		0		0	1763658	

Remarks

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

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Based Interceptor (GBI)										
	SS/FP	Davidson/ AL	564	0		0		CONT.	564	CONT.
	SS/FP	Mevatec/ AL	7,282	0		0		CONT.	7,282	CONT.
	SS/FP	TSI/ AL	5,794	0		0		CONT.	5,794	CONT.
	C/CPFF	Sparta/ AL	1,730	0		0		CONT.	1,730	CONT.
	MIPR	AMCOM/ AL	437	0		0		CONT.	437	CONT.
	MIPR	USASMDC/ AL	337	0		0		CONT.	337	CONT.
	MIPR	DOT/ITOP/ DC	487	0		0		CONT.	487	CONT.
	MIPR	Mitre/ AL	131	0		0		CONT.	131	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	Misc/ Various	214	0		0		CONT.	214	CONT.
	Various	Misc/ Various	1,651	0		0		CONT.	1,651	CONT.
	SS/FP	CSC/ AL	7,245	0		0		CONT.	7,245	CONT.
	MIPR	SMC/ CA	8,649	0		0		TBD	8,649	TBD
X Band Radar Technology Development										
	C/FP	TBE	1,440	0		0		TBD	1,440	TBD
	C/FP	CSC	552	0		0		TBD	552	TBD
	SS/CPAF	Ga. Tech	1,730	0		0		CONT.	1,730	CONT.
	C/FP	Mevatech	7,578	0		0		CONT.	7,578	CONT.
	MIPR	AMCOM	1,667	0		0		CONT.	1,667	CONT.
	C/CPFF	Xontech	780	0		0		CONT.	780	CONT.
Upgraded Early Warning Radar (UEWR) Development										
	MIPR	Xontech/ Boston, MA	2,700	0		0		TBD	2,700	TBD
	C/CPAF	TRW/ JNIC	338	0		0		TBD	338	TBD
	C/CPFF	AFRL/ ESC, Hanscom AFB	120	0		0		TBD	120	TBD
Element Engineering & Integration										
	MIPR	TSC/SMDC/ AL	1,100	0		0		CONT.	1,100	CONT.
	MIPR	NSWC/ Dahlgren, VA	5,795	0		0		CONT.	5,795	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	DTRA/ Dulles, VA	1,360	0		0		CONT.	1,360	CONT.
	MIPR	NAIC/ Wright Patterson, AFB	900	0		0		CONT.	900	CONT.
	MIPR	SBIRS SPO/ LA AFB, CA	2,900	0		0		CONT.	2,900	CONT.
	MIPR	DTD/GMD/ Huntsville, AL	2,200	0		0		CONT.	2,200	CONT.
	MIPR	GME Engineering Analysis/ Huntsville, AL	3,190	0		0		CONT.	3,190	CONT.
	MIPR	GMD Studies & Analysis/ Huntsville, AL	1,900	0		0		CONT.	1,900	CONT.
	SS/CPFF	CSC/ Arlington, VA	18,288	0		0		CONT.	18,288	CONT.
	MIPR	MIT Lincoln Labs/ Cambridge, MA	973	0		0		CONT.	973	CONT.
	MIPR	Photon Labs/ Arlington, VA	1,334	0		0		CONT.	1,334	CONT.
	SS/CPAF	IDA/ Arlington, VA	230	0		0		CONT.	230	CONT.
	C/CPAF	Miltec/ Huntsville, AL	0	0		0		CONT.		CONT.
	MIPR	Aerospace Corp./ Los Angeles, CA	550	0		0		TBD	550	TBD
	C/CPAF	Various	400	0		0		CONT.	400	CONT.
	MIPR	JNIC/ Colorado Springs, CO	5,480	0		0		CONT.	5,480	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Planning and Management										
SPT DC	C/CPAF	CSC/ DC	94,875	0		0		CONT.	94,875	CONT.
SPT HSV	C/CPAF	CSC/ AL	44,226	0		0		CONT.	44,226	CONT.
TRADOC System Manager	MIPR	SMDC/ AL	21,136	0		0		CONT.	21,136	CONT.
Logistics Planning, Production and Protection										
Logistic/GFX	C/CPFF	Nichols/ SY Tech	709	0		0		TBD	709	TBD
	C/CPFF	CSC/ AL	612	0		0		CONT.	612	CONT.
	C/CPFF	L3 Communications/ AL	1,018	0		0		CONT.	1,018	CONT.
	C/CPFF	Mevatech/ AL	862	0		0		CONT.	862	CONT.
	C/CPFF	TSI/ AL	450	0		0		CONT.	450	CONT.
	C/CPFF	MSAIC	48	0		0		CONT.	48	CONT.
	MIPR	AMCOM/ IMMC	690	0		0		CONT.	690	CONT.
	MIPR	AMCOM/ OGA	0	0		0		CONT.		CONT.
	C/CPFF	Mevatech/ AL	425	0		0		CONT.	425	CONT.
	C/CPFF	CSC	100	0		0		TBD	100	TBD
	C/CPFF	SY Tech	2,100	0		0		CONT.	2,100	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	Colsa/ AL	65	0		0		CONT.	65	CONT.
	MIPR	COE	40,922	0		0		CONT.	40,922	CONT.
	MIPR	DTRA/ VA	275	0		0		CONT.	275	CONT.
	MIPR	NSA/ VA	6	0		0		CONT.	6	CONT.
	MIPR	USACE/ AL	5,353	0		0		CONT.	5,353	CONT.
	MIPR	USASMDC/ AL	500	0		0		CONT.	500	CONT.
	MIPR	USAF MET&CAL	609	0		0		CONT.	609	CONT.
	MIPR	Schriever AFB	400	0		0		CONT.	400	CONT.
	MIPR	NSA	21	0		0		CONT.	21	CONT.
	MIPR	Schriever AFB	59	0		0		CONT.	59	CONT.
	MIPR	CST	150	0		0		CONT.	150	CONT.
	MIPR	USASMDC/ AL	1,376	0		0		CONT.	1,376	CONT.
	C/CPFF	CSC/ AL	384	0		0		TBD	384	TBD
	C/CPFF	Sparta/ AL	384	0		0		TBD	384	TBD
	MIPR	AMCOM/ AL	906	0		0		TBD	906	TBD
	MIPR	OGA	446	0		0		TBD	446	TBD
		USACE/ AL	2,000	0		0		TBD	2,000	TBD
Program Protection	C/CPAF	TRW/DC/ AL	4,300	0		0		TBD	4,300	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	USASMDC/AL/ AL	2,380	0		0		TBD	2,380	TBD
		Various	800	0		0		CONT.	800	CONT.
Production	MIPR	AMRDEC/AL	1,600	0		0		CONT.	1,600	CONT.
	CPFF	Various/AL	3,472	0		0		CONT.	3,472	CONT.
Govt Furnished Information	MIPR	USASMDC/ AL	75,865	0		0		TBD	75,865	TBD
Base Support and Real Property	MIPR	USASMDC/ AL	0	0		0		CONT.		CONT.
Site Activation										
	C/CPFF	CSC/ AL	2,217	0		0		CONT.	2,217	CONT.
	MIPR	Various	2,917	0		0		CONT.	2,917	CONT.
	MIPR	USACE/ Huntsville, AL	6,928	0		0		CONT.	6,928	CONT.
	C/CPFF	CSC/ AL	2,888	0		0		CONT.	2,888	CONT.
	C/CPFF	L3 Communications/ AL	1,789	0		0		CONT.	1,789	CONT.
	MIPR	U.S. Army War College/ PA	1,440	0		0		CONT.	1,440	CONT.
		Various	3,050	0		0		CONT.	3,050	CONT.
	C/CPFF	Mevatech/ AL	1,817	0		0		CONT.	1,817	CONT.
	C/CPFF	Nichols/ AL	1,078	0		0		CONT.	1,078	CONT.
	C/CPFF	CSC/ AL	6,413	0		0		CONT.	6,413	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	Colsa/ AL	225	0		0		CONT.	225	CONT.
	MIPR	USACE/ Huntsville, AL	1,000	0		0		CONT.	1,000	CONT.
	C/CPFF	CSC/ AL	1,898	0		0		CONT.	1,898	CONT.
	CPFF	L3 Communications/ AL	1,291	0		0		CONT.	1,291	CONT.
	MIPR	USASMDC/ AL	4,765	0		0		CONT.	4,765	CONT.
	MIPR	USARAK/ AK	12,691	0		0		CONT.	12,691	CONT.
		Various	920	0		0		CONT.	920	CONT.
	SS/CPAF	Boeing/ Various	19,756	0		0		TBD	19,756	TBD
Subtotal Support Costs			480,633	0		0		0	480633	

Remarks

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

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

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Element Test and Evaluation										
Combined Test Force	C/CPAF	Colsa/ AL	7,527	0		0		CONT.	7,527	CONT.
	C/CPIF	ASGI/ AL	507	0		0		CONT.	507	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	SS/CPAF	Boeing/ Various	2,250	0		0		CONT.	2,250	CONT.
	MIPR	Kirtland AFB/ NM	225	0		0		CONT.	225	CONT.
	MIPR	USAKA/ AK	22,578	0		0		CONT.	22,578	CONT.
	MIPR	Sandia/ NM	125	0		0		CONT.	125	CONT.
	MIPR	USASMDC/ AL	3,081	0		0		CONT.	3,081	CONT.
	C/TM	JNTF/ CO	1,861	0		0		CONT.	1,861	CONT.
	MIPR	Nichols/ AL	1,119	0		0		CONT.	1,119	CONT.
	C/TM	Mevatech/ AL	5,412	0		0		CONT.	5,412	CONT.
	C/TM	CSC/ AL	2,226	0		0		CONT.	2,226	CONT.
	C/CPIF	Aeromet/ Various	1,153	0		0		CONT.	1,153	CONT.
	MIPR	SBIRS SPO	610	0		0		CONT.	610	CONT.
	MIPR	AMCOM/ AL	1,728	0		0		CONT.	1,728	CONT.
	MIPR	USARSPACE/ AL	137	0		0		CONT.	137	CONT.
	MIPR	Eglin AAFB/ FL	150	0		0		CONT.	150	CONT.
	MIPR	Peterson AFB/ CO	348	0		0		CONT.	348	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	OGA`s/ Various	612	0		0		CONT.	612	CONT.
	CPFF	IEC Electronics/ Various	3,069	0		0		CONT.	3,069	CONT.
	C/TM	CAS/ Various	1,100	0		0		CONT.	1,100	CONT.
	MIPR	MIT LLNL/ MA	4,944	0		0		CONT.	4,944	CONT.
	C/CPFF	ITT/ Various	2,480	0		0		CONT.	2,480	CONT.
	MIPR	AEDC/ TN	25	0		0		CONT.	25	CONT.
	MIPR	Sandia/ NM	3,566	0		0		CONT.	3,566	CONT.
	C/Other	Mevatech/ AL	100	0		0		CONT.	100	CONT.
	MIPR	HAFB/ MA	1,120	0		0		CONT.	1,120	CONT.
	MIPR	SMDC/ AL	93	0		0		CONT.	93	CONT.
	Other	TSI/ AL	1,005	0		0		CONT.	1,005	CONT.
	C/CPFF	VRC/ AL	2,953	0		0		CONT.	2,953	CONT.
	C/CPFF	Colsa/ AL	420	0		0		CONT.	420	CONT.
	MIPR	SLAD/ AL	175	0		0		CONT.	175	CONT.
	C/CPFF	CEI/ AL	647	0		0		CONT.	647	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	TRW/ AL	2,333	0		0		CONT.	2,333	CONT.
	MIPR	Various OGA`s	1,361	0		0		CONT.	1,361	CONT.
	C/CPFF	SAIC/ Various	945	0		0		CONT.	945	CONT.
	MIPR	AEC/ Various	788	0		0		CONT.	788	CONT.
	MIPR	Sandia/ NM	29,195	0		0		CONT.	29,195	CONT.
	MIPR	USASMDC/ AL	8,814	0		0		CONT.	8,814	CONT.
	C/CPFF	SY Tech/ AL	2,370	0		0		CONT.	2,370	CONT.
	MIPR	SMC/ AL	36,116	0		0		CONT.	36,116	CONT.
	MIPR	OGA`s/ Various	5,425	0		0		CONT.	5,425	CONT.
	MIPR	Vandenberg AFB/ CA	3,457	0		0		CONT.	3,457	CONT.
TTEC	C/CPFF	SY Tech/ AL	5,907	0		0		CONT.	5,907	CONT.
	MIPR	SED/ AL	1,050	0		0		CONT.	1,050	CONT.
TTEC	MIPR	STRICOM/ FL	1,078	0		0		CONT.	1,078	CONT.
	Various	Various/ Various	1,021	0		0		CONT.	1,021	CONT.
Subtotal Test and Evaluation			173,206	0		0		0	173206	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
X Band Radar Technology Development										
	FFRDC	MIT Lincoln Lab/ MA	1,765	0		0		CONT.	1,765	CONT.
Upgraded Early Warning Radar (UEWR) Development										
	FFRDC	MIT Lincoln Lab/ MA	600	0		0		CONT.	600	CONT.
	FFRDC	Mitre/ Various	5,763	0		0		CONT.	5,763	CONT.
	C/CPFF	SEMCOM/ Various	3,654	0		0		CONT.	3,654	CONT.
	C/CPFF	Tecolote/ Various	264	0		0		CONT.	264	CONT.
	C/CPFF	ESC/Hanscom/ Various	550	0		0		CONT.	550	CONT.
GMD Fire Control & Communications										
	MIPR	NSWC/ MD	4,605	0		0		CONT.	4,605	CONT.
	C/CPAF	TRW/ MA	8,287	0		0		CONT.	8,287	CONT.
	FFRDC	Mitre/IDA/ Various	1,545	0		0		CONT.	1,545	CONT.
	C/CPAF	Sparta/ AL	3,548	0		0		CONT.	3,548	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPAF	NRC/ Various	714	0		0		CONT.	714	CONT.
	C/BPA	QRI/ Various	959	0		0		CONT.	959	CONT.
	C/CPAF	CSC/ AL	1,852	0		0		CONT.	1,852	CONT.
	C/CPAF	Vanguard Research/ AL	171	0		0		CONT.	171	CONT.
	BPA	Tecolote/ Various	582	0		0		TBD	582	TBD
	MIPR	USAF ESC/ MA	84	0		0		CONT.	84	CONT.
	MIPR	ARL/ CA	300	0		0		CONT.	300	CONT.
	MIPR	DISA-GFX/ Various	5,531	0		0		TBD	5,531	TBD
	C/CPAF	Mevatech/ AL	836	0		0		CONT.	836	CONT.
	C/CPAF	TBD	885	0		0		CONT.	885	CONT.
	C/CPAF	TSI	252	0		0		CONT.	252	CONT.
	MIPR	NSA/ MD	500	0		0		TBD	500	TBD
	MIPR	Argonne NL	195	0		0		CONT.	195	CONT.
	Various	Miscellaneous	971	0		0		CONT.	971	CONT.
Subtotal Management Services			44,413	0		0		0	44413	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Project Total Cost			2,461,910	0		0	2,461,910
<p>Remarks The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.</p>							

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009											
	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								
Flight Tests																																				
IFT09	▲																																			
IFT10	▲																																			
IFT13B					▲																															
IFT13C					△	—	—	△																												
IFT14					△	—	—	△																												
IFT15					△	—	—	△																												
FT 04-1					△	—	—	△																												
FTG 04-1					△	—	—	△																												
FTG 04-2					△	—	—	△																												
FTG 04-3					△	—	—	△																												
FTG 04-4 a/b (Salvo Mission)					△	—	—	△																												
FTG 04-5					△	—	—	△																												
FT 06-1					△	—	—	△																												
FTG 06-1 a/b (Salvo Mission)					△	—	—	△																												
FTG 06-2					△	—	—	△																												

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Flight Tests							
IFT09	1Q						
IFT10	1Q						
IFT13B		2Q					
IFT13C		2Q-4Q	1Q				
IFT14		3Q-4Q	1Q-2Q				
IFT15		4Q	1Q-3Q				
FT 04-1			1Q-4Q				
FTG 04-1			2Q-4Q	1Q			
FTG 04-2			3Q-4Q	1Q-2Q			
FTG 04-3			4Q	1Q-3Q			
FTG 04-4 a/b (Salvo Mission)			4Q	1Q-3Q			
FTG 04-5				1Q-4Q			
FT 06-1				1Q-4Q			
FTG 06-1 a/b (Salvo Mission)				4Q	1Q-3Q		
FTG 06-2					1Q-4Q		
FTG 06-3 a/b (Salvo Mission)					2Q-4Q	1Q	
FTG 06-4					4Q	1Q-3Q	
FTG 08-1						2Q-4Q	1Q
FTG 08-2						3Q-4Q	1Q-2Q
FTG 08-3 a/b (Salvo Mission)						4Q	1Q-3Q
FTG 10-1							1Q-4Q
FTG 10-2							3Q-4Q
FTG 10-3							3Q-4Q
Booster Verification Test							
BV 6	4Q						
BV 5		2Q					

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones							
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0808 Ground-Based Midcourse Defense (GMD) Block 2004/2006 Development	0	1,587,089	2,331,881	2,131,180	2,113,342	0	0
RDT&E Articles Qty	0	16	6	32	38	36	17

Note: This Budget Project was previously captured in Project 3012 in FY 2003.

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the Ballistic Missile Defense System (BMDS) is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The goals of the BMDS are (1) to complete, verify, and test the BMDS; (2) to place an operational capability on alert by September 30, 2004; (3) to enhance these fielded capabilities when appropriate; and (4) to perform concurrent operations and testing of a BMDS. The elements being developed and fielded for the Midcourse segment will comprise most of the critical components in meeting these goals in the near-term. Project 0808 provides the development for the GMD hardware and software components for the BMDS. This development consists of a series of block development efforts.

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

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

Block 2004 (contained in Projects 3011, 0708, 3012, and 0808) consists of the early development of the initial GMD hardware and software components of the BMDS IDC and Test Bed. This includes the development of the ground-based interceptor, specifically the booster and EKV; X-Band radar technologies, including the GBR-P; fire control and communications technologies, including the In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs); test range resources; and future fielding planning.

Block 2006 (contained in Projects 3012 and 0808) consists of the continuing development and fielding of capabilities to detect, track, intercept, and defeat ballistic missile threats. Block 2006 also includes the next increment of fielded capability with additional interceptors (up to 20), UEWrs, IDTs, and planning for a third interceptor site. Block 2006 also includes continuing development and evolution of the wide range of software supporting the IDC and assessment, test, and evaluation of alternative GBI basing options. A basing concept under study examines the option of mounting GBIs on a sea-based relocatable platform to enhance responsiveness to emerging threats.

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

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>The GMD Block 2004/ 2006 development program provides an integrated development and test program of more capable interceptors (both boost and kill vehicles), targets, sensors, battle management technologies, and GMD Fire Control and Communications systems and infrastructure. Specifically, the Project 0808 provides the following:</p> <ul style="list-style-type: none"> - The GMD is developing boosters from two vendors to support the IDC. This risk reduction initiative will help ensure that reliable components are readily available for future fielding and testing requirements. Because of the dual booster development initiative, significant delays and turbulence to the IDC and test programs were avoided when the provider of the upper stage (CSD) for the BV+ booster (Lockheed) suffered significant damage to their propellant mixer in an explosion. Near-term booster acquisitions were shifted to the other booster supplier (OSC) avoiding delays to the IDC and flight test program. The Orbital (OSC) Boost Vehicle (OBV) and the BV+ will be the launch vehicles for the Exo-atmospheric Kill Vehicle (EKV). Both boosters are in development with booster verification flight tests planned in FY 2004. - The EKV is a "Hit-to-Kill" payload designed to acquire, discriminate, track, and intercept targets in the midcourse phase of flight. The key components and technologies of the EKV include the acquisition and tracking sensors, the on-board maneuvering system, and the on-board vehicle C3 systems. Component development is on going and is demonstrated as part of the block improvement process in the Integrated Flight Test program. - The sensor development program is a mix of enhancements to existing radar assets and development of new radar capabilities. The program will continue the software upgrades to the Early Warning Radars at Beale and Fylingdales, and the Cobra Dane radar at Shemya. The program continues planning for potential upgrades to other Early Warning Radar (EWR) sites. The key elements of the upgrades are the software builds to improve the effectiveness of the radars. A broad range of X-Band Radar (XBR) technologies will continue in development to support the SBX. The Ground Based Radar Prototype (GBR-P) located at the Ronald Reagan Test Site (RTS), at Kwajalein, is being used as part of the Integrated Flight Test program, and serves as a demonstration platform for these evolving radar technologies. - The GMD Fire Control and Communications component is an integrated communications network of nodes, to enable the GMD element to function as part of the BMDS. This includes: <ul style="list-style-type: none"> -- Various communications links (e.g., CONUS ring, Alaska leased lines and Satellite Communications (SATCOM) to Shemya, Fort Greely, and In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs). -- GMD Fire Control and Communications Nodes [Fort Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC)] -- In-Flight Interceptor Communications System Data Terminal (IDTs) at various locations. <p>These FC&C development initiatives continue on these technologies and components meeting future block capability requirements. This effort will be developed as part of the BMDS overarching BMC/C2 architecture.</p> <ul style="list-style-type: none"> - One of the most significant activities supported by this project is the component and systems level testing. The integrated flight and ground tests; the component level developmental testing; modeling and simulation; and the Verification, Validation, and Accreditation testing are critical to the successful fielding of all IDC components. The GMD test program is designed to demonstrate a broad range of GMD component development efforts. These incremental capabilities include multiple launches against multiple threat targets as the block capabilities mature. These components under test include boosters, EKVs, launch infrastructure, sensors, and interfaces with other BMDS elements. Additionally, the test program will incorporate Aegis Weapon System (AWS) radars to support GMD integrated flight test program. The test regimen will significantly expand to include operational interceptors both for ground and flight testing. These will subsequently be replaced with new interceptors from the ongoing production line to ensure the most technically capable GBI inventory while ensuring backward compatibility to the maximum extent possible. This rotatable pool of GBI assets provides GMD the capability to maintain youngest average age for interceptors on alert. GMD will continuously evaluate the capabilities of available interceptors through this inventory surveillance program to be initiated in FY06 to ensure that the newest, most technologically capable missiles are on Alert. Older GBIs will be used for the Integrated Flight Test Program (up to 3 IFTs per year) to verify/validate maturing component capability improvements. - Software is another key area of development supporting the BMDS. Software development supports the Upgraded Early Warning radars, the X-Band radars, the IDTs, EKV on-board processing and interfaces, the GBI systems interfaces, system-wide communications interfaces and nodes, and fire control. This software must support not only the operational BMDS but also the systems-wide testing during ground and flight tests. - Planning continues to provide a capability to respond to additional future fielding orders in the shortest time possible. This includes site surveys and activation planning, silo design and planning, facility planning, environmental impact studies and assessments, logistics planning, and operational procedures. 		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Ground Based Interceptor (GBI)		483,253	457,493
RDT&E Articles (Quantity)		8	1
<p>DISCUSSION. The GBI development program funds the development of booster and EKV technologies. It also provides developmental assets for flight-testing. GMD has successfully demonstrated a hit-to-kill capability in five (5) separate flight tests.</p> <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKVs and boost vehicles) was initiated in FY 2002 for delivery in FY 2004. Acquisition of two (2) refurbished silos and two (2) command launch equipment at VAFB.</p> <ul style="list-style-type: none"> - Completes refurbishment of 2 silos and acquisition of command launch equipment (CLE) at VAFB for flight test and IDC fielding. - Continues interceptor integration, ground/system tests, and Integrated Flight Tests. - Continues modeling and simulation development. - Continues common silo and common CLE development. - Continues development of EKV technologies to improve system discrimination, performance, and producibility in the areas of on-board sensors and processors, software/algorithms, vehicle maneuvering, and C3 systems. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of 1 Boost Vehicle initiated in FY 2003 for delivery in FY 2005.</p> <ul style="list-style-type: none"> - Continues Silo/GBI/launch systems ground testing, system level simulation, and Verification, Validation, and Accreditation activities. - Continues interceptor, ground/system tests, and Integrated Flight Tests. - Continues modeling and simulation development. - Completes common silo and common CLE development. 			
	FY 2003	FY 2004	FY 2005
X Band Radar Technology Development		70,988	67,527
RDT&E Articles (Quantity)			1
<p>DISCUSSION. X-Band radar technologies provide high-resolution tracking and discrimination data to the GMD fire control and subsequently the EKV thereby significantly enhancing the tracking and discrimination capabilities of the system. This effort develops highly sophisticated software algorithms to enhance target discrimination and material and component enhancements to improve power output and sensitivity. This technology forms the basis for the SBX.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>FY 2004 Planned Accomplishments</p> <ul style="list-style-type: none"> - Continues to develop and field XBR Software Builds. - Continues flight and ground test support. - Continues operation and maintenance of GBR-P. - Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules). <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of XBR software build initiated in FY 2003 and delivered in FY 2005</p> <ul style="list-style-type: none"> - Continues to develop and field XBR Software Builds. - Continues flight and ground test support. - Supports a Radar Certification Flight (RCF). - Continues operation and maintenance of GBR-P. - Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules). - Initiates Primary Support Base development for future fielding options for the Sea-Based X-Band Radar. 			
	FY 2003	FY 2004	FY 2005
Upgraded Early Warning Radar (UEWR) Development		35,776	83,887
RDT&E Articles (Quantity)		3	1
<p>DISCUSSION. Upgraded Early Warning Radars (UEWRs) are large, fixed, phased-array surveillance radars used to detect, track, and count individual targets early in their trajectory. UEWRs are also effective in cueing the higher resolution X-Band radars to the location and trajectory of incoming targets. The planned upgrades provide precise tracking early enough to significantly expand the battlespace for the ground-based interceptors. This program will provide for the development of enhanced EWR software.</p> <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of two (2) UEWR software builds initiated in FY 2003 and delivered in FY 2004. Acquisition of Cobra Dane software build initiated in FY 2003 and delivered in FY 2004</p> <ul style="list-style-type: none"> - Continues flight and ground test support. - Continues planning for potential future UEWR sites. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of XBR software build initiated in FY 2004 and delivered in FY 2005</p> <ul style="list-style-type: none"> - Continues flight and ground test support. - Continues planning for potential future UEWR sites. - Supports a radar certification flight. 			
	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications		217,668	218,654
RDT&E Articles (Quantity)		3	1
<p>DISCUSSION. The GMD Fire Control and Communications (GFC/C) enables control and operation of the GMD Element as part of the BMDS. The communications component consists of (1) GMD Communications Network (GCN) and (2) the In-Flight Interceptor Communication Systems (IFICS).</p> <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of GFC/C software build initiated in FY 2003 and delivered in FY 2004. Acquisition of Aegis EIS software build initiated in FY 2003 and delivered in FY 2004. Acquisition of Command Launch Equipment software build initiated in FY 2003 and delivered in FY 2004</p> <ul style="list-style-type: none"> - Continues flight and ground test support. - Continues development and installation of ESI software builds. - Continues development and installation of IFICS software builds. - Initiates development and installation of Test Exercise software builds. - Continues development and installation of GMD software builds. - Continues the planning, assessment and evaluation of future GFC/C software and technologies enhancements. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of GFC/C software build initiated in FY 2004 and delivered in FY 2005.</p> <ul style="list-style-type: none"> - Continues flight and ground test support. - Continues development and installation of IFICS software builds. - Initiates development and installation of Test Exercise software builds. - Continues development and installation of GMD software builds. - Continues the planning, assessment and evaluation of future GFC/C software and technologies enhancements. - Continues software development upgrades begun in Project 0708. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Missile Defense Plan II (GBI)			528,348
RDT&E Articles (Quantity)			
<p>DISCUSSION. The Ground-Based Interceptor consists of an Exo-atmospheric Kill Vehicle (EKV) and a Booster Vehicle. These Interceptors will enhance the BMDS capability against long and intermediate range ballistic missile attacks by adding twenty (20) interceptors at two sites.</p> <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Initiates acquisition of up to ten (10) additional EKVs for Fort Greely. - Initiates acquisition of up to ten (10) additional boosters for Fort Greely. - Initiates acquisition of ten (10) additional common silos for Fort Greely. - Initiates acquisition of up to ten (10) boosters for a third site. - Initiates acquisition of up to ten (10) EKVs for a third site. 			
	FY 2003	FY 2004	FY 2005
Missile Defense Plan II (UEWR and IDT)			22,385
RDT&E Articles (Quantity)			
<p>DISCUSSION. The Thule UEWR will provide increased early warning capability for potential threat objects launched from north and east of CONUS as well as providing a backup capability to the Flyingdales UEWR. The processor (hardware and software) upgrades the GMD fire control access along with the associated GMD Communications Network (GCN) connectivity. They are planned for full implementation at Thule by FY 2007.</p> <p>Two additional IDTs will be acquired to provide the capability to communicate with multiple interceptors from existing launch sites as well as planned launch sites. The IDTs will be located at Fort Greely and the third site, acquisition of these IDTs will begin in FY 2005.</p> <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Initiates acquisition of long lead UEWR hardware items. - Initiates planning / design / environmental process for UEWR HW/SW installation. - Initiates acquisition of an IDT at Fort Greely. 			

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Missile Defense Plan II (RDT&E Construction)			40,267
RDT&E Articles (Quantity)			
DISCUSSION. This GMD RDT&E Construction request is further justified in the accompanying DD-1391 Exhibits, RDT&E Construction Data.			
FY 2005 Planned Accomplishments:			
<ul style="list-style-type: none"> - Initiates construction of 10 additional common silos and supporting facilities at Fort Greely. - Initiates construction of an IDT at Fort Greely. - Initiates and completes site facility designs for the Thule UEWR. - Initiates site / facility designs for a future additional fielding site. 			
	FY 2003	FY 2004	FY 2005
Element Engineering & Integration		175,969	181,632
RDT&E Articles (Quantity)			
DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integrating the functional components of the GMD segment of the BMDS. Defines element-level test requirements and objectives and develops element-level assessments and capability-based requirements. Provides engineering, integration, and operations planning supporting the BMDS. Continues the integration of component/element systems and sustains the planning effort for future fielding options. Continues to complement the BMDS systems engineering capability by providing detailed insight and analysis into component technical and design-specific issues.			
FY 2004 Planned Accomplishments:			
<ul style="list-style-type: none"> - Completes IP-4 Integrated Technical Review (ITR). - Completes Block 2006 (IP-5) Integrated Design Review (IDR). - Continues software management and specialty engineering. - Continues software verification and validation. - Continues modeling and simulation development. - Continues system analyses, integration, and verification. - Supports integrated ground tests and specialty testing. - Conducts pre- and post-flight test analyses. 			
FY 2005 Planned Accomplishments:			
<ul style="list-style-type: none"> - Completes Block 2006 (IP-5) Integrated Technical Review (ITR). - Continues software management and specialty engineering. - Continues software verification and validation. - Continues modeling and simulation development. - Continues system analyses, integration, and verification. - Supports integrated ground tests and specialty testing. - Conducts pre- and post-flight test analyses. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Element Test and Evaluation		200,517	186,862
RDT&E Articles (Quantity)		2	2
<p>DISCUSSION. GMD Test and Evaluation utilizes a comprehensive infrastructure of ground-test facilities, ranges, sensors and instrumentation resources providing critical risk reduction and measurement of system performance for all GMD element components. This infrastructure allows the element engineers to successfully model and simulate test results into projections of future system performance. The GMD Combined Test Force, under a single unified organization, integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, minimizes the duplication of test resources and the time required to execute required testing, and supports BMDS level test and evaluation.</p> <p>FY 2004 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of 2 targets initiated in FY 2002 for delivery in FY 2004.</p> <ul style="list-style-type: none"> - Continues operation and maintenance of System Test Lab, Prime Contractor Integration Laboratory (PCIL), and Integrated Systems Test Center 2 (ISTC-2). - Continues planning activities for implementing ISTC-1. - Continues ground and flight test planning, design, and scheduling. - Conducts Integrated Flight Tests. - Performs pre- and post-test analyses. - Performs analyses to define target requirements. - Establishes Element Test Objectives. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Test Articles: Acquisition of 2 targets initiated in FY 2003 for delivery in FY 2005.</p> <ul style="list-style-type: none"> - Continues operation and maintenance of System Test Lab, PCIL, and ISTC-2. - Completes installation and implementation of ISTC-1. - Continues ground and flight test planning, design, and scheduling. - Conducts Integrated Ground Test (IGT) (development). - Conducts Distributed Ground Test (DGT). - Conducts Integrated Flight Tests. - Performs pre- and post-test analyses. - Performs analyses to define target requirements. - Establishes Element Test Objectives. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
	FY 2003	FY 2004	FY 2005
Program Planning and Management		131,106	131,007
RDT&E Articles (Quantity)			
DISCUSSION.			
<p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Provides government program office staff and infrastructure for the management of the GMD Program. - Provides technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities. - Provides requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution. - Continues program management, subcontract management, quality assurance, and technical and testing oversight. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Provides government program office staff and infrastructure for the management of the GMD Program. - Provides technical and business management expertise to support GMD Joint Program Office (JPO) tasks and activities, financial management, including cost and schedule performance assessments, configuration management, and integration planning activities. - Provides requirements clarification and verification of H/W and S/W development including management of IV&V activities, test and evaluation planning and execution. - Continues program management, subcontract management, quality assurance, and technical and testing oversight. 			
	FY 2003	FY 2004	FY 2005
Logistics Planning, Production and Protection		234,904	272,610
RDT&E Articles (Quantity)			
DISCUSSION. GFX represents the materiel and services provided to the prime contractor in support of the GMD development and test efforts. It includes Government Furnished Equipment (GFE), Information (GFI), Facilities (GFF), and Services (GFS) (including communication leases).			
<p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Continues to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support IDC/ Test Bed activation and GMD test program. - Continues to provide management efforts to activate a logistics support system to include IDC/ Test Bed site support activation and validation, logistical support requirements, and IDC/ Test Bed readiness reviews. - Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDC/ Test Bed sites as required. - Conducts quality assurance planning and implementation. - Continues to provide functional support for production, quality, configuration and change management. - Conducts sustainment, fielding, siting, and facility planning. - Continues to provide program protection to the Test Bed including physical security. - Conducts reliability and maintainability analyses. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Continues to coordinate, procure, and provide GFX (over 700 line items) to the prime contractor to support Test Bed activation and GMD test program. - Continues to provide management efforts to activate a logistics support system to include IDC/ Test Bed site support activations and validation, logistical support requirements, and IDC/ Test Bed readiness reviews. - Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other IDC/ Test Bed sites as required. - Continues to provide functional support for production, quality, configuration and change management. - Conducts sustainment, fielding, siting, and facility planning. - Continues to provide program protection including physical security. - Conducts reliability and maintainability analyses. 			
	FY 2003	FY 2004	FY 2005
Site Activation		36,908	36,459
RDT&E Articles (Quantity)			
<p>DISCUSSION. This effort provides a broad range of site design and layout, facility requirements, and environmental management activities.</p> <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Initiates Planning and Design of an additional facility at the Von Braun Complex located at the Redstone Arsenal to consolidate MDA personnel and activities currently located in a number of dispersed locations. Construction was planned to begin in FY 2006. Congressional add in FY 2004 has accelerated start of construction to FY 2004. - Continues Block 2004 IDC/ Test Bed activation. - Updates IDC/ Test Bed site activation plans. - Continues siting, NEPA, and ESH analysis for Block 2004 IDC/ Test Bed. - Completes siting and Joint Spectrum Center Electromagnetic Interference analysis for SBX. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Continues Planning and Design of an additional facility at the Von Braun Complex located at the Redstone Arsenal to consolidate MDA personnel and activities currently located in a number of dispersed locations. Construction was planned to begin in FY 2006. Congressional add in FY 2004 has accelerated start of construction to FY 2004. - Continues IDC/ Test Bed support. - Updates IDC/ Test Bed site activation plans. - Continues siting, NEPA, and ESH analysis for Block 2004 IDC/ Test Bed. 			
	FY 2003	FY 2004	FY 2005
Contractor Logistics Support (CLS)			104,750
RDT&E Articles (Quantity)			
<p>Discussion. This effort provides for Contractor Logistics Support (CLS) for the GMD program. CLS will provide a level-of-service consistent with established Engagement Sequence Groups (ESG). CLS will meet program support requirements by providing a flexible and robust support capability that emphasizes support of ESG assets.</p>			

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
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FY 2005 Planned Accomplishments:

- Establish contract for developing and gathering equipment logistics data.
- Complete logistics infrastructure and support concept initiated under Project 3011.
- Initiate CLS program for logistics support and maintenance of IDC.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters – MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Based Interceptor (GBI)										
Ground Based Interceptor (GBI)	SS/CPAF	Boeing/ Various	0	456,985	1/2Q	432,538	1/2Q	CONT.	889,523	CONT.
X Band Radar Technology Development										
X Band Radar Technology Development	SS/CPAF	Boeing/ Various	0	69,723	1/2Q	66,262	1/2Q	CONT.	135,985	CONT.
Upgraded Early Warning Radar (UEWR) Development										
Upgraded Early Warning Radar (UEWR) Development	SS/CPAF	Boeing/ Various	0	8,223	1/4Q	57,774	1/4Q	CONT.	65,997	CONT.
GMD Fire Control & Communications										
Fire Control & Communications	SS/CPAF	Boeing/ Various	0	200,460	2Q	202,305	2Q	CONT.	402,765	CONT.
Missile Defense Plan II (GBI)										
GBI's & Silos	SS/CPAF	Boeing/ Various				528,348	1Q		528,348	
Missile Defense Plan II (UEWR and IDT)										
UEWR & IDT	SS/CPAF	Boeing/ Various				22,385	1Q		22,385	
Element Engineering & Integration										
Systems Engineering & Integration	SS/CPAF	Boeing/ Various	0	137,083	1/2Q	144,691	1/2Q	CONT.	281,774	CONT.
Element Test and Evaluation										
	SS/CPAF	Boeing/ Various	0	49,296	1/2Q	43,175	1/2Q	CONT.	92,471	CONT.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Logistics Planning, Production and Protection										
Logistics Planning, Production and Protection	SS/CPAF	Boeing/ Various	0	16,100	1/2Q	16,300	1/2Q	CONT.	32,400	CONT.
Subtotal Product Development			0	937,870		1,513,778		0	2451648	

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

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Based Interceptor (GBI)										
	SS/FP	Davidson/ AL	0	1,192	1/2Q	1,192	1/2Q	CONT.	2,384	CONT.
	SS/FP	Mevatec/ AL	0	7,894	1/2Q	7,894	1/2Q	CONT.	15,788	CONT.
	SS/FP	TSI/ AL	0	7,449	1/2Q	6,136	1/2Q	CONT.	13,585	CONT.
	C/CPFF	Sparta/ AL	0	1,394	1/2Q	1,394	1/2Q	CONT.	2,788	CONT.
	MIPR	AMCOM/ AL	0	354	1/2Q	354	1/2Q	CONT.	708	CONT.
	MIPR	USASMDC/ AL	0	391	1/2Q	391	1/2Q	CONT.	782	CONT.
	MIPR	DOT/ITOP/ AL	0	231	1/2Q	231	1/2Q	CONT.	462	CONT.
	MIPR	Mitre/ DC	0	291	1/2Q	291	1/2Q	CONT.	582	CONT.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	Misc/ Various	0	100	1/2Q	125	1/2Q	CONT.	225	CONT.
	Various	Misc/ Various	0	174	1/2Q	149	1/2Q	CONT.	323	CONT.
	SS/FP	CSC/ AL	0	6,798	1/2Q	6,798	1/2Q	CONT.	13,596	CONT.
Upgraded Early Warning Radar (UEWR) Development										
	SS/CPAF	Ga. Tech	0	1,220	1/2Q	1,220	1/2Q	CONT.	2,440	CONT.
	C/CPFF	Xontech	0	780	1/2Q	780	1/2Q	CONT.	1,560	CONT.
	C/FP	Mevatec	0	9,487	1/2Q	8,769	1/2Q	CONT.	18,256	CONT.
	MIPR	AMCOM	0	1,620	1/2Q	1,620	1/2Q	CONT.	3,240	CONT.
Missile Defense Plan II (RDT&E Construction)										
Facilities Construction	MIPR	COE/ AK				40,267	1Q		40,267	
Element Engineering & Integration										
	MIPR	TSC/SMDC/ AL	0	1,000	1/2Q	1,000	1/2Q	CONT.	2,000	CONT.
	MIPR	NSWC/ Dahlgren, VA	0	4,125	1/2Q	4,125	1/2Q	CONT.	8,250	CONT.
	MIPR	DTRA/ Dulles, VA	0	1,000	1/2Q	1,000	1/2Q	CONT.	2,000	CONT.
	MIPR	NAIC/ Wright Patterson, AFB	0	700	1/2Q	700	1/2Q	CONT.	1,400	CONT.
	MIPR	SBIRS SPO/ LA AFB, CA	0	1,800	1/2Q	1,800	1/2Q	CONT.	3,600	CONT.
	MIPR	DTD/GMD/ Huntsville, AL	0	1,870	1/2Q	1,870	1/2Q	CONT.	3,740	CONT.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	GME Engineering Analysis/ Huntsville, AL	0	1,980	1/2Q	1,980	1/2Q	CONT.	3,960	CONT.
	MIPR	GMD Studies & Analysis/ Huntsville, AL	0	1,700	1/2Q	1,700	1/2Q	CONT.	3,400	CONT.
	SS/CPFF	CSC/ Arlington, VA	0	17,688	1/2Q	15,743	1/2Q	CONT.	33,431	CONT.
	MIPR	MIT Lincoln Labs/ Cambridge, MA	0	815	1/2Q	815	1/2Q	CONT.	1,630	CONT.
	MIPR	Photon Labs/ Arlington, VA	0	700	1/2Q	700	1/2Q	CONT.	1,400	CONT.
	SS/CPAF	IDA/ Arlington, VA	0	250	1/2Q	250	1/2Q	CONT.	500	CONT.
	C/CPAF	Miltec/ Huntsville, AL	0	600	1/2Q	600	1/2Q	CONT.	1,200	CONT.
	MIPR	JNIC/ Colorado Springs, CO	0	4,658	1/2Q	4,658	1/2Q	CONT.	9,316	CONT.
Program Planning and Management										
SPT DC	C/CPAF	CSC/ DC	0	94,757	1Q	90,254	1Q	CONT.	185,011	CONT.
SPT HSV	C/CPAF	CSC/ AL	0	20,194	1/4Q	25,406	1/4Q	CONT.	45,600	CONT.
TRADOC System Manager	MIPR	SMDC/ AL	0	16,155	1/4Q	15,347	1/4Q	CONT.	31,502	CONT.
Logistics Planning, Production and Protection										
	C/CPFF	CSC/ AL	0	1,072	3Q	1,072	3Q	CONT.	2,144	CONT.

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	L3 Communications/ AL	0	2,584	3Q	2,584	3Q	CONT.	5,168	CONT.
	C/CPFF	Mevatech/ AL	0	902	3Q	902	3Q	CONT.	1,804	CONT.
	C/CPFF	TSI/ AL	0	910	3Q	910	3Q	CONT.	1,820	CONT.
	C/CPFF	MSAIC	0	96	3Q	96	3Q	CONT.	192	CONT.
	MIPR	AMCOM/ IMMC	0	1,625	3Q	1,625	3Q	CONT.	3,250	CONT.
	MIPR	AMCOM/ OGA	0	3,618	3Q	3,618	3Q	CONT.	7,236	CONT.
	C/CPFF	Mevatech/ AL	0	1,201	3Q	1,201	3Q	CONT.	2,402	CONT.
	C/CPFF	SY Tech	0	3,349	3Q	3,349	3Q	CONT.	6,698	CONT.
	MIPR	Colsa/ AL	0	65	3Q	65	3Q	CONT.	130	CONT.
	MIPR	COE/ VA	0	41,187	3Q	26,455	3Q	CONT.	67,642	CONT.
	MIPR	DTRA/ VA	0	275	3Q	275	3Q	CONT.	550	CONT.
	MIPR	NSA/ AL	0	6	3Q	6	3Q	CONT.	12	CONT.
	MIPR	USACE/ AL	0	5,353	3Q	5,353	3Q	CONT.	10,706	CONT.
	MIPR	USASMDC/ AL	0	500	3Q	500	3Q	CONT.	1,000	CONT.
	MIPR	USASMDC	0	609	3Q	609	3Q	CONT.	1,218	CONT.
	MIPR	Schriever AFB	0	400	3Q	400	3Q	CONT.	800	CONT.
	MIPR	NSA	0	21	3Q	21	3Q	CONT.	42	CONT.
	MIPR	Schriever AFB	0	59	3Q	59	3Q	CONT.	118	CONT.

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	CST	0	150	3Q	150	3Q	CONT.	300	CONT.
	MIPR	USASMDC/ AL	0	1,376	3Q	1,376	3Q	CONT.	2,752	CONT.
		Various	0	2,354	2Q	2,236	2Q	CONT.	4,590	CONT.
Production	MIPR	AMRDEC/ AL	0	4,028	2Q	3,948	2Q	CONT.	7,976	CONT.
	CPFF	Various/ AL	0	2,664	2Q	2,410	2Q	CONT.	5,074	CONT.
Base Support and Real Property	MIPR	USASMDC/ AL	0	144,400	1Q	197,090	1Q	CONT.	341,490	CONT.
Site Activation										
	C/CPFF	CSC/ AL	0	2,349	2Q	2,350	2Q	CONT.	4,699	CONT.
	MIPR	Various	0	3,104	2Q	3,104	2Q	CONT.	6,208	CONT.
	MIPR	USACE/ Huntsville, AL	0	3,661	2Q	3,661	2Q	CONT.	7,322	CONT.
	C/CPFF	CSC/ AL	0	2,420	2Q	987	2Q	CONT.	3,407	CONT.
	C/CPFF	L3 Communications/ AL	0	1,499	2Q	946	2Q	CONT.	2,445	CONT.
	MIPR	U.S. Army War College/ PA	0	1,207	2Q	874	2Q	CONT.	2,081	CONT.
		Various	0	2,119	2Q	789	2Q	CONT.	2,908	CONT.
	C/CPFF	Mevatech/ AL	0	822	2Q	822	2Q	CONT.	1,644	CONT.
	C/CPFF	Nichols/ AL	0	1,573	2Q	751	2Q	CONT.	2,324	CONT.
	C/CPFF	CSC/ AL	0	4,808	2Q	7,086	2Q	CONT.	11,894	CONT.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	Colsa/ AL	0	301	2Q	301	2Q	CONT.	602	CONT.
	MIPR	USACE/ Huntsville, AL	0	2,019	2Q	1,337	2Q	CONT.	3,356	CONT.
	C/CPFF	CSC/ AL	0	610	2Q	610	2Q	CONT.	1,220	CONT.
	CPFF	L3 Communications/ AL	0	1,377	2Q	854	2Q	CONT.	2,231	CONT.
	MIPR	USASMDC/ AL	0	4,244	2Q	3,524	2Q	CONT.	7,768	CONT.
	MIPR	USARAK/ AK	0	3,813	2Q	7,481	2Q	CONT.	11,294	CONT.
		Various	0	982	2Q	982	2Q	CONT.	1,964	CONT.
Contractor Logistics Support (CLS)										
	SS/CPAF	Boeing/ AK	0	0		104,750	1/2Q	CONT.	104,750	CONT.
Subtotal Support Costs			0	465,079		643,078		0	1108157	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Element Test and Evaluation										
Combined Test Force	C/CPAF	Colsa/ AL	0	6,021	1/2Q	6,022	1/2Q	CONT.	12,043	CONT.

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPIF	ASGI/ AL	0	406	1/2Q	406	1/2Q	CONT.	812	CONT.
	SS/CPAF	Boeing/ Various	0	1,800	1/2Q	1,800	1/2Q	CONT.	3,600	CONT.
	MIPR	Kirtland AFB/ NM	0	180	1/2Q	180	1/2Q	CONT.	360	CONT.
	MIPR	USAKA/ AK	0	18,061	1/2Q	18,061	1/2Q	CONT.	36,122	CONT.
	MIPR	Sandia/ NM	0	100	1/2Q	100	1/2Q	CONT.	200	CONT.
	MIPR	USASMDC/ AL	0	2,465	1/2Q	2,465	1/2Q	CONT.	4,930	CONT.
	C/TM	JNTF/ CO	0	1,489	1/2Q	1,489	1/2Q	CONT.	2,978	CONT.
	MIPR	Nichols/ AL	0	895	1/2Q	895	1/2Q	CONT.	1,790	CONT.
	C/TM	Mevatech/ AL	0	4,329	1/2Q	4,329	1/2Q	CONT.	8,658	CONT.
	C/TM	CSC/ AL	0	1,781	1/2Q	1,781	1/2Q	CONT.	3,562	CONT.
	C/CPIF	Aeromet/ Various	0	922	1/2Q	922	1/2Q	CONT.	1,844	CONT.
	MIPR	SBIRS SPO	0	488	1/2Q	488	1/2Q	CONT.	976	CONT.
	MIPR	AMCOM/ AL	0	1,382	1/2Q	1,382	1/2Q	CONT.	2,764	CONT.
	MIPR	USARSPACE/ AL	0	110	1/2Q	110	1/2Q	CONT.	220	CONT.
	MIPR	Eglin AAFB/ FL	0	120	1/2Q	120	1/2Q	CONT.	240	CONT.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	Peterson AFB/ CO	0	278	1/2Q	278	1/2Q	CONT.	556	CONT.
	MIPR	OGA's/ Various	0	488	1/2Q	488	1/2Q	CONT.	976	CONT.
	CPFF	IEC Electronics/ Various	0	2,455	1/2Q	2,455	1/2Q	CONT.	4,910	CONT.
	C/TM	CAS/ Various	0	880	1/2Q	880	1/2Q	CONT.	1,760	CONT.
	MIPR	MIT LLNL/ MA	0	3,955	1/2Q	3,955	1/2Q	CONT.	7,910	CONT.
	C/CPFF	ITT/ Various	0	1,984	1/2Q	1,984	1/2Q	CONT.	3,968	CONT.
	MIPR	AEDC/ TN	0	20	1/2Q	20	1/2Q	CONT.	40	CONT.
	MIPR	Sandia/ NM	0	2,853	1/2Q	2,853	1/2Q	CONT.	5,706	CONT.
	C/Other	Mevatech/ AL	0	80	1/2Q	80	1/2Q	CONT.	160	CONT.
	MIPR	HAFB/ MA	0	896	1/2Q	896	1/2Q	CONT.	1,792	CONT.
	MIPR	SMDC/ AL	0	74	1/2Q	74	1/2Q	CONT.	148	CONT.
	Other	TSI/ AL	0	804	1/2Q	804	1/2Q	CONT.	1,608	CONT.
	C/CPFF	VRC/ AL	0	2,362	1/2Q	2,362	1/2Q	CONT.	4,724	CONT.
	C/CPFF	Colsa/ AL	0	336	1/2Q	336	1/2Q	CONT.	672	CONT.
	MIPR	SLAD/ AL	0	140	1/2Q	140	1/2Q	CONT.	280	CONT.

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	CEI/ AL	0	518	1Q	518	1Q	CONT.	1,036	CONT.
	C/CPFF	TRW/ AL	0	1,866	1/2Q	1,866	1/2Q	CONT.	3,732	CONT.
	MIPR	Various OGA's	0	1,089	1/2Q	1,089	1/2Q	CONT.	2,178	CONT.
	C/CPFF	SAIC/ Various	0	756	1/2Q	756	1/2Q	CONT.	1,512	CONT.
	MIPR	AEC/ Various	0	630	1/2Q	630	1/2Q	CONT.	1,260	CONT.
	MIPR	Sandia/ NM	0	36,065	1/2Q	28,863	1/2Q	CONT.	64,928	CONT.
	MIPR	USASMDC/ AL	0	7,051	1/2Q	7,051	1/2Q	CONT.	14,102	CONT.
	C/CPFF	SY Tech/ AL	0	1,896	1/2Q	1,896	1/2Q	CONT.	3,792	CONT.
	MIPR	SMC/ AL	0	28,891	1Q	28,891	1Q	CONT.	57,782	CONT.
	MIPR	OGA's/ Various	0	4,340	1/2Q	4,340	1/2Q	CONT.	8,680	CONT.
	MIPR	Vandenberg AFB/ CA	0	2,765	1/2Q	2,765	1/2Q	CONT.	5,530	CONT.
TTEC	C/CPFF	SY Tech/ AL	0	3,121	1/2Q	2,812	1/2Q	CONT.	5,933	CONT.
	MIPR	SED/ AL	0	671	1/2Q	671	1/2Q	CONT.	1,342	CONT.
TTEC	MIPR	STRICOM/ FL	0	488	1/2Q	488	1/2Q	CONT.	976	CONT.
	Various	Various/ Various	0	2,920	1/2Q	2,896	1/2Q	CONT.	5,816	CONT.
Subtotal Test and Evaluation			0	151,221		143,687		0	294908	

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Remarks

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

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
X Band Radar Technology Development										
	FFRDC	MIT Lincoln Lab/ MA	0	1,265	1/2Q	1,265	1/2Q	CONT.	2,530	CONT.
Upgraded Early Warning Radar (UEWR) Development										
	FFRDC	MIT Lincoln Lab/ MA	0	300	2Q	301	2Q	CONT.	601	CONT.
	FFRDC	Mitre/ Various	0	9,547	1/3Q	8,423	1/3Q	CONT.	17,970	CONT.
	C/CPFF	SEMCOM/ Various	0	3,757	1/3Q	4,140	1/3Q	CONT.	7,897	CONT.
	C/CPFF	Tecolote/ Various	0	272	1/3Q	280	1/3Q	CONT.	552	CONT.
	C/CPFF	ESC/Hanscom/ Various	0	570	1/4Q	580	1/4Q	CONT.	1,150	CONT.
GMD Fire Control & Communications										
	MIPR	NSWC/ MD	0	3,619	2Q	2,760	2Q	CONT.	6,379	CONT.
	C/CPAF	TRW/ MA	0	3,916	2Q	3,916	2Q	CONT.	7,832	CONT.
	FFRDC	Mitre/IDA/ Various	0	1,147	2Q	1,147	2Q	CONT.	2,294	CONT.
	C/CPAF	Sparta/ AL	0	3,053	2Q	3,053	2Q	CONT.	6,106	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPAF	NRC/ Various	0	688	2Q	688	2Q	CONT.	1,376	CONT.
	C/BPA	QRI/ Various	0	874	2Q	874	2Q	CONT.	1,748	CONT.
	C/CPAF	CSC/ AL	0	1,767	2Q	1,767	2Q	CONT.	3,534	CONT.
	C/CPAF	Vanguard Research/ AL	0	84	2Q	84	2Q	CONT.	168	CONT.
	MIPR	USAF ESC/ MA	0	69	2Q	69	2Q	CONT.	138	CONT.
	MIPR	ARL/ CA	0	247	2Q	247	2Q	CONT.	494	CONT.
	C/CPAF	Mevatech/ AL	0	688	2Q	688	2Q	CONT.	1,376	CONT.
	C/CPAF	TBD	0	707	2Q	707	2Q	CONT.	1,414	CONT.
	C/CPAF	TSI	0	201	2Q	201	2Q	CONT.	402	CONT.
	MIPR	Argonne NL	0	140	2Q	140	2Q	CONT.	280	CONT.
	Various	Miscellaneous	0	8	2Q	8	2Q	CONT.	16	CONT.
Subtotal Management Services			0	32,919		31,338		0	64257	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										
Project Total Cost			0	1,587,089		2,331,881			3,918,970	
Remarks										
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.										

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

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

Fiscal Year	2003				2004				2005				2006				2007				2008				2009					
	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		
Flight Tests																														
IFT09	▲																													
IFT10	▲																													
IFT13B					▲																									
IFT13C					△	—————	△																							
IFT14						△	—————	△																						
IFT15							△	—————	△																					
FT 04-1								△	—————	△																				
FTG 04-1									△	—————	△																			
FTG 04-2										△	—————	△																		
FTG 04-3											△	—————	△																	
FTG 04-4 a/b (Salvo Mission)												△	—————	△																
FTG 04-5													△	—————	△															
FT 06-1														△	—————	△														
FTG 06-1 a/b (Salvo Mission)																△	—————	△												
FTG 06-2																		△	—————	△										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Flight Tests																												
FTG 06-3 a/b (Salvo Mission)																												
FTG 06-4																												
FTG 08-1																												
FTG 08-2																												
FTG 08-3 a/b (Salvo Mission)																												
FTG 10-1																												
FTG 10-2																												
FTG 10-3																												
Booster Verification Test																												
BV 6				▲																								
BV 5							▲																					
Milestones																												
Decision Points	▲																											▲

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Flight Tests							
IFT09	1Q						
IFT10	1Q						
IFT13B		2Q					
IFT13C		2Q-4Q	1Q				
IFT14		3Q-4Q	1Q-2Q				
IFT15		4Q	1Q-3Q				
FT 04-1			1Q-4Q				
FTG 04-1			2Q-4Q	1Q			
FTG 04-2			3Q-4Q	1Q-2Q			
FTG 04-3			4Q	1Q-3Q			
FTG 04-4 a/b (Salvo Mission)			4Q	1Q-3Q			
FTG 04-5				1Q-4Q			
FT 06-1				1Q-4Q			
FTG 06-1 a/b (Salvo Mission)				4Q	1Q-3Q		
FTG 06-2					1Q-4Q		
FTG 06-3 a/b (Salvo Mission)					2Q-4Q	1Q	
FTG 06-4					4Q	1Q-3Q	
FTG 08-1						2Q-4Q	1Q
FTG 08-2						3Q-4Q	1Q-2Q
FTG 08-3 a/b (Salvo Mission)						4Q	1Q-3Q
FTG 10-1							1Q-4Q
FTG 10-2							3Q-4Q
FTG 10-3							3Q-4Q
Booster Verification Test							
BV 6	4Q						
BV 5		2Q					
Milestones							
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603882C Ballistic Missile Defense Midcourse Defense Segment			

COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0908 Ground-Based Midcourse Defense (GMD) Block 2008 Development	0	0	0	0	0	1,236,413	1,237,596
RDT&E Articles Qty	0	0	0	0	0	6	9

A. Mission Description and Budget Item Justification

The Ground-Based Midcourse (GMD) segment of the Ballistic Missile Defense System (BMDS) is a key component of the Initial Defensive Capability (IDC) and all future BMDS Blocks being fielded by MDA. It consists of ground-based interceptors, sensors, and fire control systems fielded in multiple locations. The GMD employs hit-to kill technologies to intercept ballistic missiles in the midcourse phase of flight to defend the homeland, deployed forces, friends, and allies. The goals of the BMDS are (1) to complete, verify, and test the BMDS; (2) to place an operational capability on alert by September 30, 2004; (3) to enhance these fielded capabilities when appropriate; and (4) to perform concurrent operations and testing of a BMDS. The elements being developed and fielded of the Midcourse segment will comprise most of the critical components in meeting these goals in the near-term.

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

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

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

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

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Funding in this Project is not programmed until FY08.			
RDT&E Articles (Quantity)			

C. Other Program Funding Summary									
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

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

Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	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	
Flight Tests																													
IFT09	▲																												
IFT10	▲																												
IFT13B						▲																							
IFT13C						△	=====	△																					
IFT14							△	=====	△																				
IFT15								△	=====	△																			
FT 04-1									△	=====	△																		
FGT 04-1										△	=====	△																	
FTG 04-2											△	=====	△																
FTG 04-3												△	=====	△															
FTG 04-4 a/b (Salvo Mission)													△	=====	△														
FTG 04-5														△	=====	△													
FT 06-1															△	=====	△												
FTG 06-1 a/b (Salvo Mission)																△	=====	△											
FTG 06-2																	△	=====	△										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	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	
Flight Tests																													
FTG 06-3 a/b (Salvo Mission)																													
FTG 06-4																													
FTG 08-1																													
FTG 08-2																													
FTG 08-3 a/b (Salvo Mission)																													
FTG 10-1																													
FTG 10-2																													
FTG 10-3																													
Booster Verification Test																													
BV 6				▲																									
BV 5							▲																						
Milestones																													
Decision Points																													

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Flight Tests							
IFT09	1Q						
IFT10	1Q						
IFT13B		2Q					
IFT13C		2Q-4Q	1Q				
IFT14		3Q-4Q	1Q-2Q				
IFT15		4Q	1Q-3Q				
FT 04-1			1Q-4Q				
FTG 04-1			2Q-4Q	1Q			
FTG 04-2			3Q-4Q	1Q-2Q			
FTG 04-3			4Q	1Q-3Q			
FTG 04-4 a/b (Salvo Mission)			4Q	1Q-3Q			
FTG 04-5				1Q-4Q			
FT 06-1				1Q-4Q			
FTG 06-1 a/b (Salvo Mission)				4Q	1Q-3Q		
FTG 06-2					1Q-4Q		
FTG 06-3 a/b (Salvo Mission)					2Q-4Q	1Q	
FTG 06-4					4Q	1Q-3Q	
FTG 08-1						2Q-4Q	1Q
FTG 08-2						3Q-4Q	1Q-2Q
FTG 08-3 a/b (Salvo Mission)						4Q	1Q-3Q
FTG 10-1							1Q-4Q
FTG 10-2							3Q-4Q
FTG 10-3							3Q-4Q
Booster Verification Test							
BV 6	4Q						
BV 5		2Q					
Milestones							
Decision Points	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3020 Sea-Based Midcourse Defense (SMD)	386,200	0	0	0	0	0	0
RDT&E Articles Qty	8	0	0	0	0	0	0
<p><i>Note: Consistent with the Missile Defense Agency (MDA) Block Management framework, beginning in FY 2004, Budget Project 3020 will be divided into the following Budget Projects:</i></p> <p>0709 - Aegis BMD Block 2004 0809 - Aegis BMD Block 2006 0909 - Aegis BMD Block 2008 0009 - Aegis BMD Block 2010 0402 - Japan Cooperative Research</p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The mission of Aegis BMDS is to deliver an enduring operationally effective and supportable Ballistic Missile Defense Capability in Aegis Cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by both providing and gaining synergy from other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral upgrades as part of BMDS block upgrades.</p> <p>The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System (BMDS). Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:</p> <ul style="list-style-type: none"> - In all regions by providing capability in locations within range of international waters. Aegis BMD may be deployed by Japan and possibly other countries in addition to the United States. - In all phases of ballistic missile flight: boost, midcourse, and terminal. - Against long- range ballistic missiles by providing surveillance and tracking support to the Block 04 Initial Defensive Operations. It provides engagement support against short and medium range ballistic missiles as part of Block 04, and will provide support against intermediate range ballistic missiles as part of BMDS Block 06 and BMDS Block 08. <p>Aegis BMD supports the BMDS effort to improve missile capability with the SM-3 Block 1 and Block 1A missiles. It supports the effort to improve sensors so that missiles are more effective through LRS&T support to the IDO, through development of the Aegis BMD signal processor to support Block 06/08, and through the ability to launch on Tactical Digital Information Link (TADIL).</p> <p>The Aegis Ballistic Missile Defense (BMD) Block 2004 program will be technically capable of initial defensive operations:</p> <ul style="list-style-type: none"> - Defeats unitary and separating targets (Short Range Ballistic Missiles and Medium Range Ballistic Missiles (SRBMs and MRBMs)) with Aegis BMD configured cruisers and STANDARD Missile-3 (SM-3) guided missiles. - Uses a BMD modified Aegis Weapon System (AWS) and SM-3 guided missile evolved from the Aegis Light-weight Exo-atmospheric Projectile (LEAP) Intercept (ALI) demonstrated in flight tests. - Provides three incremental capability deliveries including; Long Range Surveillance and Track to support Initial Defense Operations, preliminary engagement capability for test bed operations and for emergency use if required, and full Block 2004 ECS compliant BMD capability including integrated Ship Self Defense and Tomahawk capability. - Provides Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the Ballistic Missile Defense System (BMDS) to the Ground-based Missile Defense (GMD) system for radar cueing and development of early fire control information. - Provides SM-3 Block 1 and IA missile configurations. - Provides expanded battle space through the use of remote data provided by Joint Tactical Information Data System (JTIDS) (Launch on TADIL). - Provides the ability to quickly reconfigure BMD ships into a fleet air defense capability. - Modifies Aegis destroyers for GMD surveillance and tracking capability. - Modifies Aegis cruisers with the Block 2004 capability. 							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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- Provides concurrent test and operations capability as an element of the BMDS.
- Provides basis for Aegis BMD capability requested by Japan.

Aegis BMDS will continue to plan and budget for improvements to existing Sea Based system to enable it to defend against longer range missiles.

Aegis Ballistic Missile Defense (BMD) Block 2006 will evolve (through spiral capability driven development) from the Block 2004 Aegis Weapon System (AWS) with development focused on enhancing BMDS engagement sequence support:

- Defeats unitary and separating targets (Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), and Intermediate Range Ballistic Missiles (IRBM) with Aegis BMD configured cruisers, destroyers and STANDARD Missile-3 (SM-3) guided missiles.
- Provides militarily useful capability.
- Provides improved battle space to the Block 2004 capability through such capabilities as Launch on Remote and Launch on Boost.
- Provides improved Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the BMDS to the Ground-based Midcourse Defense (GMD) system for radar cueing and development of early fire control information.
- Provides improved tracking and discrimination with synthetic wide bandwidth AN/SPY-1 Radar modifications.
- Modifies additional Aegis destroyers with Block 2004 GMD surveillance tracking capability to a BMD engage capability.
- Provides the ability to rapidly reconfigure BMD ships into a fleet air defense capability.
- Provides a total of fifteen Aegis destroyers equipped with Aegis BMD capability.
- Provides a total of three Aegis cruisers equipped with Aegis BMD capability.

The U.S./Japan Cooperative Research (JCR) will continue per the U.S. Department of Defense (DoD)/Japan Defense Agency (JDA) Memorandum of Agreement signed in 1999 to conduct cooperative research in Ballistic Missile Defense:

- Focusing research on four components of the SM-3 guided missile: sensor, advanced kinetic warhead, second stage propulsion, and lightweight nosecone.
- Conduct flight tests in FY 2005 and FY 2006 of the lightweight nosecone in Joint Control Test Vehicle-1 (JCTV-1) and Joint Flight Mission-1 (JFM-1).

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Aegis BMD Block 04	368,700		
RDT&E Articles (Quantity)	8		

For completeness, the FY 2003 Accomplishments are provided below.

Aegis BMDS has completed major steps to deliver and deploy an Initial Defense Capability in Support of Presidential guidance. Long Range Surveillance and Track, System Design was disclosed and the Chief of Naval Operations (CNO) assigned the first six Aegis BMD destroyers. The first BMDS IDO system test was conducted passing track data from USS Lake Erie in the western Pacific to GMD through the C2BMC network. Initial logistics support and crew training is underway.

RDT&E Articles: SM-3 Guided Missiles (3), Targets (2), Prototype Surveillance & Tracking Destroyer kits available for installation (3)

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>Aegis Weapons System (AWS) For Initial Defense Operations:</p> <ul style="list-style-type: none"> - Completed SURV 1.2 engineering assessment. - Conducted Aegis BMD Long Range Surveillance and Track (LRS&T) System Design Disclosure. - Conducted Pacific Explorer exercises with USS Lake Erie in Western Pacific with BMDS GMD system to evaluate IDO engagement sequence communications. - Defined logistics support plan for Aegis IDO destroyer. <p>AWS For emergency engagement capability:</p> <ul style="list-style-type: none"> - Conducted FM-4 flight test hitting the target. - Conducted the Aegis BMD Block 2004 3.0 System Design Disclosure (SDD). - Initiated development of Aegis BMD Computer Program certification plan for Aegis BMD 3.0. <p>Missile For emergency engagement capability:</p> <ul style="list-style-type: none"> - Commenced TSRM Design Verification Test. - Conducted All-Up-Round level CDRs for SM-3 Block I. - Conducted FM-5 flight test to verify Block 2004 with KW multi-pulse SDACS capability and lethal aim point shift in an ascent phase scenario. - Conducted Monolithic SDACS ground and qualification tests. - Continued Monolithic SDACS design studies. - Released Kinetic Warhead (KW) initial software build with discrimination features. <p>VLS For emergency engagement capability:</p> <ul style="list-style-type: none"> - Conducted the Vertical Launching System (VLS) Phase I Preliminary Design Review (PDR 1) with a 3.0 computer program. - Conducted VLS canister thermal trade studies. - Initiated development of SAASM Crypto VLS VGI upgrade. <p>AWS Block 2004 BMD and integrated ship self defense and Tomahawk capability:</p> <ul style="list-style-type: none"> - Continued engineering development of the Block 2004 Aegis BMD System. - Conducted element/multi-element test and verification of AWS Computer Program. - Initiated development of Aegis BMD Computer Program certification plan for Aegis BMD 3.1 - Conducted the Miniature Transmit/Receive System (MTRS)/Assessment of Effectiveness (AOE) Preliminary Design Review (PDR). 		

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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- Continued IR discrimination algorithm development.
- Continued Radio Frequency (RF)/IR discrimination guidance algorithms implementation.
- Initiated IR discrimination studies.
- Initiated code development for SURV 1.n and Aegis BMD 3.n.
- Verified shipboard system interfaces with ETEDDS.

Missile

Block 2004 BMD and integrated ship self defense and Tomahawk capability:

- Initiated SM-3 All-Up-Round level obsolete material replacement development effort.
- Completed SM-3 nosecone structural integrity tests, initiated rain erosion test.
- Continued SM-3 Block 2004 SDACS development.
- Verified sealed seeker design.
- Continued TSRM obsolete material replacement development efforts.

	FY 2003	FY 2004	FY 2005
Aegis BMD Block 06	17,500		
RDT&E Articles (Quantity)			

FY 2003 Accomplishments:

AWS

- Completed inputs for MDA Engineering Review Boards (ERB) for Block 2006.
- Completed Block 2006 capability assessment.
- Continued use of KW IR Seeker Captive Carry and AN/SPY-1 Radar High Range Resolution (HRR) Test Beds
- Developed preliminary requirements and design for Aegis BMD Signal Processor Prototype.
- Continued fabrication of AN/SPY-Aegis BMD Signal Processor Prototype.
- Continued Infra-Red (IR) discrimination advance studies for Block 2006 capabilities.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Aegis BMD Block 04										
	SS/CPFF	JHU/APL/ MD	13,085					CONT.	13,085	TBD
	SS/CPAF	Lockheed Martin/ NJ	93,260					CONT.	93,260	TBD
	SS/FFRDC	MIT/LL/ MA	5,997					CONT.	5,997	TBD
	MIPR	NSWC/CL/ CA	2,055					CONT.	2,055	TBD
	MIPR	NRL/ DC	2,576					CONT.	2,576	TBD
	MIPR	NSWC/DD/ VA	8,219					CONT.	8,219	TBD
	MIPR	NSWC/PHD/ CA	3,584					CONT.	3,584	TBD
	SS/CPAF	Raytheon/ AZ	129,171					CONT.	129,171	TBD
	C/CPFF	PSC/ VA	1,700					CONT.	1,700	TBD
	SS/CPAF	United Defense/ MN	1,382					CONT.	1,382	TBD
	Various	Various	0					CONT.		TBD
	SS/CPFF	Mitre/ NJ	0					CONT.		TBD
	C/CPFF	Northrup Grumman/ VA	0					CONT.		TBD
	MIPR	NSWC/CD/ MD	0					CONT.		TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	NSWC/IH/MD	0					CONT.		TBD
	MIPR	WSMR/NM	0					CONT.		TBD
Aegis BMD Block 06										
	C/CPAF	United Defense/MN	585					CONT.	585	CONT.
	MIPR	NSWC/DD/VA	208					CONT.	208	CONT.
	SS/CPFF	JHU/APL/MD	430					CONT.	430	CONT.
	SS/CPAF	Lockheed Martin/NJ	3,050					CONT.	3,050	CONT.
	SS/CPAF	Raytheon/AZ	26,800					CONT.	26,800	CONT.
	Various	Various	0					CONT.		CONT.
Subtotal Product Development			292,102	0		0		0	292102	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Aegis BMD Block 04										
	MIPR	NSWC/DD/VA	10,568					CONT.	10,568	TBD
	SS/CPFF	JHU/APL/MD	8,348					CONT.	8,348	TBD
	C/CPAF	COMP/VA	2,417					CONT.	2,417	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPAF	CREE/ VA	2,400					CONT.	2,400	TBD
	SS/CPFF	BMPCO/ MD	1,170					CONT.	1,170	TBD
	C/CPFF	MEI/ VA	1,250					CONT.	1,250	TBD
	FFRDC	MIT/LL/ MA	7,040					CONT.	7,040	TBD
	MIPR	NSWC/CD/ VA	2,919					CONT.	2,919	TBD
	SS/CPFF	SEG/ VA	3,740					CONT.	3,740	TBD
	MIPR	NSWC/PHD/ CA	2,932					CONT.	2,932	TBD
	SS/CPAF	Lockheed Martin/ NJ	0					CONT.		TBD
	Various	Various	0					CONT.		TBD
Aegis BMD Block 06										
	MIPR	NSWC/DD/ VA	622					CONT.	622	CONT.
	SS/CPFF	JHU/APL/ MD	1,289					CONT.	1,289	CONT.
	SS/CPAF	Raytheon/ AZ	0					CONT.		TBD
	SS/CPAF	Lockheed Martin/ NJ	0					CONT.		TBD
	Various	Various	0					CONT.		TBD
Subtotal Support Costs			44,695	0		0		0	44695	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Aegis BMD Block 04										
	C/CPFF	HTS/ HI	1,175					CONT.	1,175	TBD
	SS/CPFF	JHU/APL/ MD	2,870					CONT.	2,870	TBD
	MIPR	NAWC/PM/ CA	1,987					CONT.	1,987	TBD
	MIPR	NSWC/DD/ VA	5,118					CONT.	5,118	TBD
	MIPR	NSWC/PHD/ CA	3,677					CONT.	3,677	TBD
	MIPR	SMDC/ AL	9,245					CONT.	9,245	TBD
	MIPR	CINCPACFLT/ HI	1,024					CONT.	1,024	TBD
	MIPR	PMRF/ HI	2,869					CONT.	2,869	TBD
	Various	Various	0					CONT.		TBD
Subtotal Test and Evaluation			27,965	0		0		0	27965	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Aegis BMD Block 04										
	C/CPFF	PCI/ VA	1,600					CONT.	1,600	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	Anteon/ VA	10,336					CONT.	10,336	TBD
	C/CPAF	BAE/ VA	1,615					CONT.	1,615	TBD
	C/CPFF	Jaycor/ VA	1,141					CONT.	1,141	TBD
	C/CPAF	Logicon/ VA	1,435					CONT.	1,435	TBD
	MIPR	NAVSEA/ DC	3,400					CONT.	3,400	TBD
	SS/CPFF	JHU/APL/ MD	1,128					CONT.	1,128	TBD
	MIPR	NSWC/DD/ VA	783					CONT.	783	TBD
	SS/CPFF	Paradigm Technologies/ VA	0					CONT.		TBD
	SS/CPAF	Lockheed Martin/ NJ	0					CONT.		TBD
	SS/CPAF	Raytheon/ AZ	0					CONT.		TBD
	Other	MDA/ VA	0					CONT.		TBD
	Various	Various	0					CONT.		TBD
Subtotal Management Services			21,438	0		0		0	21438	
Remarks										
Project Total Cost			386,200	0		0			386,200	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
Monolithic DACS MDU1	▲																											
Monolithic DACS MDU2		▲																										
Monolithic DACS Flight Qualification			▲																									
Manufacturing Processes and Advanced Materials																												
Aegis BMD Surv & Track Computer Program 1.2				▲																								
Aegis BMD FM-5 Configuration			▲																									
Integrated Flight Test																												
IFT 10	▲																											
Development Milestones																												
Aegis BMD Surveillance & Track Upgrades	▲	—	—	▲																								
TSCR	▲																											
3.0 SDD		▲																										
SM-3 Block 1 CDR			▲																									
VLS PDR 1				▲																								

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Monolithic DACS MDU1	1Q						
Monolithic DACS MDU2	2Q						
Monolithic DACS Flight Qualification	3Q						
Manufacturing Processes and Advanced Materials							
Aegis BMD Surv & Track Computer Program 1.2	4Q						
Aegis BMD FM-5 Configuration	3Q						
Integrated Flight Test							
IFT 10	1Q						
Development Milestones							
Aegis BMD Surveillance & Track Upgrades	1Q-4Q						
TSCR	1Q						
3.0 SDD	2Q						
SM-3 Block 1 CDR	3Q						
VLS PDR 1	4Q						
Flight Tests							
FM -4	1Q						
FM-5	3Q						
Fielding Deliveries/Ships							
Test DDGs (Kits Only)	4Q						
LRS&T IPR	4Q						

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MDA Exhibit R-2A RDT&E Project Cost Analysis					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603882C Ballistic Missile Defense Midcourse Defense Segment			

COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0709 AEGIS Ballistic Missile Defense Block 2004	0	640,892	965,800	177,600	0	0	0
RDT&E Articles Qty	0	12	19	24	11	0	0

Note: This Budget Project was previously captured in Project 3020 in FY 2003.

A. Mission Description and Budget Item Justification

RDT&E Articles: SM-3 Guided Missiles (6), destroyers configured with Aegis BMD 3.0E (3), Target (3)

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

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

- In all regions by providing capability in locations within range of international waters. Aegis BMD may be deployed by Japan and possibly other countries in addition to the United States.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against long- range ballistic missiles by providing surveillance and tracking support to the Block 04 Initial Defensive Operations. It provides engagement support against short and medium range ballistic missiles as part of Block 04, and will provide support against intermediate range ballistic missiles as part of BMDS Block 06 and BMDS Block 08.

Aegis BMD supports the BMDS effort to improve missile capability with the SM-3 Block 1 and Block 1A missiles. It supports the effort to improve sensors so that missiles are more effective through LRS&T support to the IDO, through development of the Aegis BMD signal processor to support Block 06/08, and through the ability to launch on Tactical Digital Information Link (TADIL). In collaboration with the MDA National Team (MDNT), Aegis BMD is contributing to the BMDS in development of engagement sequence groups (ESGs). It supports an autonomous engagement against SRBMs and MRBMs without external cueing (SM-3 Uncued ESG), supporting an autonomous engagement against SRBMs and MRBMs using external DSP and TADIL J cueing (SM-3 Cued ESG).

Aegis BMD will also provide cueing data to support GBI Launch and Engagement against LRBM and IRBM via input for the GMD Sensor Task Plan (STP) and Weapons Task Plan (WTP) respectively. Aegis BMD will support a Launch on Other engagement against MRBMs using TADIL J data from other Aegis BMD Elements (SM-3 Launch on Other ESG).

The Aegis Ballistic Missile Defense (BMD) Block 2004 program will be technically capable of initial defensive operations:

- Defeats unitary and separating targets (Short Range Ballistic Missiles and Medium Range Ballistic Missiles (SRBMs and MRBMs)) with Aegis BMD configured cruisers and STANDARD Missile-3 (SM-3) guided missiles.
- Uses a BMD modified Aegis Weapon System (AWS) and SM-3 guided missile evolved from the Aegis Light-weight Exo-atmospheric Projectile (LEAP) Intercept (ALI) demonstrated in flight tests.
- Provides three incremental capability deliveries including; Long Range Surveillance and Track to support Initial Defense Operations, preliminary engagement capability for test bed operations and for emergency use if required, and full Block 2004 ECS compliant BMD capability including integrated Ship Self Defense and Tomahawk capability.
- Provides Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the Ballistic Missile Defense System (BMDS) to the Ground-based Missile Defense (GMD) system for radar cueing and development of early fire control information.
- Provides SM-3 Block 1 and IA missile configurations.
- Provides expanded battle space through the use of remote data provided by Joint Tactical Information Data System (JTIDS) (Launch on TADIL).
- Provides the ability to quickly reconfigure BMD ships into a fleet air defense capability.

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603882C Ballistic Missile Defense Midcourse Defense Segment

- Ensures that AEGIS BMD operational data is available to the BMDS C2BMC Element in order to provide the deliberate planning tools and crisis action tools to evolve courses of action based upon a common view of the threat, available global resources, and warning order objectives.
- Modifies Aegis destroyers for GMD surveillance and tracking capability.
- Modifies Aegis cruisers with the Block 2004 capability.
- Provides concurrent test and operations capability as an element of the BMDS.
- Provides basis for Aegis BMD capability requested by Japan.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Weapon System Engineering		564,814	823,837
RDT&E Articles (Quantity)		9	14

FY 2004 Planned Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (6), destroyers configured with Aegis BMD 3.0E (3)

AWS

For Initial Defense Operations:

- Begin LRS&T Initial Deployment Operations (IDO) utilizing Aegis BMD 3.0E with destroyers.
- Complete CDLMS V3.3 development.
- Continue coding of the Aegis BMD 3.0E computer program
- Complete engineering algorithm development and design for Surveillance & Track computer programs (SURV 1.n and Aegis BMD 3.0E) and install them in three destroyers.
- Conduct Aegis BMD 3.0E Engineering Assessment.
- Configure Aegis BMD destroyers with S&T test (SURV 1.n) configuration.
- Participate in GMD IGT2.
- Implement and integrate BMC4I IDO Architecture including Aegis BMD capability, BMDS interface control specifications, as well as definition and verification of BMC4I requirements and objectives.
- Continue element/multi-element testing and verification of the Aegis BMD Computer Program.

For emergency engagement capability:

- Continue element/multi-element testing and verification of the Aegis BMD Computer Program.
- Continue coding of the Aegis BMD 3.0 computer program.
- Conduct Aegis BMD 3.0 Test Procedures Review (TPR).
- Begin CSEDS 3.0 Testing.
- Conduct waterfront integration testing.

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RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>Block 2004 BMD and integrated ship self defense and Tomahawk capability:</p> <ul style="list-style-type: none"> - Conduct the Aegis BMD 3.1 System Design Disclosure (SDD). - Begin coding of the Aegis BMD 3.1 computer program - Conduct Aegis BMD 3.1 Test Program Review (TPR). - Begin CSEDS Aegis 3.1 Testing. - Conduct the MTRS/AOE CDR. - Conduct Wideband Aligned Images Demonstration. - Conduct Wideband Static Image Display Demonstration. - Continue qualification tests of Monolithic SDACS. - Continue RF/IR discrimination guidance algorithm implementation. - Complete IR discrimination development effort. - Complete JTT ship installation plan for Block 04. - Continue to support performance capability assessment engineering. - Continue use of Captive Carry Test Beds. - Implement and integrate BMC4I IDO architecture including Aegis BMD capability, BMDS interface control specifications as well as definition and verification of BMC4I requirements and objectives. - Provide detailed performance assessment of Aegis BMD BLK 04 design <p>VLS</p> <p>For emergency engagement capability:</p> <ul style="list-style-type: none"> - Conduct VLS CDR 2 - Conduct the VLS MK41 In-Process Review (IPR). <p>Block 2004 BMD and integrated ship self defense and Tomahawk capability:</p> <ul style="list-style-type: none"> - Complete development of SAASM, VGI upgrades - Conduct the VLS Preliminary Design Review (PDR)2 - Test Aegis BMD multi-warfare VLS capability. <p>Missile</p> <p>For emergency engagement capability:</p> <ul style="list-style-type: none"> - Deliver five SM-3 Block 1 missiles. - Initiate long lead material buy for an additional 6 SM-3 Block 1 missiles. 		

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MDA Exhibit R-2A RDT&E Project Cost Analysis		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p>Block 2004 BMD and integrated ship self defense and Tomahawk capability:</p> <ul style="list-style-type: none">- Conduct SM-3 Design Verification Tests.- Initiate facility upgrade to expand missile delivery throughput.- Initiate SM-3 hardware/software integration testing for Block 2004 capability.- Initiate SM-3 Hazard Safety tests for Block 2004 Capability.- Initiate SM-3 Value Engineering Change Proposal (VECP) implementation engineering analysis.- Continue SM-3 All-Up-Round obsolete material replacement development effort.- Complete TSRM obsolete material replacement development efforts.- Complete All-Up-Round design and construction modifications for extended shelf life.- Initiate test equipment modification to support additional missile build.- Initiate assembly of 6 additional SM-3 Block 1 missiles. <p>FY 2005 Planned Accomplishments:</p> <p>RDT&E Articles: SM-3 Block 1 Missiles (5), Upgrade delivery to USS Lake Erie (1), BMD Cruiser (1), Surveillance and Tracking Destroyers (7)</p> <p>AWS For Initial Defense Operations:</p> <ul style="list-style-type: none">- Participate in GMD IFT events and planned Aegis BMD flight missions.- Continue to coordinate BMC4I/communication architecture engineering and integration with other BMDS elements.- Begin Aegis BMD 3.0 engagement Initial Deployment Operations (IDO) with cruisers.- Outfit additional six Aegis destroyers with Aegis BMD 3.0 capabilities.- Complete Block 2004 multi-element integration and testing for BMD 3.0.- Conduct Aegis BMD 3.0 Engineering Assessment.- Complete SM-3 hardware/software integration testing.- Continue SM-3 Design Verification Testing.- Participate in GMD IFT events and Aegis BMD flight missions.- Conduct waterfront integration testing. <p>Block 2004 BMD and integrated ship self defense and Tomahawk capability:</p> <ul style="list-style-type: none">- Provide engineering and development of Aegis BMD RF enhanced S-band tracking and target designation including integration and assessment of performance.- Continue engineering development, algorithm modifications, and weapon system modifications for separating target tests, code implementations, and multi-element integration and testing of BMD 3.1.- Participate in GMD IFT events and Aegis BMD flight missions.- Continue to coordinate BMC4I/communication architecture engineering and integration with other BMDS elements.- Conduct waterfront integration testing.		

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MDA Exhibit R-2A RDT&E Project Cost Analysis		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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VLS

Block 2004 BMD and integrated ship self defense and Tomahawk capability:

- Complete development of a multi-warfare VLS capability as part of BMD.
- Conduct VLS MK41 Aegis BMD 3.1 CDR.

Missile

Block 2004 BMD and integrated ship self defense and Tomahawk capability:

- Continue SM-3 Hazard Safety Testing.
- Continue SM-3 VECP implementation engineering effort.
- Continue SM-3 Design Verification Testing.
- Deliver 5 SM-3 Block 1 missiles initiated in FY 2004.
- Continue test equipment modifications to support additional missile build.
- Initiate long lead material buys for Block 1A missiles.
- Initiate assembly of additional missiles.
- Continue All-Up-Round obsolete material replacement development effort.

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

- Missiles, targets, and ship modifications are shown in this budget exhibit in their fiscal year of delivery.
- Aegis BMD computer program deliveries are shown as a single unit delivery in the fiscal year the Engineering Assessment (EA) is conducted.

	FY 2003	FY 2004	FY 2005
Test & Evaluation		50,844	106,363
RDT&E Articles (Quantity)		3	5

For completeness, the FY 2003 Accomplishments are provided below (Funded in Budget Project 3020):

- Conducted FM-4 flight test by hitting a selected aim point on the target in ascent of flight.
- Conducted FM-5 flight test to verify Block 2004 with KW monolithic SDACS capability in an ascent phase scenario.
- Participated in GMD IFT9 flight mission, using an Aegis Destroyer to provide target-tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
- Participated in GMD IFT10 flight mission, using an Aegis Destroyer to provide target-tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
- Conducted lethality and post-intercept analysis.
- Conducted Pacific Explorer Mission I to verify Satellite TADIL J (STJ) connectivity between Aegis BMD and BMDS.
- Continued to test interoperability with other BMDS elements.
- Acquired FM targets for future flight test operations.

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MDA Exhibit R-2A RDT&E Project Cost Analysis		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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FY 2004 Planned Accomplishments:

RDT&E Articles: Targets (3)

- Conduct FM-6 flight test to verify lethal intercept of a Group A Target, KW monolithic SDACS capability, and lethality assessment.
- Participate in GMD IFT13C flight mission, using an Aegis Destroyer to provide target-tracking data to GMD.
- Participate in GMD IFT14 flight mission, using an Aegis Destroyer to provide target-tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
- Participate in S&T/PACEX III flight mission using an Aegis Destroyer to Detect and Track Ballistic Missiles (simulated), Link Launch Point via S TADIL J, Link Ballistic Missile Tracks/Status to BMDS and Other Link Players.
- Participate in Notional At-Sea Demonstration 3.0 flight mission using an Aegis Destroyer and Cruiser with Aegis BMD 3.0 in a Multi-Warfare Environment, Simulate Group A Engagement in a Multi-Warfare Environment, and Simulate Group B Engagement.
- Continue to test interoperability with other BMDS elements.
- Acquire two Aegis Readiness Assessment Vehicle, (ARAV) for S&T/PACEX III.
- Initiate acquisition of targets for future flight test operations.
- Acquire one Group A target for FM-6.

FY 2005 Planned Accomplishments:

RDT&E Articles: Targets (5)

- Acquire 1 Group A target for FM-7 and 1 Group B target for FM-8, 1 Group B target for FM-9, and 2 ARAVs for At-Sea Demonstration 3.0.
- Conduct FM-7 flight test to verify Aegis BMD 3.0 emergency engagement capability with lethal intercept of a Group A Target.
- Conduct FM-8 flight test to verify lethal intercept of a Group B Target.
- Conduct FM-9 flight test to verify lethal intercept of a Group B Target.
- Participate in GMD FTG-04-4a/b flight mission, using an Aegis Destroyer and/or Cruiser to exercise the system for an IDO threat.
- Conduct lethality and post-intercept analysis.
- Continue to test interoperability with other BMDS elements.
- Initiate acquisition of targets for FM-10.
- Initiate acquisition of targets for Pacific Blitz 06.

	FY 2003	FY 2004	FY 2005
SRBM Low Exo		25,234	35,600
RDT&E Articles (Quantity)			

For completeness, these FY 2003 Accomplishments are provided below. (Funded in Project 3020):

- Continued performance studies and initiate development of ship system changes to implement the low-altitude intercept guidance control changes.
- Continued performance studies and initiate development of SM-3 Third Stage Guidance Control and Rocket Motor Multi-pulse management to support the low exo-atmospheric intercept.
- Continued modifications to the models and simulation tools to support the Weapon System and SM-3 Missile changes for the low exo-atmospheric intercept capability.

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MDA Exhibit R-2A RDT&E Project Cost Analysis		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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FY 2004 Planned Accomplishments:

AWS

- Complete development of ship system algorithms and software coding changes to implement the low exo-atmospheric intercept guidance control changes.
- Continue modifications to the models and simulation tools to support the Weapon System and SM-3 Missile changes for the low exo-atmospheric intercept capability.

Missile

- Complete development of SM-3 Third Stage Guidance Control and Rocket Motor Multi-pulse management algorithms and software coding to support the low exo-atmospheric intercept.

FY 2005 Planned Accomplishments:

AWS

- Conduct firing test to validate the low exo-atmospheric intercept capability.
- Complete modifications and verification to engagement models and simulations to account for the firing test.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Cost Analysis							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603882C Ballistic Missile Defense Midcourse Defense Segment				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

D. Acquisition Strategy

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapon System Engineering										
AWS	SS/CPIF	Lockheed Martin/ NJ	0	133,502	2Q	197,850	2Q	CONT.	331,352	TBD
AWS	FFRDC	MIT/LL/ MA	0	5,400	2Q	5,000	2Q	CONT.	10,400	TBD
AWS	SS/CPFF	JHU/APL/ MD	0	2,300	1Q	1,900	1Q	CONT.	4,200	TBD
AWS	MIPR	NSWC/DD/ VA	0	12,444	1Q	15,419	1Q	CONT.	27,863	TBD
AWS	MIPR	MITRE/ VA	0	550	1Q	1,291	1Q	CONT.	1,841	TBD
AWS	MIPR	NSWC/PHD/ CA	0	5,000	1Q	6,600	1Q	CONT.	11,600	TBD
AWS		MDA	0	11,016	1Q	7,318	1Q	CONT.	18,334	TBD
AWS	Various	VARIOUS	0	7,150	1Q	15,180	1Q	CONT.	22,330	TBD
MISSILE	SS/CPIF	RAYTHOEN/ AZ	0	266,766	2Q	414,018	2Q	CONT.	680,784	TBD
MISSILE	SS/CPIF	JHU/APL/ MD	0	9,700	2Q	7,638	2Q	CONT.	17,338	TBD
MISSILE	FFRDC	MIT/LL/ MA	0	600	1Q	2,687	1Q	CONT.	3,287	TBD
MISSILE	MIPR	NSWC/DD/ VA	0	7,740	1Q	9,523	1Q	CONT.	17,263	TBD
MISSILE	MIPR	NSWC/PHD/ CA	0	3,147	1Q	5,507	1Q	CONT.	8,654	TBD
MISSILE	MIPR	WSMR/ NM	0	1,770	1Q	3,770	1Q	CONT.	5,540	TBD
MISSILE	MIPR	NSWC/CD/ CA	0	554	2Q	0	2Q	CONT.	554	TBD

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MISSILE	MIPR	NSWC/IH/MD	0	1,206	2Q	1,472	2Q	CONT.	2,678	TBD
MISSILE	MIPR	NAWC/CL/CA	0	1,066	1Q	2,240	1Q	CONT.	3,306	TBD
MISSILE		MDA/VA	0	9,575	1Q	11,640	1Q	CONT.	21,215	TBD
MISSILE	Various	VARIOUS/VARIOUS	0	5,573	1Q	15,081	1Q	CONT.	20,654	TBD
MISSILE	MIPR	NSWC/CD/CA	0	2,000	1Q				2,000	
MISSILE	MIPR	VA SITES/VA	0	3,900	1Q				3,900	
SRBM Low Exo										
	SS/CPIF	Lockheed Martin/NJ	0	2,500	2Q	3,500	2Q	CONT.	6,000	TBD
	SS/CPIF	Raytheon/AZ	0	22,734	2Q	32,100	2Q	CONT.	54,834	TBD
Subtotal Product Development			0	516,193		759,734		0	1275927	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapon System Engineering										
	SS/CPFF	JHU/APL/MD	0	7,250	2Q	7,250	2Q	CONT.	14,500	TBD
	SS/CPAF	Lockheed Martin/NJ	0		2Q		2Q	CONT.		TBD
	FFRDC	MIT/LL/MA	0	600	1Q	1,450	1Q	CONT.	2,050	TBD

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	MIPR	NSWC/DD/ VA	0	3,723	1Q	5,723	1Q	CONT.	9,446	TBD
	SS/CPAF	Raytheon/ AZ	0		2Q		2Q	CONT.		TBD
	SS/CPFF	SEG/ VA	0	550	1Q	8,316	1Q	CONT.	8,866	TBD
	SS/CPFF	BMPCOE/ MD	0	700	1Q	514	1Q	CONT.	1,214	TBD
	SS/CPFF	MITRE/ VA	0	825	1Q	1,290	1Q	CONT.	2,115	TBD
		MDA	0	985	1Q	3,481	1Q	CONT.	4,466	TBD
	Various	VARIOUS/ VARIOUS	0	1,078	1Q	4,304	1Q	CONT.	5,382	TBD
	MIPR	NSWC/Corona/ CA	0	400	1Q	400	1Q		800	
	MIPR	NSWC/PHD/ CA	0	1,289	1Q	1,734	1Q		3,023	
	MIPR	SPAWAR/ CA	0	2,725	1Q	4,237	1Q		6,962	
	MIPR	ANTEON/ VA	0	1,200	1Q		1Q		1,200	
Subtotal Support Costs			0	21,325		38,699		0	60024	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test & Evaluation										
	MIPR	PMRF/ HI	0	7,030	1Q	7,300	1Q	CONT.	14,330	TBD

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	C/CPFF	HTS/ CA	0	2,695	2Q	2,805	2Q	CONT.	5,500	TBD
	SS/CPAF	Xontech/ CA	0	1,015	2Q	1,054	2Q	CONT.	2,069	TBD
	MIPR	NSWC/PHD/ CA	0	5,053	1Q	8,163	1Q	CONT.	13,216	TBD
	MIPR	NAWC/PM/ CA	0	2,295	1Q	4,500	1Q	CONT.	6,795	TBD
	MIPR	NSWC/Corona/ CA	0	889	1Q	1,602	1Q	CONT.	2,491	TBD
	MIPR	NSWC/DD/ VA	0	6,608	1Q	13,122	1Q	CONT.	19,730	TBD
	MIPR	CINPACFLT/ HI	0	0	1Q	605	1Q	CONT.	605	TBD
	SS/CPFF	JHU/APL/ MD	0	7,100	2Q	5,850	2Q	CONT.	12,950	TBD
	MIPR	SMDC/ AL	0	6,900	1Q	52,000	1Q	CONT.	58,900	TBD
	MIPR	SPAWAR/ CA	0	2,022	1Q	1,763	1Q	CONT.	3,785	TBD
	MIPR	DOI/ DC	0	0	1Q	1,017	1Q	CONT.	1,017	TBD
	MIPR	AIRPAC/ HI	0	868	1Q	903	1Q	CONT.	1,771	TBD
		MDA	0	3,270	1Q	4,721	1Q	CONT.	7,991	TBD
	Various	VARIOUS/ VARIOUS	0	2,578	1Q	958	1Q	CONT.	3,536	TBD
	MIPR	WSMR/ CA	0	2,521	1Q	0	1Q		2,521	
Subtotal Test and Evaluation			0	50,844		106,363		0	157207	

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapon System Engineering										
		NAVSEA/ DC	0	13,000	1Q	13,463	1Q	CONT.	26,463	TBD
	SS/CPFF	JHU/API/ MD	0	2,300	2Q	2,300	2Q	CONT.	4,600	TBD
	MIPR	NSWC/DD/ VA	0	1,700	1Q	1,700	1Q	CONT.	3,400	TBD
	C/CPFF	Anteon/ VA	0	23,215	1Q	24,862	1Q	CONT.	48,077	TBD
	SS/CPFF	Paradigm/ VA	0	5,386	1Q	5,747	1Q	CONT.	11,133	TBD
	SS/CPAF	Lockheed Martin/ NJ	0	1,200	1Q	1,200	1Q	CONT.	2,400	TBD
	SS/CPAF	Raytheon/ AZ	0	1,400	2Q	1,400	2Q	CONT.	2,800	TBD
		MDA	0	3,379	1Q	7,481	1Q	CONT.	10,860	TBD
	Various	Various/ Various	0	950	1Q	2,851	1Q	CONT.	3,801	TBD
Subtotal Management Services			0	52,530		61,004		0	113534	
Remarks										
Project Total Cost			0	640,892		965,800			1,606,692	
Remarks										

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Testing Milestones																																
Monolithic DACS MDU1	▲																															
Monolithic DACS MDU2		▲																														
Monolithic DACS Flight Qualification			▲																													
Third Stage Rocket Motor							Δ																									
HERO Test							Δ																									
Pacific Explorer III								Δ																								
At-Sea Demo 3.0 (Concurrent with FM-7)											Δ																					
At-Sea Demo 3.1															Δ																	
Manufacturing Processes and Advanced Materials																																
Aegis BMD FM 5 configuration			▲																													
Surveillance & Track Computer Program 1.N				▲																												
Aegis BMD FM 6 configuration							▲																									
04 CP 3.0E								Δ																								
Aegis BMD FM 7 configuration											Δ																					
Block 04 Computer Program 3.0											Δ																					

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Manufacturing Processes and Advanced Materials																																
Block 04 Computer Program 3.1																Δ																
Flight Tests																																
FM-4	▲																															
FM-5			▲																													
FM-6				▲																												
FM-7											Δ																					
FM-8											Δ																					
FM-9												Δ																				
FM-10															Δ																	
Integrated Flight Test																																
IFT 10	▲																															
IFT 13C					Δ	=====	Δ																									
IFT 14					Δ	=====	Δ																									
FT-04-1									Δ	=====	Δ																					
FTG-04-4a/b									Δ	=====	Δ																					

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development Milestones																												
TSCR	▲																											
SM-3 Block I CDR			▲																									
VLS PDR 1				▲																								
Block 04 CDR Report					▲																							
VLS CDR 1						Δ																						
VLS PDR 2							Δ																					
SM-3 Block 1A CDR							Δ																					
VLS CDR 2								Δ																				
Fielding Deliveries/Ships																												
Test DDGs (Kits Only)				▲																								
Surveillance & Tracking DDGs (BMD 3.0)								Δ																				
Engagement Cruiser										Δ	←	Δ																
Surveillance & Tracking DDGs (BMD 3.1)													Δ															
Engagement DDGs (BMD 3.1)														Δ														

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Monolithic DACS MDU1	1Q						
Monolithic DACS MDU2	2Q						
Monolithic DACS Flight Qualification	3Q						
Third Stage Rocket Motor		2Q					
HERO Test		2Q					
Pacific Explorer III		4Q					
At-Sea Demo 3.0 (Concurrent with FM-7)			2Q				
At-Sea Demo 3.1				1Q			
Manufacturing Processes and Advanced Materials							
Aegis BMD FM 5 configuration	3Q						
Surveillance & Track Computer Program 1.N	4Q						
Aegis BMD FM 6 configuration		1Q					
04 CP 3.0E		4Q					
Aegis BMD FM 7 configuration			2Q				
Block 04 Computer Program 3.0			2Q				
Block 04 Computer Program 3.1				1Q			
Flight Tests							
FM-4	1Q						
FM-5	3Q						
FM-6		1Q					
FM-7			2Q				
FM-8			3Q				
FM-9			4Q				
FM-10				2Q			
Integrated Flight Test							
IFT 10	1Q						
IFT 13C		1Q-4Q					
IFT 14		1Q-4Q					
FT-04-1			1Q-4Q				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
FTG-04-4a/b			1Q-4Q				
Development Milestones							
TSCR	1Q						
SM-3 Block I CDR	3Q						
VLS PDR 1	4Q						
Block 04 CDR Report		1Q					
VLS CDR 1		2Q					
VLS PDR 2		3Q					
SM-3 Block 1A CDR		3Q					
VLS CDR 2			1Q				
Fielding Deliveries/Ships							
Test DDGs (Kits Only)	4Q						
Surveillance & Tracking DDGs (BMD 3.0)			1Q				
Engagement Cruiser			3Q-4Q				
Surveillance & Tracking DDGs (BMD 3.1)				1Q			
Engagement DDGs (BMD 3.1)				3Q			
Fielding Deliveries/Missiles							
Accelerated Block I Missiles		3Q-4Q					
Block 1A Missiles				2Q-4Q	1Q-3Q		
Block I Missiles			2Q-4Q	1Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0809 AEGIS Ballistic Missile Defense Block 2006	0	23,585	106,494	674,667	776,288	50,325	0
RDT&E Articles Qty	0	0	0	8	15	29	9

Note: This Budget Project was previously captured in Project 3020 in FY 2003.

A. Mission Description and Budget Item Justification

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

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

- In all regions by providing capability in locations within range of international waters. Aegis BMD may be deployed by Japan and possibly other countries in addition to the United States.
- In all phases of ballistic missile flight: boost, midcourse, and terminal.
- Against long- range ballistic missiles by providing surveillance and tracking support to the Block 04 Initial Defensive Operations. It provides engagement support against short and medium range ballistic missiles as part of Block 04, and will provide support against intermediate range ballistic missiles as part of BMDS Block 06 and BMDS Block 08.

Aegis BMD supports the BMDS effort to improve missile capability with the SM-3 Block 1 and Block 1A missiles. It supports the effort to improve sensors so that missiles are more effective through LRS&T support to the IDO, through development of the Aegis BMD signal processor to support Block 06/08, and through the ability to launch on Tactical Digital Information Link (TADIL). In collaboration with the MDA National Team (MDNT), Aegis BMD is contributing to the BMDS in development engagement sequence groups (ESGs). It supports an autonomous engagement against SRBMs and MRBMs without external cueing (SM-3 Uncued ESG), and external DSP and TADIL J cueing (SM-3 Cued ESG).

Aegis BMD will also provide cueing data to support GBI Launch and Engagement against LRBM and IRBM via input for the GMD Sensor Task Plan (STP) and Weapons Task Plan (WTP) respectively. Aegis BMD will support a Launch on Other engagement against MRBMs using TADIL J data from other Aegis BMD Elements (SM-3 Launch on Other ESG).

Aegis Ballistic Missile Defense (BMD) Block 2006 will evolve (through spiral capability driven development) from the Block 2004 Aegis Weapon System (AWS) with development focused on enhancing BMDS engagement sequence support:

- Defeats unitary and separating targets (Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), and Intermediate Range Ballistic Missiles (IRBM) with Aegis BMD configured cruisers, destroyers and STANDARD Missile-3 (SM-3) guided missiles.
- Provides militarily useful capability.
- Provides improved battle space to the Block 2004 capability through such capabilities as Launch on Remote.
- Provides improved Inter-Continental Ballistic Missile (ICBM) surveillance and track data through the BMDS to the Ground-based Midcourse Defense (GMD) system for radar cueing and development of early fire control information.
- Provides improved tracking and discrimination with synthetic wide bandwidth AN/SPY-1 Radar modifications.
- Modifies additional Aegis destroyers with Block 2004 GMD surveillance tracking capability to a BMD engage capability.
- Provides the ability to rapidly reconfigure BMD ships into a fleet air defense capability.
- Provides a total of fifteen Aegis destroyers equipped with Aegis BMD capability.
- Provides a total of three Aegis cruisers equipped with Aegis BMD capability.
- Supports a Launch on Other engagement against MRBMs using TADIL J data from other BMDS Elements (SM-3 Launch on Other ESG)

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Weapons System Engineering		23,585	106,494
RDT&E Articles (Quantity)			

FY 2004 Planned Accomplishments:

AWS

- Transition the High Range Resolution efforts into the Aegis BMD Signal Processor.
- Continue fabrication and start incremental testing of a prototype AN/SPY-1 BMDS Signal Processor (BSP).
- Demonstrate real time display enhanced S-Band tracking and target designation.
- Initiate definition of Block 06 engagement coordination methods, integration and capabilities including engagement coordination among BMDS elements.
- Continue to support performance capability assessment engineering.
- Continue IR discrimination risk reduction and algorithm development

FY 2005 Planned Accomplishments:

AWS

- Complete fabrication and start incremental testing of prototype AN/SPY-1 Aegis BMD Signal Processor.
- Commence at-sea testing of prototype AN/SPY-1 BSP.
- Demonstrate real time feature extraction capability using the Aegis BMD signal processor prototype.
- Continue IR discrimination risk reduction and algorithm development
- Continue to support performance capability assessment engineering.
- Initiate development of Block 2006 Aegis Weapon System computer program upgrade Aegis BMD 3.2.
- Continue development of Aegis BMD communication architecture ensuring interface and interoperability is coordinated with C2 BMC, GMD, Patriot, ABL, THAAD, KI Boost.

Missile

- Provide an option for an alternate DACS that will increase divert capability.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapons System Engineering										
AWS	SS/CPAF	Lockheed Martin/ NJ	0	11,500	1Q	73,214	1Q	CONT.	84,714	CONT.
AWS	FFRDC	MIT/LL/ MA	0		1Q	3,684	1Q		3,684	
AWS	CPFF	JHU/APL/ MD	0		1Q	1,200	1Q		1,200	
AWS	MIPR	NSWC/DD/ VA	0		1Q	1,100	1Q		1,100	
Subtotal Product Development			0	11,500		79,198		0	90698	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapons System Engineering										
	SS/CPFF	JHU/APL/ MD	0	1,100	1Q	3,770	1Q	CONT.	4,870	TBD
	SS/CPAF	Lockheed Martin/ NJ	0	450	2Q	1,326	2Q	CONT.	1,776	TBD
	SS/CPAF	MIT/LL/ MA	0	2,800	1Q	5,479	1Q	CONT.	8,279	TBD
	SS/FPI	NSWC/DD/ VA	0	3,666	1Q	3,966	1Q	CONT.	7,632	TBD
	SS/MIPR	NSWC/Corona/ CA	0	200	1Q	278	1Q	CONT.	478	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	SS/MIPR	NSWC/PHD/CA	0	250	1Q	463	1Q	CONT.	713	TBD
	SS/CPAF	RAYTHEON/AZ	0	450	1Q	8,595	2Q	CONT.	9,045	TBD
	SS/CPFF	SEG/VA	0	925	2Q	1,084	2Q	CONT.	2,009	TBD
	SS/CPFF	TSC/VA	0	0	1Q			CONT.		TBD
	SS/CPFF	BMPCOE/MD	0			186	1Q	CONT.	186	
	Various	VARIOUS/US	0	309	1Q	316	1Q		625	
	SS/CPFF	MITRE/VA	0			204	1Q		204	
Subtotal Support Costs			0	10,150		25,667		0	35817	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapons System Engineering										
		NAVSEA/ DC	0	250	1Q	0	1Q	CONT.	250	CONT.
	SS/CPFF	JHU/APL/ MD	0	100	1Q	100	1Q	CONT.	200	CONT.
	MIPR	NSWC/DD/ VA	0	50	1Q	50	1Q	CONT.	100	CONT.
	C/CPFF	Anteon/ VA	0	1,085	2Q	482	2Q	CONT.	1,567	CONT.
	SS/CPFF	Paradigm/ VA	0	50	1Q	0	1Q	CONT.	50	CONT.
	SS/CPAF	Lockheed Martin/ NJ	0	50	2Q	50	2Q	CONT.	100	CONT.
	SS/CPAF	Raytheon/ AZ	0	50	2Q	50	2Q	CONT.	100	CONT.
		MDA	0		1Q	0	1Q	CONT.		CONT.
	Various	Various/ Various	0	300	1Q	897	1Q	CONT.	1,197	CONT.
Subtotal Management Services			0	1,935		1,629		0	3564	
Remarks										
Project Total Cost			0	23,585		106,494			130,079	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Testing Milestones																													
Pacific Blitz 06																Δ													
Integrated Flight Test																													
FTG 06-1b															Δ	—————	Δ												
FTG 06-2																			Δ	—————	Δ								
FTG 06-3a/b																			Δ	—————	Δ								
FTG 08-1																			Δ	—————	Δ								
Flight Tests																													
FM 11																													
FM 12																													
FM-13																													
Development Milestones																													
Aegis BMD Surveillance & Track Upgrades																													
Aegis BMD 3.2 Development																													
Aegis BMD 3.2 PDR																													
Aegis BMD 3.2 CDR																													

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Development Milestones																																
Aegis BMD 3.2 Object Classification Demo																Δ																
Aegis BMD CSEDS Testing																			Δ													
Aegis BMD 3.2 Delivery																								Δ								

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MDA Exhibit R-4A Schedule Detail					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Pacific Blitz 06				4Q			
Integrated Flight Test							
FTG 06-1b				1Q-4Q			
FTG 06-2					1Q-4Q		
FTG 06-3a/b					1Q-4Q		
FTG 08-1					1Q-4Q		
Flight Tests							
FM 11				4Q			
FM 12					2Q		
FM-13					4Q		
Development Milestones							
Aegis BMD Surveillance & Track Upgrades	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Aegis BMD 3.2 Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Aegis BMD 3.2 PDR		4Q					
Aegis BMD 3.2 CDR			3Q				
Aegis BMD 3.2 Object Classification Demo				1Q			
Aegis BMD CSEDS Testing					1Q		
Aegis BMD 3.2 Delivery					4Q		

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	0	20,100	144,700	533,840	434,577												
RDT&E Articles Qty	0	0	0	0	0	5	2												
<p><u>A. Mission Description and Budget Item Justification</u></p> <p>The mission of Aegis BMDS is to deliver an enduring operationally effective and supportable Ballistic Missile Defense Capability in Aegis Cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by both providing and gaining synergy from other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral upgrades as part of BMDS block upgrades.</p> <p>The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System (BMDS). Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:</p> <ul style="list-style-type: none"> - In all regions by providing capability in locations within range of international waters. Aegis BMD may be deployed by Japan and possibly other countries in addition to the United States. - In all phases of ballistic missile flight: boost, midcourse, and terminal. - Against long- range ballistic missiles by providing surveillance and tracking support to the Block 04 Initial Defensive Operations. It provides engagement support against short and medium range ballistic missiles as part of Block 04, and will provide support against intermediate range ballistic missiles as part of BMDS Block 06 and BMDS Block 08. <p>Aegis BMD supports the BMDS effort to improve missile capability with the SM-3 Block 1 and Block 1A missiles. It supports the effort to improve sensors so that missiles are more effective through LRS&T support to the IDO, through development of the Aegis BMD signal processor to support Block 06/08, and through the ability to launch on Tactical Digital Information Link (TADIL). In collaboration with the MDA National Team (MDNT), Aegis BMD is contributing to the BMDS in the development of engagement sequence groups (ESGs). It supports an autonomous engagement against SRBMs and MRBMs without external cueing (SM-3 Uncued ESG), and using external DSP and TADIL J cueing (SM-3 Cued ESG).</p> <p>Aegis Ballistic Missile Defense (BMD) Block 2008 will evolve (through spiral capability driven development) from the Block 2006 Aegis Weapon System (AWS) with the focus of development on fully integrated radar discrimination:</p> <ul style="list-style-type: none"> - Integration of Block 06 Discrimination Capabilities (e.g. Synthetic Wideband Radar Upgrade, Signal Processing & Feature Extraction Algorithms, Improved CCM). - Improved BMDS Command and Control, Battle Management, and Communications (C2BMC). - Analyze and plan for potential undefined missile upgrades. - Risk Reduction for MDA multi-use interceptor integration. - Test Aegis BMD Signal Processor and demonstrate closed-loop synthetic wideband and narrowband discrimination. - Provides an option for an alternative DACS design with increase divert capability (Kinematic Capability), fully safety-compliant with full production optimization <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Funding in this Project is not programmed until FY06.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table>									FY 2003	FY 2004	FY 2005	Funding in this Project is not programmed until FY06.				RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Funding in this Project is not programmed until FY06.																			
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<p><u>D. Acquisition Strategy</u></p> <p>The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has implemented a missile defense acquisition strategy using a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. After considering all the technical and management aspects of the program and to meet the requirements presented by the ballistic missile threat, the Aegis BMD program has awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 missile and Aegis Weapon System, respectively.</p>		

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Flight Tests																																
FM 14																								Δ								
FM 15																												Δ				
FM 16																																Δ
FM 17																																Δ

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Pacific Blitz 08						4Q	
Development Milestones							
Radar & Signal Processing Risk Reduction					3Q-4Q	1Q-4Q	1Q
Aegis BMD 4.0 Engineering Assessment							1Q
Aegis BMD 4.0 Development			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Aegis BMD 4.0 PDR			3Q				
Aegis BMD 4.0 CDR				3Q			
Aegis BMD 4.0 CSEDS Testing						1Q	
Aegis BMD 4.0 Delivery							2Q
Integrated Flight Test							
FTG 08-3a						1Q-4Q	
FTG 08-3b						1Q-4Q	
FTG 10-1							1Q-4Q
FTG 10-2							1Q-4Q
FTG 10-3							1Q-4Q
Flight Tests							
FM 14						2Q	
FM 15						3Q	
FM 16							2Q
FM 17							3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0009 AEGIS Ballistic Missile Defense Block 2010	0	0	0	0	7,753	30,000	94,414												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: This Budget Project was previously captured in Project 3020 in FY 2003.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The mission of Aegis BMDS is to deliver an enduring operationally effective and supportable Ballistic Missile Defense Capability in Aegis Cruisers and destroyers, in defense of the U.S., our deployed forces, allies and friends; to increase the effectiveness of the greater Ballistic Missile Defense System (BMDS) by both providing and gaining synergy from other BMDS elements; and to incrementally increase this capability by delivering evolutionary spiral upgrades as part of BMDS block upgrades.</p> <p>The Aegis BMD program is the sea-based element of the Ballistic Missile Defense System (BMDS). Aegis BMD supports the BMDS mission of intercepting ballistic missiles in all regions, in all phases, and of all ranges, as follows:</p> <ul style="list-style-type: none"> - In all regions by providing capability in locations within range of international waters. Aegis BMD may be deployed by Japan and possibly other countries in addition to the United States. - In all phases of ballistic missile flight: boost, midcourse, and terminal. <p>Aegis Ballistic Missile Defense (BMD) Block 2010 will evolve (through spiral capability driven development) from the BMD Block 2008 Aegis Weapon System and its integration with the Navy developed Aegis Open Architecture System:</p> <ul style="list-style-type: none"> - Defeats a wide variety of ballistic missiles in the presence of complex counter countermeasures (Short Range Ballistic Missiles (SRBM) , Medium Range Ballistic Missiles (MRBM), and Intermediate Range Ballistic Missiles (IRBM). - Incorporate Advanced CCM Improvements - Provides Discrimination Algorithms, Adaptive Processing, C2BMC Upgrades for BMDS Integration. - Provides for possible integration of the Aegis BMD Weapon System and the Missile Defense Agency (MDA) Common Interceptor. <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Funding in this Project is not programmed until FY07.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table>									FY 2003	FY 2004	FY 2005	Funding in this Project is not programmed until FY07.				RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Funding in this Project is not programmed until FY07.																			
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment	
<u>D. Acquisition Strategy</u> <p>The Aegis BMD element will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has implemented a missile defense acquisition strategy using a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities. After considering all the technical and management aspects of the program and to meet the requirements presented by the ballistic missile threat, the Aegis BMD program has awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 missile and Aegis Weapon System, respectively.</p>		

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones							
Element Capability Spec					4Q		
Block 2010 PDR						3Q	
Block 2010 CDR							3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0402 Japanese Cooperative Program	0	53,382	72,457	24,806	0	0	0
RDT&E Articles Qty	0	0	1	1	0	0	0
<i>Note: This Budget Project was previously captured in Project 3020 in 2003.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
The U.S./Japan Cooperative Research (JCR) will continue per the U.S. Department of Defense (DoD)/Japan Defense Agency (JDA) Memorandum of Agreement signed in 1999 to conduct cooperative research in Ballistic Missile Defense. The focus of research is on four components of the SM-3 guided missile: sensor, advanced kinetic warhead, second stage propulsion, and lightweight nosecone. In FY 2005 and 2006, the JCR project plans to flight test the lightweight nosecone in Joint Control Test Vehicle-1 (JCTV-1) and Joint Flight Mission-1 (JFM-1).							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Japan Cooperative Research Project		53,382	72,457				
RDT&E Articles (Quantity)			1				
For completeness, these FY 2003 Accomplishments are provided below (Funded in Budget Project 3020):							
<ol style="list-style-type: none"> 1) Continued development and system engineering support for the four U.S./JCR components. 2) Initiated procurement of test articles and ship modifications for JCTV-1 and JFM-1 including JFM-1 target. 3) Conducted Proof-of-Principle (PoP) Missile Nosecone Critical Design Review (CDR) supporting integration of JDA developed nosecone on PoP flights JCTV-1 and JFM-1. 4) Continued ground testing in the U.S. of the Japan Quantum Well Infrared Photodetector (QWIP) seeker. 5) Continued System Engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components. 6) Completed JCR nosecone wind tunnel tests. 							
FY 2004 Planned Accomplishments:							
<ol style="list-style-type: none"> 1) Initiate test planning and preparation for the PoP flights JCTV-1 and JFM-1. 2) Continue development and system engineering support for the four U.S./JCR components. 3) Continue procurement of test articles and ship modifications for JCTV-1 and JFM-1 including JFM-1 target. 4) Conduct Preliminary Design Review (PDR) for Ship System and Vertical Launching System (VLS) modifications to support JCR PoP flights JCTV-1 and JFM-1. 5) Complete integration of the Japanese Quantum Well Infrared Photodetector (QWIP) and DoD Mercury Cadmium Telluride (MCT) seekers onto Widebody Airborne Sensor Platform (WASP). 6) Conduct Captive Carry Testing (CCT) with QWIP and MCT sensors on WASP. 7) Conduct ground testing to support PoP flight tests including Design Verification and Engineering Tests (DVT) for Shielding Effectiveness, Electrostatic Discharge, HERO, Push-through, and Separation tests. 8) Continue System Engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components. 							
FY 2005 Planned Accomplishments:							
<ol style="list-style-type: none"> 1) Continue development and system engineering support for the four U.S./JCR components. 2) Conduct Captive Carry Testing (CCT) with QWIP and MCT sensors on WASP. 							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603882C Ballistic Missile Defense Midcourse Defense Segment				

- 3) Complete procurement of test articles and ship modifications for JCTV-1 and JFM-1 including JFM-1 target.
- 4) Continue test planning and preparation for the PoP flights JCTV-1 and JFM-1.
- 5) Continue ground testing to support PoP flight tests.
- 6) Conduct JCTV-1 PoP flight test.
- 7) Initiate post-test analysis of PoP flight test JCTV-1.
- 8) Continue System Engineering support for JDA design and development of second stage propulsion, QWIP seeker, lightweight nosecone and SDACS valve and thruster components.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
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PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603882C Ballistic Missile Defense Midcourse Defense Segment				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

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

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Japan Cooperative Research Project										
JCR	SS/CPAF	Raytheon/ AZ	0	31,272	2Q	43,597	2Q	CONT.	74,869	TBD
JCR	SS/CPAF	Lockheed Martin/ NJ	0	7,200	1Q	8,955	1Q	CONT.	16,155	TBD
Subtotal Product Development			0	38,472		52,552		0	91024	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Japan Cooperative Research Project										
	SS/CPFF	NSWC/DD/ VA	0	3,909	1Q	4,897	1Q	CONT.	8,806	TBD
	SS/CPFF	NSWC/PHD/ CA	0	722	1Q	1,367	1Q	CONT.	2,089	TBD
	SS/CPFF	JHU/APL/ MD	0	3,354	2Q	4,591	2Q	CONT.	7,945	TBD
	Various	Various/ Various	0	805	1Q	1,477	1Q	CONT.	2,282	TBD
	SS/MIPR	NAWC/CL/ CA	0	210	1Q	260			470	
	SS/MIPR	ANTEON/ VA	0	1,953	1Q	2,136			4,089	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	SS/CPFF	PARADIGM/ VA	0	364	1Q	403			767	
		MDA/ VA	0	2,624	2Q	3,837			6,461	
	SS	NAVSEA/ DC	0	969	1Q	937			1,906	
Subtotal Support Costs			0	14,910		19,905		0	34815	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	53,382		72,457			125,839	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Development Milestones																																
Ship System PDR			▲																													
Nosecone CDR			▲																													
Ship System CDR						Δ																										
Japan Cooperative Research Project																																
JCTV-1												Δ																				
JFM-1															Δ																	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones							
Ship System PDR	3Q						
Nosecone CDR	3Q						
Ship System CDR		2Q					
Japan Cooperative Research Project							
JCTV-1			4Q				
JFM-1				2Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3050 Segment Common Engineering and Integration	99,358	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: The Risk Reduction efforts transitioned to the Program Element (PE) 0603890C Ballistic Missile Defense System (BMDS)Core beginning in FY 2004, while the EKV efforts transitioned to the BMDS Interceptor PE 0603886C. The Counter/Countermeasures (C/CM) efforts transitioned to PE 0603890C Ballistic Missile Defense System Core beginning in FY 2004.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>This project provides for two primary efforts of Risk Reduction and Counter/Countermeasures (C/CM) efforts for the midcourse segment. The risk reduction efforts provide engineering risk management activities for the midcourse ground and sea-based elements. The countermeasures mitigation activity addresses a few reentry vehicles with simple countermeasure capabilities and then expands to complex countermeasures mitigation with several reentry vehicles. In addition, the engineering management systems support activities support the risk reduction and C/CM activities.</p> <p>Risk Reduction:</p> <p>The risk reduction activities include a number of efforts for FY 2003 including the Complementary Exo-atmospheric Kill Vehicle (CEKV), Midcourse and AEGIS BMD risk reduction, and the BMDS Interceptors risk reduction.</p> <p>The CEKV-risk reduction efforts began in FY 2002 and consist of an effort to develop a kill vehicle (KV) utilizing the latest technology to provide risk mitigation. This effort studies the ability to develop a potential common EKV for Ground and Sea-based Midcourse Defense. The development is based on insertion of new technology and lessons learned from existing EKV development. The CEKV program is planned to include design, testing and project insertion, where appropriate, into the block development approach of BMDS. Based on the study results in FY 2002 and the assessment for the development of a common components, including the EKV, the Risk Reduction EKV efforts were transitioned to the Ballistic Missile Defense System (BMDS) Interceptor Program Element (PE) 0603886C beginning in FY 2004.</p> <p>A number of other ground and sea-based risk reduction efforts are conducted in this project. AEGIS BMD risk reduction efforts, beginning in FY 2003, consist of efforts in the areas of Standard Missile (SM)-3 Monolithic Divert Attitude Control System (DACS) Producibility, Integration and Ground Testing; Standard Missile (SM)-3 and Aegis Hardware-in-the-Loop (HWIL)/Computer-in-the-Loop (CIL)/End-to-End (ETE) Ground Tests Simulation, BMDS Integration, and Wargaming Representation; SM-3 Parts Obsolescence; SM-3 Hardware Procurement Acceleration; Aegis Weapon System (AWS)/Vertical Launch System (VLS)/SM-3 Interfaces; Midcourse C/CM Techniques; and the RCF-1 Exercise. The Risk Reduction efforts transitioned to the Program Element (PE) 0603890C Ballistic Missile Defense System Core beginning in FY 2004.</p> <p>The BMDS Interceptors Risk Reduction efforts integrate and test the Generation II kill vehicle (KV) in preparation for an FY 2004 hover test and integration into the Near-field Infrared Experiment (NFIRE) payload. Second generation KE Boost KVs are mature variants of existing MDA developed KV components; they will be the first KVs with the performance to reliably achieve boost phase intercept. The BMDS Interceptor Risk Reduction efforts transitioned to the BMDS Interceptor PE 0603886C beginning in FY 2004.</p> <p>Counter/Countermeasures (C/CM):</p> <p>The C/CM effort identifies, develops, and demonstrates solutions to improve the performance of missile defense projects against countermeasure suites. This requires a process to identify and prioritize solutions to credible countermeasures for integration into the program, and requires increased robustness in the test program to incorporate testing against a broader range of credible threats. Results of the testing program will result in the development of additional algorithms to mitigate credible threats. To minimize the programmatic impacts resulting from intelligence estimates, the program is transitioning from threat point-designs to a capability-based approach. Solutions with potential to improve the capabilities against countermeasures will be incorporated through Block upgrades into the Midcourse segment (both ground and sea) and will be provided to the overall Ballistic Missile Defense System (BMDS) through the Missile Defense Agency (MDA) Red-White-Blue team process.</p>							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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The MDA C/CM program operates two adversary teams, each with a different threat perspective, to generate countermeasures to BMDS capabilities: a Red Team that is restricted to using only information on the BMDS available from open sources, and a Black Team that has complete access to all technical data on the BMDS in order to identify potential system vulnerabilities and technical concerns. A White Team, comprised of senior technical experts, reviews the adversary teams' concepts and provides MDA with an independent assessment of their feasibility and risk to the BMDS. The program's Blue Team develops capability improvements, also reviewed by the White Team, to counter the impact of high-risk vulnerabilities. The program funds initiatives to develop the Blue Team counter-countermeasures and demonstrate their readiness for insertion into the BMDS. The program budget supports two cycles per year of countermeasure generation and development of counter-countermeasure responses.

The C/CM effort transitioned to Program Element (PE) 0603890C Ballistic Missile Defense System Core beginning in FY 2004.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Risk Reduction	72,972		
RDT&E Articles (Quantity)			

FY 2003 Accomplishments:

Complementary Exo-atmospheric Kill Vehicle (CEKV):

- Based on the completed study conducted in FY 2002 the CEKV efforts were consolidated with other interceptor components efforts and transitioned to the Ballistic Missile Defense System (BMDS) Interceptor Program Element (PE) 0603886C.

Midcourse Ground and Sea-Based Risk Reduction:

-The Midcourse Ground and Sea-Based risk reduction efforts included activities in the areas of Standard Missile (SM)-3 Monolithic Divert Attitude Control System (DACs) Producibility, Integration and Ground Testing; SM-3 and Aegis HWIL/CIL/End to End Ground Tests Simulation, BMDS Integration, and Wargaming Representation; SM-3 Parts Obsolescence; SM-3 Hardware Procurement Acceleration; AWS/VLS/SM-3 Interfaces; Aegis CCM Techniques; and the RCF-1 Exercise. Activities included:

- Initiated acquisition of accelerated STANDARD Missile-3 (SM-3) guided missile hardware
- Initiated obsolete material replacement development effort for SM-3 test equipment and missile parts
- Conducted Monolithic Solid Divert and Attitude Control System (SDACS) ground and qualification tests
- Continued element/multi-element testing and verification of Aegis Weapons System (AWS) computer programs
- Verified Shipboard system interfaces with End-to-End Distributed Development System (ETEDDS)
- Continued Aegis Weapon System (AWS)/SM-3 guided missile interface development & integration
- Continued Vertical Launching System (VLS)/SM-3 guided missile interface development & integration
- Conducted SM-3 Hardware-in-the-Loop (HIL)/Computer-in-the-Loop (CIL)/End-to-End (ETE) ground tests and simulated engagements
- Conducted Aegis BMD Counter-Countermeasures (CCM) technique characterization

BMDS Interceptors Risk Reduction:

- Integrated and tested the Generation II kill vehicle (KV) in preparation for a FY 2004 hover test and integration into the Near-field Infrared Experiment (NFIRE) payload. Second generation KE Boost KVs are mature variants of existing MDA developed KV components; they will be the first KVs with the performance to reliably achieve boost phase intercept.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2003	FY 2004	FY 2005
Counter/Countermeasures	26,386		
RDT&E Articles (Quantity)			

FY 2003 Accomplishments:

- Updated and maintained the open-source database on the BMDS and generated one set of countermeasures against the open source system architecture.
- Updated the technical description of the baseline BMDS and generated one set of countermeasures with threat risk assessment.
- Initiated operations; performed one cycle of BMDS assessment; select areas for analysis; and identified system weaknesses, technical concerns, and block transition issues.
- Organized Element participation in program, analyzed Red and Black Team countermeasures and proposed counter-countermeasure mitigation strategies.
- Reviewed adversary teams' countermeasures and Blue Team response; provided independent assessments of teams' products to MDA Director.
- Conducted Aegis BMD Counter-Countermeasures technique characterization.
- Conducted Aegis BMD Counter-Countermeasures track feature design and discrimination.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing

D. Acquisition Strategy

The Missile Defense Agency (MDA) will follow a capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

The Segment Common Engineering & Integration project includes risk reduction activities for Ground and Sea-based Midcourse Defense projects and counter/countermeasures that are capability-based, rather than threat-based. The MDA participates in a countermeasures program that focuses on identifying threat countermeasures that may not yet be evident, but are physically plausible and technically feasible. The program identifies and develops solutions to improve the capability of ballistic missile defense projects to defeat those countermeasures. Solutions that successfully demonstrate an improvement in the MDA project performance are integrated into the block development program.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Risk Reduction										
Midcourse Risk Reduction	MIPR	NSWC/DD/ VA	2,625						2,625	
Midcourse Risk Reduction	SS/CPAF	JHU/APL/ MD	7,437						7,437	
Midcourse Risk Reduction	SS/CPAF	LM/ NJ	10,655						10,655	
Midcourse Risk Reduction	SS/CPAF	Raytheon/ AZ	42,743						42,743	
Counter/Countermeasures										
Counter/Countermeasures	SS/CPAF	JHU/APL/ MD	1,000						1,000	
Counter/Countermeasures	SS/CPAF	LM/ NJ	3,000						3,000	
Counter/Countermeasures	SS/CPAF	Raytheon/ AZ	9,688						9,688	
Subtotal Product Development			77,148	0		0		0	77148	
Remarks										
The Risk Reduction efforts transitioned to the Program Element (PE) 0603890C Ballistic Missile Defense System (BMDS)Core beginning in FY 2004, while the EKV efforts transitioned to the BMDS Interceptor PE 0603886C. The Counter/Countermeasures (C/CM) efforts transitioned to PE 0603890C Ballistic Missile Defense System Core beginning in FY 2004.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Risk Reduction										
CEKV	Various		3,298						3,298	
Midcourse Risk Reduction	MIPR	NSWC/IH/ MD	700						700	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
BMDs Interceptors	MIPR	NAWC/CL/CA	400						400	
Midcourse Risk Reduction	MIPR	NAWC/PM/CA	150						150	
Midcourse Risk Reduction	SS/CPFF	JHU/APL/MD	1,050						1,050	
Midcourse Risk Reduction	C/CPAF	Raytheon/AZ	200						200	
Midcourse Risk Reduction	C/CPFF	SEG/VA	1,000						1,000	
Midcourse Risk Reduction	MIPR	NSWC/DD/VA	914						914	
Midcourse Risk Reduction	SS/FFRDC	MIT/LL/MA	850						850	
Counter/Countermeasures										
Counter/Countermeasures	SS/CPAF	Boeing/AL	7,595						7,595	
Counter/Countermeasures	SS/FFRDC	MIT Lincoln Labs/MA	4,307						4,307	
Counter/Countermeasures	Various	Various	5,793						5,793	
Counter/Countermeasures	MIPR	NSWC/DD/VA	914						914	
Counter/Countermeasures	MIPR	NSWC/IH/MD	700						700	
Counter/Countermeasures	C/CPAF	LM/NJ	800						800	
Counter/Countermeasures	C/CPFF	BAE/VA	500						500	
Counter/Countermeasures	SS/CPFF	JHU/APL/MD	1,025						1,025	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Counter/Countermeasures	C/CPAF	Raytheon/ AZ	200						200	
Counter/Countermeasures	C/CPFF	SEG/ VA	1,000						1,000	
Subtotal Support Costs			31,396	0		0		0	31396	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Risk Reduction										
Risk Reduction	MIPR	CINCPACFLT/ HI	500						500	
Risk Reduction	MIPR	NSWC/ Corona, CA	155						155	
Risk Reduction	MIPR	NSW/DD/ VA	568						568	
Risk Reduction	MIPR	NSWC/PHD/ CA	795						795	
Risk Reduction	SS/CPFF	JHU/APL/ MD	200						200	
Risk Reduction		Various	282						282	
Subtotal Test and Evaluation			2,500	0		0		0	2500	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			111,044	0		0			111,044	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing Milestones																												
AEGIS BMD Monolithic DACS MDU 1	▲																											
AEGIS BMD Monolithic DACS MDU 2		▲																										
AEGIS BMD Monolithic DACS Flight Qualification			▲																									
Aegis BMD Monolithic DACS Flight Qualification			▲																									
Manufacturing Processes and Advanced Materials																												
Blue Team CCM plans against Red and Black Team CM			▲																									
Red Team Countermeasure Conceptual Designs	▲																											
Blue Team CCM plans against Red and Black Team CM				▲																								
Red Team Countermeasure Conceptual Designs				▲																								
Black Team Countermeasure Conceptual Designs	▲		▲																									
Development Milestones																												
Aegis BMD VLS PDR		▲																										
Aegis BMD VLS CDR				▲																								

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
AEGIS BMD Monolithic DACS MDU 1	1Q						
AEGIS BMD Monolithic DACS MDU 2	2Q						
AEGIS BMD Monolithic DACS Flight Qualification	3Q						
Aegis BMD Monolithic DACS Flight Qualification	3Q						
Manufacturing Processes and Advanced Materials							
Blue Team CCM plans against Red and Black Team CM	3Q						
Red Team Countermeasure Conceptual Designs	1Q						
Blue Team CCM plans against Red and Black Team CM	4Q						
Red Team Countermeasure Conceptual Designs	4Q						
Black Team Countermeasure Conceptual Designs	1Q,3Q						
Development Milestones							
Aegis BMD VLS PDR	2Q						
Aegis BMD VLS CDR	4Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3090 Program-Wide Support	79,449	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 3090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA) Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	79,449	0	0
RDT&E Articles (Quantity)			

Personnel:
Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:
Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004																
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment																		
COST (\$ in Thousands)				FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0602 Program-Wide Support				0	76,302	47,084	39,447	45,064	30,720	35,670												
RDT&E Articles Qty				0	0	0	0	0	0	0												
<p><i>Note: Fiscal Year 2003 is reflected in Project 3090 and Fiscal Years 2004 and out are in Project 0602.</i></p> <p>A. Mission Description and Budget Item Justification This project covers personnel and related support costs, statutory and fiscal requirements.</p> <p>Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA) Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.</p> <p>Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.</p> <p>Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.</p> <p>Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.</p> <p>B. Accomplishments/Planned Program</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">FY 2003</td> <td style="text-align: center;">FY 2004</td> <td style="text-align: center;">FY 2005</td> </tr> <tr> <td>Civilian Salaries and Support</td> <td style="text-align: center;">0</td> <td style="text-align: center;">76,302</td> <td style="text-align: center;">47,084</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.</p>												FY 2003	FY 2004	FY 2005	Civilian Salaries and Support	0	76,302	47,084	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																			
Civilian Salaries and Support	0	76,302	47,084																			
RDT&E Articles (Quantity)																						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment
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Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
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PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
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PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603882C Ballistic Missile Defense Midcourse Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification						Date February 2004	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	705,643	617,270	492,614	555,667	611,736	473,602	455,961
4030 Air-Based Boost	550,765	0	0	0	0	0	0
0710 Airborne Laser (ABL) Block 2004	0	603,041	474,335	0	0	0	0
0810 Airborne Laser (ABL) Block 2006	0	0	0	532,794	586,769	0	0
0910 Airborne Laser (ABL) Block 2008	0	0	0	0	0	445,103	425,274
4010 Kinetic Energy Boost	99,547	0	0	0	0	0	0
4043 Space-Based Laser	16,229	0	0	0	0	0	0
4090 Program-Wide Support	39,102	0	0	0	0	0	0
0602 Program-Wide Support	0	14,229	18,279	22,873	24,967	28,499	30,687

Note: Several projects funded in earlier years are no longer funded within this Program Element (PE). Beginning in FY 2003, funding for the Space Based Laser program (Project 4043) transitioned to support the Missile Defense Agency's (MDA's) Laser Technology Program. Reference Program Element 0603875C Advanced System (AS) for project 4043 FY 2003 accomplishments. For FY 2004-2009, funding for the Kinetic Energy Boost transitioned into the Ballistic Missile Defense System (BMDS) Interceptor Program Projects 0913 and 0013. Reference Program Element 0603886C for project 4010 FY 2003 accomplishments. ABL activities are being consolidated into blocks associated with the two-year timeframe when they occur, better reflecting the knowledge advancement being provided annually. Specifically, all efforts in FY 2004 - FY 2005 will occur in ABL Block 04 while FY 2006 - FY 2007 activities and FY 2008 - FY 2009 work will be accomplished in ABL Blocks 06 and 08, respectively.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The Missile Defense Agency develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters as quickly as possible while allowing for rapid insertion of emerging technology in the most affordable manner. These capability blocks will subsequently build on and be integrated with the predecessor blocks. Block capabilities are built by using complete elements and their individual components to integrate a single BMDS and provide layered defense against ballistic missiles during all flight phases, Boost, Midcourse, and Terminal, using multiple basing modes and phenomenology.

As part of the total BMDS, the Boost Defense Segment (BDS) Program Element (PE) funds the Boost-related element portions of Blocks 2004, 2006, and 2008 and other Boost-related mission area investment activities. The BMDS element in this Boost Defense Segment, Airborne Laser (ABL), provides a capability to destroy ballistic missiles in the boost phase of their trajectory, the segment from post launch through propellant burnout after which the missile enters the midcourse phase of ballistic flight. Destroying ballistic missiles in the boost phase is important to Ballistic Missile Defense (BMD) as threats can be negated long before they have an opportunity to deploy reentry vehicles, submunitions, or countermeasures, and debris from successful engagements can be precluded from affecting protected areas and assets. The flow-down of BMD System capability specifications resulting from Missile Defense National Team efforts in C2BMC and Systems Engineering & Integration will guide the integration of the Boost Defense Elements into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

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MDA Exhibit R-2 RDT&E Budget Item Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603883C Ballistic Missile Defense Boost Defense Segment	
<p>ABL will design, build and test an air-based laser system to acquire, track, and kill ballistic missiles in their boost phase. The boost phase typically includes the first 60-300 seconds of flight and concludes at altitudes between 20-450 kilometers. ABL integrates three major subsystems (Laser; Beam Control; and Battle Management; Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400 aircraft. ABL also includes ABL-specific ground support equipment.</p> <p>The extended development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through key knowledge points. These knowledge points are:</p> <ol style="list-style-type: none"> 1) Completion of ground testing of a flight worthy, weapon class laser segment suitable for use in an ABL 2) Completion of ground testing of a flight worthy beam control fire control segment 3) Completion of flight testing of the BCFC segment 4) Completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments 5) Successful demonstration of the ABL lethality against a boosting missile 6) flight testing of an expanded ABL weapon system performance envelope <p>Early activities in pursuing knowledge points include the flight testing of the Beam Control Fire Control (BCFC) system. The near term knowledge points enabled by this funding request represent tremendous steps forward and reason for increased confidence. This will demonstrate, in a realistic environment, important pointing, control, and tracking functions required to engage a ballistic missile during the boost phase. The ground test of the laser segment will demonstrate full scale weapon level performance in a flight worthy configuration for the first time.</p> <p>While stepping through these key knowledge points, the program will also provide for continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. The Block 06 effort provides for enhancement of BMDS integration and ground support. Finally, it will produce trade studies and maintain a requirements baseline for defining an optimal 2nd ABL aircraft in order to guide infrastructure and technology improvements efforts.</p> <p>A significant change to the ABL program in FY 2005 is the deferral of efforts toward development of the Iron Bird, a ground based test facility, and the purchase of the 2nd ABL aircraft. These activities will be re-initiated at a later date.</p> <p>Program Operations under this project cover personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on a limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.</p>		

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	718,036	626,264	653,612
Current President's Budget (FY 2005 PB)	705,643	617,270	492,614
Total Adjustments	-12,393	-8,994	-160,998
Congressional Specific Program Adjustments	0	-2,000	0
Congressional Undistributed Adjustments	0	-6,994	0
Reprogrammings	-11,881	0	-160,998
SBIR/STTR Transfer	-512	0	0

The FY 2003 Boost Program Element budget request in the FY 2004 budget compared to the FY 2005 budget showed a reduction of \$12,393,000. This resulted from a transfer of \$512,000 to the Small Business Innovative Research Program; and a reprogramming of \$11,881,000 based on Agency priorities.

The FY 2005 Boost Program Element budget request in the FY 2004 budget compared to the FY 2005 budget showed a reduction of \$16,998,000. This reduction reflects the Missile Defense Agency's realignment of resources to support higher Agency priorities.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4030 Air-Based Boost	550,765	0	0	0	0	0	0
RDT&E Articles Qty	14	0	0	0	0	0	0
<i>Note: Project 4030 has been superceded by ABL Block 04, ABL Block 06, and ABL Block 08 starting in FY 2004.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
The Airborne Laser (ABL) is an element of the Ballistic Missile Defense System (BMDS). ABL will design, build and test an air-based laser system to acquire, track, and kill ballistic missiles in their boost phase. ABL integrates three major subsystems (Laser, Beam Control, and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400 aircraft. ABL also includes ABL-specific ground support equipment.							
Starting in FY 2004, the Missile Defense Agency (MDA) has adopted a new work breakdown structure (WBS) for all Ballistic Missile Defense System (BMDS) elements to provide greater insight into funding requirements. Thus, funding requirements for FY 2004-2009 are now broken into capability blocks. In accordance with this new WBS, Air-based boost has been broken into three Airborne Laser (ABL) capability blocks (ABL Block 2004 -- Project 0710, ABL Block 2006 -- Project 0810, and ABL Block 2008 -- Project 0910).							
RDT&E Articles: The test articles associated with Block 2004 will decrease risk and improve the probability of success for flight test objectives. The following targets were delivered in the fiscal year specified:							
FY 2003: 14 Lance Missiles.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Air-Based Boost	406,738						
RDT&E Articles (Quantity)	14						
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.							
	FY 2003	FY 2004	FY 2005				
Air-Based Boost - Government Activities	24,752						
RDT&E Articles (Quantity)							
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603883C Ballistic Missile Defense Boost Defense Segment		
	FY 2003	FY 2004	FY 2005
Air-Based Boost - Test and Evaluation	21,429		
RDT&E Articles (Quantity)			
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.			
	FY 2003	FY 2004	FY 2005
Weapon System Development	39,583		
RDT&E Articles (Quantity)			
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.			
	FY 2003	FY 2004	FY 2005
Infrastructure Improvement	4,395		
RDT&E Articles (Quantity)			
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.			
	FY 2003	FY 2004	FY 2005
Technology Insertion	13,868		
RDT&E Articles (Quantity)			
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.			
	FY 2003	FY 2004	FY 2005
Iron Bird	40,000		
RDT&E Articles (Quantity)			
Air-Based Boost FY 2003 accomplishments can be found in the ABL Block 04 R-2A.			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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<p>MDA Exhibit R-2A RDT&E Project Justification</p>		<p>Date February 2004</p>
<p>APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)</p>	<p>R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment</p>	
<p><u>D. Acquisition Strategy</u></p> <p>The Airborne Laser entered into a program definition and risk reduction (PDRR) contract in November 1996. The program is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. The development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through the following key knowledge points:</p> <ol style="list-style-type: none">1) completion of ground testing of a flight worthy, six module, weapon class laser segment suitable for use in an ABL2) completion of ground testing of a flight worthy beam control fire control segment3) completion of flight testing of the Beam Control / Fire Control (BCFC) segment4) completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments5) success demonstration of the ABL lethality against a boosting ballistic missile6) flight testing of an expanded ABL weapon system performance envelope <p>Additional technology, infrastructure and system definition activities focus on reducing risk and uncertainty in achieving the lethal demonstration and in the cost and performance of future blocks.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Air-Based Boost										
ABL Block 2004 Contract	C/CPAF	Boeing Defense and Space Group/ Seattle, WA	795,378					CONT.	795,378	TBD
Weapon System Development										
	SS/CPAF	Boeing Defense and Space Group/ Seattle, WA	39,583					CONT.	39,583	TBD
Infrastructure Improvement										
	SS/Various	Various	4,997					CONT.	4,997	TBD
Technology Insertion										
Contract	SS/Various	Various	19,293					CONT.	19,293	TBD
Iron Bird										
Contract	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA	40,000					CONT.	40,000	TBD
Subtotal Product Development			899,251	0		0		0	899251	
Remarks Air-Based Boost is being superceded by ABL Block capability development efforts. See ABL Block 04 for FY 2004 and FY 2005 activities and funding requirements. Prior years are MDA totals.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Air-Based Boost - Government Activities										
Technical Support Costs	Various	Various	30,804					CONT.	30,804	TBD
Government and Other Support	Various	Various	17,292					CONT.	17,292	TBD
Subtotal Support Costs			48,096	0		0		0	48096	
Remarks Air-Based Boost is being superceded by ABL Block capability development efforts. See ABL Block 04 for FY 2004 and FY 2005 activities and funding requirements. Prior years are MDA totals.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Air-Based Boost - Test and Evaluation										
Integrated Test Force	MIPR	AFFTC/ Edwards AFB	19,200					CONT.	19,200	TBD
LFT&E-Lethality Baseline Tests	Various	Various	11,946					CONT.	11,946	TBD
Taget - Test Instrumentation	MIPR	Various	25,736					CONT.	25,736	TBD
Subtotal Test and Evaluation			56,882	0		0		0	56882	
Remarks Air-Based Boost is being superceded by ABL Block capability development efforts. See ABL Block 04 for FY 2004 and FY 2005 activities and funding requirements. Prior years are MDA totals.										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			1,004,229	0		0			1,004,229	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones							
See ABL Block 04 for FY 2003 accomplishments	1Q-4Q						
Testing Milestones							
See ABL Block 04 for FY 2003 accomplishments	1Q-4Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0710 Airborne Laser (ABL) Block 2004	0	603,041	474,335	0	0	0	0
RDT&E Articles Qty	0	3	2	0	0	0	0
<p><i>Note: Previous ABL Block 06 and ABL Block 08 efforts and funding requirements for FY 2004 and FY 2005 are being consolidated within ABL Block 04 due to a restructuring that addresses the extended development time of the 1st ABL weapon system testbed by reducing concurrency and focusing progress towards successful demonstration through incremental achievement of key milestones with appropriate risk mitigation.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The ABL Block 2004 is the first increment in the spiral development of an air-based, boost phase intercept capability using direct energy. This first ABL weapon system test bed under development in Block 2004 represents a unique, dedicated, highly mobile weapon element for the overall BMDS. In addition to a boost defense weapon, the ABL adds a sensor element, expanding the overall Engagement Sequence Groups (ESG) available.</p> <p>The ABL Block 2004 effort capitalizes on the technical progress achieved to date in integration and test of the 1st ABL weapon system testbed. The primary focus is accomplishing key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. To that end, efforts necessary to reducing the risk and uncertainties associated with follow-on steps to shoot down also continue. The Block 04 program additionally provides continued ABL specific technology maturation, integration and testing for future blocks and provides continued infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. Studies and a System Requirements Review to define the enhanced 2nd ABL aircraft will be performed to guide infrastructure and technology improvement efforts, as well as the evaluation of the 1st ABL aircraft. These activities further reduce risk and uncertainties in achieving shoot down by refining the definition of the current aircraft baseline, applying lessons learned from the on-going testing, implementing prudent system engineering practices, improving critical component reliability, and improving spares provisioning. The ABL initial development contract was awarded to the Boeing/TRW (now Northrop-Grumman)/Lockheed-Martin team in November 1996, to design, fabricate, integrate, test a Boeing 747 aircraft with a laser device, as well as Beam Control and Battle Management Systems. The extended development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through the following key knowledge points:</p> <ol style="list-style-type: none"> 1) completion of ground testing of a flight worthy, weapon class laser segment suitable for use in an ABL 2) completion of ground testing of a flight worthy beam control fire control segment 3) completion of flight testing of the Beam Control / Fire Control (BCFC) segment 4) completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments 5) success demonstration of the ABL lethality against a boosting ballistic missile 6) flight testing of an expanded ABL weapon system performance envelope <p>A significant change to the ABL program in FY 2005 is the deferral of efforts toward development of the Iron Bird, a ground based test facility, and the purchase of the second ABL aircraft. These activities will be reinitiated at a later date.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
ABL Block 2004		442,874	341,935
RDT&E Articles (Quantity)			
<p>FY 2004/2005 Planned Program: Continue Block 2004 program for developing the 1st ABL weapon system testbed. This includes ground integration and testing of a flight worthy weapons class laser. This also includes efforts to integrate and test the Beam Control Fire Control (BC/FC) segment on the aircraft.</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030):</p> <ul style="list-style-type: none"> - Completed airworthiness and air-refueling flight testing of the 1st ABL aircraft - Delivered 1st ABL aircraft to Edwards AFB and began preparation of airframe for integration of beam control/fire control and laser segments - Completed initial flight testing of the BMC4I segment. - Successfully tracked ICBM-class missile through entire boost phase through Integrated Flight Test event 10 (IFT-10) - Completed initial Link-16 testing for first set of messages - Completed all hardware deliveries to Edwards AFB for Laser System Integration Lab (SIL) - Completed installation of all six laser modules and 95% of the support hardware into the Laser SIL - Completed 97% of the integration and 41% testing of the beam control /fire control segment - Completed qualification of the optical coating process and chamber for coating the large ABL optics - Completed facilitization for chemical mixing facilities at Edwards AFB <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Complete ground integration and testing of the beam control/fire control segment - Complete integration of the six laser modules in the System Integration Laboratory (SIL) - Achieve First Light in the System Integration Lab (SIL) - Begin integration of the beam control segment into the 1st ABL weapon system aircraft - Support MDNT planning, BMDS C2BMC development, and BMDS sensor algorithm development <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Ground test of the BCFC segment in the 1st ABL aircraft - Complete Link-16 implementation, providing integration into the BMDS - First flight of the ABL weapon system with Beam Control System - Successful tracking and surrogate high energy laser engagement of an instrumented missile alternative - Complete ground test of Active Ranging System (ARS) - No earlier than (NET) FY 2005, integrate the laser segment into the 1st ABL aircraft - NET FY 2005, conduct flight test operations with the laser segment - NET FY 2005, conduct the lethal demonstration 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
	FY 2003	FY 2004	FY 2005
Government Activities		104,836	97,200
RDT&E Articles (Quantity)		3	2
<p>RDT&E Articles: The test articles associated with Block 2004 are targets for testing the 1st ABL weapon system testbed for evaluating and testing the capability envelope and providing the target for the demonstration of system lethality. The following targets will be prepared for generic MDA configuration and put in hold status until needed for final test configuration.</p> <p>FY 2004: 3 Foreign Military Assets.</p> <p>FY 2005: 2 Foreign Military Assets.</p> <p>FY 2004/2005 Planned Program: Continue purchase of test instruments, conduct test activities at Edwards AFB, perform lethality assessments on ABL target sets, perform modeling and simulation activities, support development of BMDS specifications and plans, and acquire advisory and assistance services. Continue government operations and support for labor, training, travel, equipment, and testing.</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030):</p> <ul style="list-style-type: none"> - Completed flight test of the target board on the Proteus aircraft - Initiated Low Power Missile Alternative Range Target Instrument flight tests - Built and delivered 14 Lance missiles - Completed preparation of 3 Terrier Lynx missiles - Delivered atmospheric decision aid to support ABL testing - Participated in two BMDS-wide war game exercises - Created test concepts for integrated BMDS testing in FY05 <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Complete launch, recovery, and refurbishment testing of an instrumented missile alternative - Complete optical fault system manager tool - Continue development and application of modeling and simulation tools to support ABL testing and BMDS integration - Continue lethality analysis of conceptual and threat missiles - Support BMDS engineering, test planning, and test execution - Support ground test activities at Edwards AFB - Conduct oversight of auxiliary research efforts <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Complete AF Link-16 testing - Complete preparations for system-level capability specification verification - Support flight test operations out of Edwards AFB - Provide atmospheric decision aid support to ABL flight testing - Provide diagnostics and targets to support ABL flight testing 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
	FY 2003	FY 2004	FY 2005
Weapon System Development		24,928	10,100
RDT&E Articles (Quantity)			
<p>FY 2004/2005 Planned Program: Capture and maintain baseline for 1st ABL weapon system to support definition of an optimized 2nd ABL weapon system testbed through trade studies and data collection and analysis efforts to guide incorporation of lessons learned from SIL and BCFC test and integrations activities (Note: Development of 2nd ABL weapon system testbed has been postponed to include purchase of "green" aircraft)</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030): - Awarded contract for 2nd ABL weapon system testbed definition and engineering System Requirements Review</p> <p>FY 2004 Planned Accomplishments: - Continue trade studies to determine system performance capabilities - Continue effort toward completion of the System Requirements Review for the 2nd ABL weapon system testbed - Support of National Team architecture activities</p> <p>FY 2005 Planned Accomplishments: - Conduct System Requirements Review - Continue Trade Studies and incorporate lessons learned from SIL and BCFC test and integration activities</p>			
	FY 2003	FY 2004	FY 2005
Infrastructure Improvement		18,405	15,100
RDT&E Articles (Quantity)			
<p>FY 2004/2005 Planned Program: Conduct investments to enhance the ABL specific industrial base with the focus on large optics, optical coatings and targeted manufacturing shortfalls for 2nd ABL weapon system testbed</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030): - Awarded contract for large optics fabrication and optical coating improvements and sustainment</p> <p>FY 2004 Planned Accomplishments - Continue large optics fabrication and optical coating improvements and sustainment efforts - Begin program to improve Electron Bombarded Charge Couple Device (EBCCD) camera manufacturing yields and processes - Initiate other efforts to improve manufacturing shortfalls for 2nd ABL aircraft hardware - Support National Team National Production capability analysis</p> <p>FY 2005 Planned Accomplishments: - Implement improvements in process and process controls for coating large and small optics - Improve hardware repeatability</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
<ul style="list-style-type: none"> - Continue optical coating technique improvement. Provide coatings for ABL test program spares - Continue efforts to improve the ABL industrial base's capability to sustain testing of first ABL weapon system test bed and meet performance needs of future ABL weapon systems. - Continue program to improve EBCCD camera manufacturing yields and processes 			
	FY 2003	FY 2004	FY 2005
Technology Insertion		11,998	10,000
RDT&E Articles (Quantity)			
<p>FY 2004/2005 Planned Program: Develop promising technologies for incorporation in 2nd ABL weapon system testbed or future ABL blocks. Efforts will focus on technologies that will improve ABL lethality, reliability, and maintainability to improve ABL's contribution to the BMDS</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030): <ul style="list-style-type: none"> - Initiated efforts to reduce optical jitter, improve illuminator performance, investigate laser light-weighting and composites - Initiate investigation of deuterated reactants and lightweight structure materials </p> <p>FY04 Planned Accomplishments <ul style="list-style-type: none"> - Continue efforts to reduce optical jitter, improved illuminator performance, and lightweight structural materials - Initiate investigation of laser advanced techniques - Initiate efforts to investigate lower altitude pressure recovery system, magazine management, and other promising technologies - Support to Missile Defense Agency-wide technology needs planning </p> <p>FY05 Planned Accomplishments <ul style="list-style-type: none"> - Continue efforts to reduce optical jitter, improved illuminator performance, and lightweight structural materials - Continue development of laser advanced techniques and promising technologies </p>			
	FY 2003	FY 2004	FY 2005
Iron Bird			
RDT&E Articles (Quantity)			
<p>FY 2004/2005 Planned Program: No work will be done on the Iron Bird (IB) within the FY04 - FY05 timeframe. This part of the ABL program has been postponed to reduce concurrency and fit within fiscal constraints.</p> <p>FY 2003 Accomplishments (FY 2003 accomplishments are shown here but funding is from project 4030): <ul style="list-style-type: none"> - Concept definition and contract proposal preparation </p>			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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D. Acquisition Strategy

The Airborne Laser entered into a program definition and risk reduction (PDRR) contract in November 1996 and since then there has been steady and significant progress. However, all key efforts under the original ABL PDRR contract are now to conclude in 3rd quarter FY 2004 with further work transitioning to incremental delivery order contracts. The program remains structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. The purpose of the change in contractual vehicles is to enable better management in the high-risk environment for the state of the art ABL program and, thereby, reduce uncertainties and improve planning. The change allows remaining efforts to be grouped and phased to emphasize the focus on incremental achievement of technical milestones and increasing confidence in the technical viability of the airborne laser.

The extended development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through the following key knowledge points:

- 1) completion of ground testing of a flight worthy, six module, weapon class laser segment suitable for use in an ABL
- 2) completion of ground testing of a flight worthy beam control fire control segment
- 3) completion of flight testing of the Beam Control / Fire Control (BCFC) segment
- 4) completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- 5) success demonstration of the ABL lethality against a boosting ballistic missile
- 6) flight testing of an expanded ABL weapon system performance envelope

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

The ABL Block 04 effort capitalizes on the technical progress achieved to date in integration and test of the 1st ABL weapon system testbed. The primary focus is accomplishing key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. To that end, efforts necessary to reducing the risk and uncertainties associated with follow-on steps to shoot down also continue. The Block 04 program additionally provides continued ABL specific technology maturation, integration and testing for future blocks and provides continued infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. Studies and a System Requirements Review to define the enhanced 2nd ABL aircraft will be performed to guide infrastructure and technology improvement efforts, as well as the evaluation of the 1st ABL aircraft. These activities further reduce risk and uncertainties in achieving shoot down by refining the definition of the current aircraft baseline, applying lessons learned from the on-going testing, implementing prudent system engineering practices, improving critical component reliability, and improving sparing.

The ABL Block 06 effort will continue program efforts to ground and flight test the 1st ABL weapon system testbed. Test objectives will be to expand the envelope of system performance by systematically stepping through knowledge points. It will provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. The Block 06 effort provides for enhancement of BMDS integration and ground support. Finally, it will continue studies on, and maintain the requirements baseline for, an optimal 2nd ABL aircraft in order to further guide other efforts and reduce risk and uncertainty.

The ABL Block 08 effort furthers ground and flight testing of the 1st ABL weapon system to include expanding into evaluations against a broader spectrum of threats and as an integrated part of the overall BMDS. The Block 08 program continues the ABL specific technology and infrastructure improvement efforts, as well as the trades studies and requirements baseline efforts for defining the 2nd ABL aircraft.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ABL Block 2004										
	C/CPAF	Boeing Defense & Space Group/ Seattle, WA		442,874	1/4Q	341,935	1/4Q	CONT.	784,809	TBD
Weapon System Development										
	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA		24,928	1/4Q	10,100	1/4Q	CONT.	35,028	TBD
Infrastructure Improvement										
Contract	SS/Various	Various/ Various		18,405	1/4Q	15,100	1/4Q	CONT.	33,505	TBD
Technology Insertion										
Contract	SS/Various	Various/ Various		11,998	1/4Q	10,000	1/4Q	CONT.	21,998	TBD
Iron Bird										
Contract	SS/CPAF	Boeing Defense & Space Group/ Seattle, WA								
Subtotal Product Development			0	498,205		377,135		0	875340	
Remarks Previous ABL Block 06 and ABL Block 08 efforts and funding requirements for FY 2004 and FY 2005 are being consolidated within ABL Block 04 due to a restructuring that addresses the extended development time of the 1st ABL weapon system testbed by reducing concurrency and focusing progress towards successful demonstration through incremental achievement of key milestones with appropriate risk mitigation. Prior year contract activity is identified and funded in project 4030.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government Activities										
Technical Support Costs	Various	Various/ Various		24,039	1/4Q	21,172	1/4Q	CONT.	45,211	TBD
Government and Other Support	Various	Various/ Various		22,683	1/4Q	14,300	1/4Q	CONT.	36,983	TBD
Subtotal Support Costs			0	46,722		35,472		0	82194	

Remarks
 Previous ABL Block 06 and ABL Block 08 efforts and funding requirements for FY 2004 and FY 2005 are being consolidated within ABL Block 04 due to a restructuring that addresses the extended development time of the 1st ABL weapon system testbed by reducing concurrency and focusing progress towards successful demonstration through incremental achievement of key milestones with appropriate risk mitigation. Prior year contract activity is identified and funded in project 4030.

III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government Activities										
Integrated Test Force	MIPR	AFFTC/ Edwards AFB		20,970	1/4Q	32,400	1/4Q	CONT.	53,370	TBD
LFT&E-Lethality Baseline Tests	Various	Various/ Various		13,630	1/4Q	9,050	1/4Q	CONT.	22,680	TBD
Target - Test Instrumentation	MIPR	Various/ Various		23,514	1/4Q	20,278	1/4Q	CONT.	43,792	TBD
Subtotal Test and Evaluation			0	58,114		61,728		0	119842	

Remarks
 Previous ABL Block 06 and ABL Block 08 efforts and funding requirements for FY 2004 and FY 2005 are being consolidated within ABL Block 04 due to a restructuring that addresses the extended development time of the 1st ABL weapon system testbed by reducing concurrency and focusing progress towards successful demonstration through incremental achievement of key milestones with appropriate risk mitigation. Prior year contract activity is identified and funded in project 4030.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	603,041		474,335			1,077,376	
Remarks Previous ABL Block 06 and ABL Block 08 efforts and funding requirements for FY 2004 and FY 2005 are being consolidated within ABL Block 04 due to a restructuring that addresses the extended development time of the 1st ABL weapon system testbed by reducing concurrency and focusing progress towards successful demonstration through incremental achievement of key milestones with appropriate risk mitigation. Prior year contract activity is identified and funded in project 4030.										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Acquisition Milestones																												
Initiated effort to improve illumin. performance	▲																											
Began effort to reduce laser and structural weight	▲																											
Initiated investigation of deuterated reactants	▲																											
Initiated effort to reduce optical jitter	▲																											
Delivered atmospheric model for ABL testing				▲																								
Initiate (ID/IQ) Contract Delivery Order 1						△																						
Conclude prime activities on PDRR contract							△																					
Awarded contract for second ABL A/C def'n and SRR	▲																											
Testing Milestones																												
Flight test of target board on Proteus aircraft	▲																											
Began low power missile target flight test			▲																									
Begin beam control/fire control int. and test									△																			
First Light									△																			
Complete Ground Test of modified ARS												△																
Complete Testing of Laser Modules in SIL														△														

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones							
Initiated effort to improve illumin. performance	1Q						
Began effort to reduce laser and structural weight	1Q						
Initiated investigation of deuterated reactants	1Q						
Initiated effort to reduce optical jitter	1Q						
Delivered atmospheric model for ABL testing	4Q						
Initiate (ID/IQ) Contract Delivery Order 1		2Q					
Initiate (ID/IQ) Contract Delivery Order 2		2Q					
Initiate (ID/IQ) Contract Delivery Order 3		2Q					
Conclude prime activities on PDRR contract		3Q					
Active Ranging System (ARS) installed in A/C			3Q				
Awarded contract for second ABL A/C def'n and SRR	1Q						
Testing Milestones							
Flight test of target board on Proteus aircraft	1Q						
Began low power missile target flight test	3Q						
Begin beam control/fire control int. and test		4Q					
First Light		4Q					
Complete Ground Test of modified ARS			3Q				
Complete Testing of Laser Modules in SIL			4Q				
First flight with BCFC			4Q				
Low Power track test of boosting missile			4Q				
Complete Link-16 testing			4Q				
BCFC Low Power Acquisition Tracking & Pointing			4Q				
1st flight modified Active Ranging System (ARS)			4Q				

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		
0810 Airborne Laser (ABL) Block 2006	0	0	0	532,794	586,769	0	0		
RDT&E Articles Qty	0	0	0	0	0	0	0		
<u>A. Mission Description and Budget Item Justification</u> The ABL Block 06 effort will continue program efforts to ground and flight test the 1st ABL weapon system testbed. Test objectives will be to expand the envelope of system performance by systematically stepping through knowledge points. It will provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. The Block 06 effort provides for enhancement of BMDS integration and ground support. Finally, it will continue studies on, and maintain the requirements baseline for, an optimal 2nd ABL aircraft in order to further guide other efforts and reduce risk and uncertainty.									
<u>B. Accomplishments/Planned Program</u>									
	FY 2003			FY 2004			FY 2005		
Funding in this Project is not programmed until FY06.									
RDT&E Articles (Quantity)									
<u>C. Other Program Funding Summary</u>									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Airborne Laser entered into a program definition and risk reduction (PDRR) contract in November 1996 and since then there has been steady and significant progress. However, all key efforts under the original ABL PDRR contract are now to conclude in 3rd quarter FY 2004 with further work transitioning to incremental delivery order contracts. The program remains structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. The purpose of the change in contractual vehicles is to enable better management in the high-risk environment for the state of the art ABL program and, thereby, reduce uncertainties and improve planning. The change allows remaining efforts to be grouped and phased to emphasize the focus on incremental achievement of technical milestones and increasing confidence in the technical viability of the airborne laser.

The extended development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through the following key knowledge points:

- 1) completion of ground testing of a flight worthy, six module, weapon class laser segment suitable for use in an ABL
- 2) completion of ground testing of a flight worthy beam control fire control segment
- 3) completion of flight testing of the Beam Control / Fire Control (BCFC) segment
- 4) completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- 5) success demonstration of the ABL lethality against a boosting ballistic missile
- 6) flight testing of an expanded ABL weapon system performance envelope

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
<p>The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Block 2004, ABL Block 2006, and ABL Block 2008). This approach systematically and incrementally adds more capability as technology matures.</p> <p>The ABL Block 04 effort capitalizes on the technical progress achieved to date in integration and test of the 1st ABL weapon system testbed. The primary focus is accomplishing key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. To that end, efforts necessary to reducing the risk and uncertainties associated with follow-on steps to shoot down also continue. The Block 04 program additionally provides continued ABL specific technology maturation, integration and testing for future blocks and provides continued infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. Studies and a System Requirements Review to define the enhanced 2nd ABL aircraft will be performed to guide infrastructure and technology improvement efforts, as well as the evaluation of the 1st ABL aircraft. These activities further reduce risk and uncertainties in achieving shoot down by refining the definition of the current aircraft baseline, applying lessons learned from the on-going testing, implementing prudent system engineering practices, improving critical component reliability, and improving sparring.</p> <p>The ABL Block 06 effort will continue program efforts to ground and flight test the 1st ABL weapon system testbed. Test objectives will be to expand the envelope of system performance by systematically stepping through knowledge points. It will provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. The Block 06 effort provides for enhancement of BMDS integration and ground support. Finally, it will continue studies on, and maintain the requirements baseline for, an optimal 2nd ABL aircraft in order to further guide other efforts and reduce risk and uncertainty.</p> <p>The ABL Block 08 effort furthers ground and flight testing of the 1st ABL weapon system to include expanding into evaluations against a broader spectrum of threats and as an integrated part of the overall BMDS. The Block 08 program continues the ABL specific technology and infrastructure improvement efforts, as well as the trades studies and requirements baseline efforts for defining the 2nd ABL aircraft.</p>		

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Continue ground and flight testing				1Q-4Q	1Q-4Q		

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		
0910 Airborne Laser (ABL) Block 2008	0	0	0	0	0	445,103	425,274		
RDT&E Articles Qty	0	0	0	0	0	0	0		
<u>A. Mission Description and Budget Item Justification</u> The ABL Block 08 effort furthers ground and flight testing of the 1st ABL weapon system to include expanding into evaluations against a broader spectrum of threats and as an integrated part of the overall BMDS. The Block 08 program continues the ABL specific technology and infrastructure improvement efforts, as well as the trades studies and requirements baseline efforts for defining the 2nd ABL aircraft.									
<u>B. Accomplishments/Planned Program</u>									
	FY 2003			FY 2004			FY 2005		
Funding in this Project is not programmed until FY08.									
RDT&E Articles (Quantity)									
<u>C. Other Program Funding Summary</u>									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Airborne Laser entered into a program definition and risk reduction (PDRR) contract in November 1996 and since then there has been steady and significant progress. However, all key efforts under the original ABL PDRR contract are now to conclude in 3rd quarter FY 2004 with further work transitioning to incremental delivery order contracts. The program remains structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. The purpose of the change in contractual vehicles is to enable better management in the high-risk environment for the state of the art ABL program and, thereby, reduce uncertainties and improve planning. The change allows remaining efforts to be grouped and phased to emphasize the focus on incremental achievement of technical milestones and increasing confidence in the technical viability of the airborne laser.

The extended development of the 1st ABL weapon system testbed will be accomplished via incrementally stepping through the following key knowledge points:

- 1) completion of ground testing of a flight worthy, six module, weapon class laser segment suitable for use in an ABL
- 2) completion of ground testing of a flight worthy beam control fire control segment
- 3) completion of flight testing of the Beam Control / Fire Control (BCFC) segment
- 4) completion of integration and ground testing of ABL weapon system combining the laser, BCFC, and battle management segments
- 5) success demonstration of the ABL lethality against a boosting ballistic missile
- 6) flight testing of an expanded ABL weapon system performance envelope

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment	
<p>The Airborne Laser development follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition, and use of two-year capability blocks (in the case of ABL; ABL Block 2004, ABL Block 2006, and ABL Block 2008). This approach systematically and incrementally adds more capability as technology matures.</p> <p>The ABL Block 04 effort capitalizes on the technical progress achieved to date in integration and test of the 1st ABL weapon system testbed. The primary focus is accomplishing key near-term knowledge points while maintaining the overall objective of achieving a lethal demonstration at the earliest possible date. To that end, efforts necessary to reducing the risk and uncertainties associated with follow-on steps to shoot down also continue. The Block 04 program additionally provides continued ABL specific technology maturation, integration and testing for future blocks and provides continued infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. Studies and a System Requirements Review to define the enhanced 2nd ABL aircraft will be performed to guide infrastructure and technology improvement efforts, as well as the evaluation of the 1st ABL aircraft. These activities further reduce risk and uncertainties in achieving shoot down by refining the definition of the current aircraft baseline, applying lessons learned from the on-going testing, implementing prudent system engineering practices, improving critical component reliability, and improving sparring.</p> <p>The ABL Block 06 effort will continue program efforts to ground and flight test the 1st ABL weapon system testbed. Test objectives will be to expand the envelope of system performance by systematically stepping through knowledge points. It will provide continued ABL specific technology maturation for integration and testing on subsequent blocks along with infrastructure advancement to maintain and improve domestic capability to produce advanced optics for high-energy laser systems. The Block 06 effort provides for enhancement of BMDS integration and ground support. Finally, it will continue studies on, and maintain the requirements baseline for, an optimal 2nd ABL aircraft in order to further guide other efforts and reduce risk and uncertainty.</p> <p>The ABL Block 08 effort furthers ground and flight testing of the 1st ABL weapon system to include expanding into evaluations against a broader spectrum of threats and as an integrated part of the overall BMDS. The Block 08 program continues the ABL specific technology and infrastructure improvement efforts, as well as the trades studies and requirements baseline efforts for defining the 2nd ABL aircraft.</p>		

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RD&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
Continue ground and flight testing						1Q-4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4010 Kinetic Energy Boost	99,547	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><u>A. Mission Description and Budget Item Justification</u></p> <p>In FY 2003, The Missile Defense Agency (MDA) combines funds under Projects 4020 (Sea-Based Boost) and 4040 (Space-Based Boost) in Project 4010 to develop the Block 2010 Kinetic Energy (KE) boost phase capability. In FY 2004 and beyond, the project will transition to the BMDS Interceptor Program Element (PE) 0603886C. A comprehensive description of this effort can be found in PE 0603886C, Projects 0013 and R113.</p> <p>The MDA is developing a Ballistic Missile Defense System (BMDS) that protects the U.S., U.S. Allies, friends, deployed forces, and areas of vital interest by providing layered defenses to intercept ballistic missiles in all phases of flight - boost, midcourse, and terminal. MDA plans an evolutionary, spiral acquisition approach to achieve greater capability over time.</p> <p>Creating a boost phase layer is fundamental to the MDA goal of a robust, integrated BMDS. By Block 2010, the MDA plans to develop and demonstrate, through flight-testing in the BMDS Test Bed, a mobile, land based boost/ascent phase capability that uses hit-to-kill technology. Based on the interceptor's performance, its initial capability may be extended into midcourse and terminal phases. MDA will test the Block 2010 interceptor to demonstrate its potential application. This capability will evolve in subsequent Blocks to integrate with other launch platforms (e.g. sea based) providing greater flexibility and capability to the BMDS. Throughout its development, the Block 2010 capability will rely heavily on existing hardware and proven technology.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Block 2010	99,547						
RDT&E Articles (Quantity)							
<p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Awarded two Concept Design contracts for down-select to one capability developer in FY 2004. - Conducted Boost/Ascent capability Concept Design phase using capability-based acquisition approach - Conducted high fidelity modeling and technical evaluation of competitor capabilities - Conducted rolling down select for Development and Test (D&T) phase - Conducted Sea-Based Commonality/Compatibility evaluation of Land-Based Boost/Ascent Concept - Initiated operational sea basing platform study - Selected containership for sea based test bed following Military Sealift Command market survey - Completed initial hardware-in-the-loop testing of a kill vehicle seeker - Built and tested a full-scale prototype launcher - Static fired the second stage rocket motor with trapped ball thrust vector control - Conducted real time C2BMC/Fire Control experiments with Overhead Non-imaging infrared (ONIR) sensors - Built and exercised a high-fidelity simulation of entire KEI element concept - Initiated procurement of spacecraft for the Near Field Infra Red Experiment 							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
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- Initiated procurement for the Launch vehicle for the Near Field Infra Red Experiment
- Integrated and tested the kill vehicle subcomponents in preparation for an FY 2004 Development Testing
- Conducted real-time fire control/BMC2 exercises and simulated engagements using space launch and ballistic missile targets of opportunity
- Collected critical boost/ascent phenomenology data with ground, airborne, and space test assets.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603883C Ballistic Missile Defense Boost Defense Segment				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

The KE Boost project will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The overall program objective is to add a KE Boost layer to the BMDS Block 2010 capability, fielding more robust capabilities in subsequent Blocks. In FY 2002, the near-field experiment contract was awarded as a result of a Broad Area Announcement competition. In FY 2003, two Block 2010 concept design contracts were awarded with a down select to one capability development contractor in FY 2004. (See PE 0603886C (BMDS Interceptors), Projects 0913 and 0013, for the acquisition strategy in FY 2004 and beyond.)

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2010										
Ground Based	C/Various	LM & NG	19,994					CONT.	19,994	TBD
Sensor Integration	MIPR	SBIRS SPO/ Los Angeles AFB,CA	2,300					CONT.	2,300	TBD
Subtotal Product Development			22,294	0		0		0	22294	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2010										
SETA	C/FFP	MEI	3,971					CONT.	3,971	TBD
Capability Engineering	MIPR	NSWC/DD / Dahlgren, VA	1,125					CONT.	1,125	TBD
SETA	C/FFP	MTSI	589					CONT.	589	TBD
Capability Engineering	MIPR	MDNT	1,500					CONT.	1,500	TBD
Capability Engineering	MIPR	Aerospace	210					CONT.	210	TBD
Capability Engineering	Various	AFRL	50						50	
Subtotal Support Costs			7,445	0		0		0	7445	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2010										
Test Planning & Execution	MIPR	SMC Det 12/ Kirtland AFB, NM	200					CONT.	200	TBD
Test Planning & Execution	MIPR	NSWC/PHD/ Port Hueneme, CA	1,505					CONT.	1,505	TBD
Test Planning & Execution	Various	JCTE/ Huntsville, AL	2,000					CONT.	2,000	TBD
Boost Kill Vehicle	Various	AFRL/ Kirtland AFB, NM	2,200					CONT.	2,200	TBD
Boost Kill Vehicle	Various	Raytheon and Navy / Tucson, AZ	12,100					CONT.	12,100	TBD
Boost Kill Vehicle	Various	AFRL/ Kirtland AFB, NM	300					CONT.	300	TBD
Near Field Infrared Experiment	MIPR	SMC Det 12/ Kirtland AFB, NM	7,550					CONT.	7,550	TBD
Near Field Infrared Experiment	C/CPAF	Spectrum Astro/ Gilbert, AZ	20,750					CONT.	20,750	TBD
Near Field Infrared Experiment	Various	AFRL/ Kirtland AFB, NM	11,800					CONT.	11,800	TBD
Near Field Infrared Experiment	Various	Raytheon and Navy EA/ Tucson, AZ	5,000					CONT.	5,000	TBD
Near Field Infrared Experiment	MIPR	SMC Det 12/ Kirtland AFB, NM	300						300	
Test Bed Development & Test	Various	AFRL/ Kirtland AFB, NM	2,100						2,100	
Test Bed Development & Test	Various	JCTI/ Huntsville, AL	2,093						2,093	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Testbed Development & Test	MIPR	NSWC/PHD/ Port Hueneme, CA	700						700	
Testbed Development & Test	Various	JCTI/ Huntsville, AL	350						350	
Subtotal Test and Evaluation			68,948	0		0		0	68948	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2010										
FFRDC	MIPR	MIT/LL/ Hanscom AFB,MA	500					CONT.	500	TBD
FFRDC	C/Various	JHU/APL/ Laurel,MD	360					CONT.	360	TBD
Subtotal Management Services			860	0		0		0	860	
Remarks										
Project Total Cost			99,547	0		0			99,547	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Land Based Block 2010							
Block 10 Capability Request For Proposal (RFP)	2Q						
Block 10 Multiple Contractor Award	3Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4043 Space-Based Laser	16,229	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><u>A. Mission Description and Budget Item Justification</u></p> <p>The Missile Defense Agency (MDA) will continue to pursue directed energy (DE) technologies as an important component of the BMD System. Directed energy applications remain among the highest priorities actively pursued as a part of MDA's technology effort.</p> <p>In FY 2002, the Space-Based Laser program was reevaluated in its entirety. Results of this review included a general program restructure and the cessation of prior SBL-specific program goals. In FY 2003 and beyond, the legacy SBL program will be evolved into a Laser Technology program and will be managed as part of the Advanced Systems (AS) program. This directorate will focus efforts and build on existing knowledge to further refine the DE concept and provide options for future system production. Emergent technologies resulting from this investment will provide MDA with the ability to pursue DE systems, possibly including a Space-Based DE program. This strategy is consistent with the MDA spiral development and evolutionary acquisition approach to building effective and capable missile defenses.</p> <p>Laser Technology: The Laser Technology program focuses on developing lasers and related component technology for low power applications including tracking, weapon guidance, and imaging, while investing in high-energy laser technologies that could lead to a future Space-Based Laser effort. The emphasis on low-power systems is driven by their considerable potential to improve and support MDA's hit-to-kill weapons.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Space Based Laser	16,229						
RDT&E Articles (Quantity)							
<p>FY 2002 Accomplishments:</p> <p>Successfully completed system level SBL Integrated Flight Experiment (IFX) design that satisfied performance requirements to destroy a boosting missile from space using a high-energy laser as specified in the Statement of Objectives.</p> <p>Assembled and characterized the first diagnostic for making MHz frequency sub-aperture measurements on a high energy laser beam (MITS--MHz Intensity and Tilt Sensor).</p> <p>Successfully made the first MHz frequency sub-aperture measurements on a high energy laser beam (Alpha test HL913) and demonstrated that the high temporal frequency sub-aperture slope content of the beam was small. In addition, HL913 was very successful by being one of the longest high-energy tests performed with Alpha at 8 seconds.</p> <p>Completed CDR on the Short Stack laser risk reduction Test Bed to validate the performance models used in the IFX laser design.</p> <p>Completed testing of three Advanced Nozzle configurations for improved HF/HFOT/DF laser performance (SBL developed hardware, testing co-funded by JTO).</p> <p>Efficiently closed out the Team SBL IFX contract for development and spaceflight of the SBL Integrated Flight Experiment. Allocated remaining FY 2002 funds to laser system technology efforts.</p>							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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FY 2003 Planned Program:

Major Projects: The Agency plans to select concepts and award contracts for two focused technology projects in FY 2003, and award a third similar contract in FY 2004. These projects will be drawn from proposals solicited from the laser and electro-optics industry. Candidates include a major effort to improve the laser transmitters for laser radars in the next 5 years, solid-state laser weapons development that also develops high-power illuminator systems, relay-mirror technology that could support a future integrated laser architecture of air-, ground-, and space-based platforms, and advanced research on chemical lasers to re-invigorate the search for an affordable Space Based Laser.

Technology Base activity: This funding supports a wide range of efforts deemed worthy of investigation for potential application to the BMD System, yet insufficiently mature to warrant major contract award. Technology Base projects will include research into highly advanced solid-state and chemical laser concepts requiring laboratory validation, new concepts for kinetic weapon guidance via remote lasers, and new detector concepts to enable future laser radars to discriminate moving targets using motion and shape features.

Leveraging of successful projects initiated under the High Energy Laser (HEL) Joint Technology Office (JTO): Promising JTO projects with specific applicability to ballistic missile defense will be selected for intensified funding under MDA auspices, in to rapidly exploit breakthroughs and successes achieved under the JTO program and apply them to missile defense applications.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

Space Based Laser followed the Missile Defense Agency's capability -based acquisition strategy that emphasized testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Space Based Laser										
SBL IFX Joint Venture Team	Various	Boeing, Lockheed, TRW/ El Segundo, CA	30,000						30,000	
Other	Various	Various	13,404						13,404	
Laser Technology Program	Various	Various								
Subtotal Product Development			43,404	0		0		0	43404	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Space Based Laser										
SBL IFX Technical Support	Various	Various	3,444						3,444	
Laser Technology Support	Various	Various								
Subtotal Support Costs			3,444	0		0		0	3444	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			46,848	0		0			46,848	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Contractual Activities& Events							
Award Contracts to Develop Components for BMDS	1Q,2Q						
Award Multiple Contracts	1Q,2Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4090 Program-Wide Support	39,102	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 4090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	39,102	0	0
RDT&E Articles (Quantity)			

Personnel:
Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:
Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	14,229	18,279	22,873	24,967	28,499	30,687
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 4090 and Fiscal Years 2004 and out are in Project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	0	14,229	18,279
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603883C Ballistic Missile Defense Boost Defense Segment				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893
5041 Space-Based Infrared System (SBIRS) Low/Space Tracking & Surveillance System (STSS)	249,896	0	0	0	0	0	0
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	266,601	273,938	259,620	182,856	47,274	51,503
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	0	24,905	29,770	19,687
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	22,263	47,833	253,828	637,215	919,830	1,112,973
5049 Russian-American Observation Satellite(s) Program (RAMOS)	25,761	0	0	0	0	0	0
0403 Russian-American Observation Satellite(s) Program (RAMOS)	0	29,285	0	0	0	0	0
5011 Ballistic Missile Defense Radars Block 2006	12,000	0	0	0	0	0	0
0811 Ballistic Missile Defense Radars Block 2006	0	99,848	256,101	260,114	487,212	216	221
0911 Ballistic Missile Defense Radars Block 2008	0	0	0	0	100,620	102,207	22,130
5060 Test & Evaluation	4,478	0	0	0	0	0	0
5090 Program-Wide Support	34,878	0	0	0	0	0	0
0602 Program-Wide Support	0	7,424	14,085	16,703	20,871	22,892	26,379

Note: The Space Tracking and Surveillance System (STSS) has been broken into three STSS capability blocks (STSS Block 2006 -- Project 0812, STSS Block 2008 -- Project 0912, and STSS Future Blocks -- Project 0012). Two of the other projects in this PE are not block specific, but have undergone project code changes. Russian-American Observation Satellites (RAMOS) (Project 5049) has been changed to Project 0403. Program-Wide Support (Project 5090) has been changed to Project 0602. Forward Deployable Radar project efforts beginning in FY 2003 (Project 5011) have been changed and divided into two Forward Deployable Radar capability blocks (Forward Deployable Radar Block 2006 -- Project 0811 and Forward Deployable Radar Block 2008 -- Project 0911).

The Test and Evaluation (Project 5060) activity was transferred to Project 0812 in FY 2004.

Due to the lack of progress on the RAMOS Government-to-Government agreement with Russia, and the uncertainty this causes, MDA intends to terminate the RAMOS program. MDA received the Russian Government's draft MOU in July 2002 and despite 17 months of discussions, have been unable to complete a government-to-government agreement. Without this agreement, which includes the fundamental issue of taxes and liabilities, the RAMOS program cannot be executed beyond the design stage.

MDA will continue to discuss an overarching MOU to govern defense cooperation with Russia, and is actively exploring alternative more beneficial missile defense cooperative projects with Russia, that enjoy the support of the Government of the Russian Federation.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

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MDA Exhibit R-2 RDT&E Budget Item Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603884C Ballistic Missile Defense Sensors	
<p>The MDA develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. These capability blocks will build on and be integrated with the predecessor blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters while allowing for the rapid insertion of emerging technology in the most affordable manner. Block capabilities are built by using elements and components to integrate a single BMDS with multiple operating modes, and provide layered defense against ballistic missiles during all phases of flight-Boost, Midcourse, and Terminal.</p> <p>As a part of the total BMDS, the Sensors Program Element (PE) funds the sensor-related element portions of Blocks 2006, 2008, and 2010 and other sensor-related mission area investment activities. Technologies and capabilities developed under the Sensors Program Element include: the STSS, RAMOS, Forward Deployable Radar, and related sensor initiatives. The BMDS spiral development approach allows these sensor technologies and capabilities to be incorporated as they mature and evolve into a network of sensors at the BMDS level. Sensor elements in this PE have been developed in coordination with Missile Defense National Team (MDNT) cooperation to help ensure that the elements are focused as a single, integrated system. This sensor data is used to detect, track, and discriminate ballistic missile threats; to control interceptors; and to support kill assessment and re-targeting. The STSS project will be evaluating the utility of infrared (IR) surveillance capabilities with the specific intent to enhance BMDS engagement sequences.</p> <p>Based on Presidential direction, MDA is developing an initial defensive operational capability that is based on the BMDS Test Bed and augmented with additional development assets. MDA will continue to employ the Test Bed for testing beyond initial fielding to evolve an integrated, layered Ballistic Missile Defense capability. Each of the Sensor Program Elements will be integrated into the BMDS Test Bed to ensure the technology is mature and ready for inclusion in a BMDS Block upgrade.</p> <p>The efforts in this Sensors Program Element have been structured to take advantage of opportunities previously prohibited by the ABM Treaty. The treaty's demise allows MDA to extend and network land, sea, air, and space based sensors for ballistic missile defense. Therefore, MDA is investing in an integrated, layered approach to sensors that includes diversity in spectra, basing modes and technologies, as well as flexibility in sensor locations, to form a sensor network that is integrated with the BMDS through the Command & Control, Battle Management, and Communication (C2BMC) system. This strategy will minimize gaps in sensor coverage to improve track continuity and situational awareness. Overlapping sensor coverage with a diversity of sensor types will improve track discrimination and kill assessments. The extended sensor coverage and accuracy provided by a network of layered sensors makes the BMDS more efficient, thereby reducing the number of target engagements needed to ensure a sufficient probability of success.</p> <p>This capability will be delivered using the BMDS Block approach by integrating and incrementally improving current sensor capabilities, initiating RDT&E programs to fill gaps in the global sensor network, and improving sensor performance, flexibility and survivability.</p> <p>The STSS project is expected to provide the BMDS with the capability to globally track and discriminate ballistic missiles from the boost phase through the midcourse phase up until intercept or reentry. STSS sensors will provide data to close the fire control loop with BMDS interceptors allowing earlier and if necessary additional shots. STSS's infrared sensors, when combined with radars, provide robustness against countermeasures. The STSS project will develop a series of R&D satellites beginning in Block 2006, and a common ground station infrastructure for all Blocks. Successive R&D satellites will field increasingly advanced technology. When an STSS constellation is adequately populated and integrated into the C2BMC system, the BMDS will have a global 24-hour, 7-day-a-week capability to track all ballistic missiles extending the kinematic range of the BMDS interceptor inventory. Block 2006 provides proof of concept to the BMDS with two satellites derived from existing hardware. Block 2008 provides an incremental upgrade to the satellite ground network and software. Funding for Block 2008 capability begins in FY 2007.</p> <p>The Forward Deployable Radar project will significantly enhance BMDS effectiveness by expanding the battlespace. The Forward Deployable Radar project will be a land based component but will have potential for a sea based configuration. The Forward Deployable Radar will provide early detection, tracking, and discrimination of threat missiles, providing data to the BMDS sensor network. The Forward Deployable Radar project will evaluate advanced algorithms and prototype the interfaces to the BMDS C2BMC using the TPS-X radar. In parallel, the Sensor Program will define improvements or modifications to both MDA and non-MDA owned sensors that have been identified for performance enhancement of the BMDS.</p> <p>Current plans call for the initial Forward Deployable Radar to be available in CY 2006. Contract options for three additional forward based radars will be executed in FY 2005, FY 2006, and FY 2007 respectively. These additional radars will be integrated into BMDS in Block 06 and beyond. Evolving radar configurations will use additional algorithms and provide enhanced capabilities to</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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support the BMDS. The Forward Deployable Radar initiative, beginning in FY 2006, will provide for continued sensor research to improve the capabilities and for a BMDS configuration(s) for Block 2008 and beyond.

Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	350,436	438,242	562,752
Current President's Budget (FY 2005 PB)	327,013	425,421	591,957
Total Adjustments	-23,423	-12,821	29,205
Congressional Specific Program Adjustments	0	-8,000	0
Congressional Undistributed Adjustments	0	-4,821	0
Reprogrammings	1,238	0	29,205
SBIR/STTR Transfer	-24,661	0	0

The FY 2003 Sensors Program Element budget request in the FY 2004 budget compared to the FY 2005 budget showed a reduction of \$23,423,000. This resulted from a reduction of \$24,661,000 based on a transfer to the Small Business Innovative Research Program; and an increase of \$1,238,000 based on reprogramming that is consistent with priorities.

The FY 2004 Sensors Program Element budget request in the FY 2004 budget compared to the FY 2005 budget showed a reduction of \$12,821,000. This resulted from a reduction of \$4,821,000 based on Congressional Undistributed Adjustments; and a reduction of \$8,000,000 based on the Congressional Specified Adjustments.

The FY 2005 Sensors Program Element budget request in the FY 2004 budget compared to the FY 2005 budget showed an increase of \$29,205,000. This increase reflects the Missile Defense Agency's realignment of resources to support higher Agency priorities.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5041 Space-Based Infrared System (SBIRS) Low/Space Tracking & Surveillance System (STSS)	249,896	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: The 2003 SBIRS Low/STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 0012.</i></p> <p>A. Mission Description and Budget Item Justification The STSS is an element of the BMDS. Through a spiral development process it will provide space-based infrared capability to acquire, track and discriminate ballistic missiles and supply over-the-horizon fire control to BMDS weapon systems extending their effective range. The near-term emphasis for STSS is on tracking performance, followed by improvements in the sensor's discrimination capability.</p> <p>This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks:</p> <p>The Block 2006 STSS uses largely existing satellite hardware as a low risk opportunity to bring a space based capability into the Block 2006 BMDS Test Bed. Block 2006 consists of two satellites, to be put in low earth orbit, ground station and software to support communication of data from these satellites to the BMDS. These two satellites will be launched on a single Delta II launch vehicle in the FY 2007 timeframe. Key activities in the 2003 timeframe included initiation of a new single contract for the Block 2006 program, hardware checkout and initial testing. FY 2004 and beyond activity is described in Project 0812. The Block 2006 program also develops the STSS Surrogate Test Bed (SSTB), which will be integrated with the BMD Test Bed. The SSTB demonstrates data fusion processing of data from surrogate infrared and visible sensors such as the AF Maui Optical Station (AMOS) telescopes, and High Altitude Observatory (HALO) II aircraft, replicating the processing and interfaces of the Block 2006 satellite ground station. The SSTB is a key pathfinder for the Block 2006 integration into the BMDS. Activity in the 2003 timeframe demonstrates functionality in key BMDS tests. The FY 2004 and beyond activity is described in Project 0812.</p> <p>The Block 2008 STSS upgrades the ground station and software aspects of the Block 2006 STSS configuration. There is no near-term funding for this activity. FY 2004 and beyond activity is described in Project 0912.</p>							
B. Accomplishments/Planned Program							
	FY 2003	FY 2004	FY 2005				
Block 2006		203,041					
RDT&E Articles (Quantity)							
FY 2003 accomplishments: - Continued surrogate sensor data collection with the AF Maui Optical Station (AMOS) telescope and High Altitude Observatory (HALO) II aircraft. - Continued further integration with the BMDS Test Bed. - Conducted full inventory and check-out of Flight Demonstration System hardware required for Block 2006. - Performed analysis of the benefits of including an improved acquisition sensor on second satellite. - Conducted Delta System Definition Review (SDR). - Conducted Delta Preliminary Design Review (PDR).							
FY 2004 and 2005 plans and schedules are described in Project 0812.							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY 2003	FY 2004	FY 2005
Future Block Development	46,855		
RDT&E Articles (Quantity)			

FY 2003 accomplishments:
 - Conducted trades for Block 2010 program.
 - Continued other risk reduction efforts.*

* Other risk reduction activities includes cryocoolers, batteries, Radiation Hardened Parts, phenomenology, optical filters, Midcourse Space Experiment (MSX) data reduction, contamination control, focal plane arrays {visible and long-wave} and survivability.

Activity beyond the Block 2006/2008 STSS program is described elsewhere due to classification.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

The STSS follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), formerly TRW, with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the Block 2006 activity and the initial definition work on Block 2010 was awarded in fourth quarter FY 2002.

The restructured program implements MDA's capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS. From an overall system standpoint, MDA will measure the capabilities of each development cycle and make decisions about the sensor complex for eventual integration into the BMDS.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006										
Capability Based R&D Contract	SS/CPAF	NGST/CA	187,897					CONT.	187,897	CONT.
Future Block Development										
Capability Based R&D Contract	SS/CPAF	NGST/CA	41,670					CONT.	41,670	CONT.
Subtotal Product Development			229,567	0		0		0	229567	
Remarks										
<p>Capability Based R&D Contract is a multi-year contract covering the testing, integration, and on-orbit operations of 2 Block 2006 satellites and system architecture trade studies of the Block 2010 effort. This contract may be extended to add the Block 2008 effort.</p> <p>Beginning in FY 2004, this contract in Block 2006 continued in Project 0812. Future Block Development (Block 2010) efforts continued in Project 0012.</p>										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006										
Program Support (OGC)	Various	Various	12,934					TBD	12,934	CONT.
Program Definition Support	Various	Various	10,149					TBD	10,149	CONT.
SBIRS Low Surrogate Test Bed	Various	Various	7,170					TBD	7,170	CONT.
Future Block Development										
Risk Reduction	Various	Various	14,000					TBD	14,000	CONT.
Subtotal Support Costs			44,253	0		0		0	44253	
Remarks										
<p>All program support and program definition support costs have been allocated to Block 2006, through the launch in FY07. Program definition support has been redefined as Advanced Algorithm Development in Project 0812 under SE/PM.</p>										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006										
FFRDC	FFRDC	AEROSPACE/ CA	36,519					CONT.	36,519	TBD
Subtotal Management Services			36,519	0		0		0	36519	
Remarks										
All FFRDC costs have been allocated to Block 2006, through the launch in FY07.										
Project Total Cost			310,339	0		0			310,339	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2006							
STSS Design, Fab, Test, Ops (FYDP detail see 0812)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block 2010							
Architecture Trade Studies	1Q-4Q						
Future Blocks (See Proj 0012)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Risk Reduction Efforts	1Q-4Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	266,601	273,938	259,620	182,856	47,274	51,503
RDT&E Articles Qty	0	0	0	1	4	2	0

Note: In FY 2003 STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 0012. This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks.

A. Mission Description and Budget Item Justification

STSS is an element of the BMDS. Through a spiral development process it will provide space-based infrared capability to acquire, track and discriminate ballistic missiles and supply over-the-horizon fire control to BMDS weapon systems to extend its effective range. The near term emphasis for STSS is on tracking performance, followed by improvements in the sensor's discrimination capability.

The Block 2006 STSS uses largely existing satellite hardware from the Flight Demonstration System (FDS) as a low risk opportunity to bring a space based capability into the Block 2006 BMDS Test Bed. Block 2006 STSS consists of two satellites with visible and infrared sensor suites, to be put in low earth orbit for initial testing. These two satellites will provide valuable risk reduction and concept demonstration information about acquisition, tracking, and discrimination functionality including stereo data fusion, cueing radars over the horizon and providing interceptor handovers. Ultimately, Block 2006 STSS will include a performance assessment of the STSS contribution to over-the-horizon fire control to BMDS interceptors. All on-orbit testing with ballistic missile targets will be orchestrated to allow BMDS participation. The budget includes launch services for the two Block 2006 STSS satellites to be launched on a single Delta II launch vehicle in FY 2007.

Block 2006 STSS also develops the ground segment and software algorithms required to operate and process data from the Block 2006 STSS satellites with growth path to the ground system required for an expanding constellation of R&D satellites developed over subsequent blocks.

Block 2006 also provides program support and program definition support through the end of FY 2007. Funding for targets to be used in Block 2006 is included beginning in FY 2005.

The Block 2006 program also develops the STSS Surrogate Test Bed (SSTB), which will be integrated with the BMD Test Bed. The SSTB demonstrates data fusion processing of data from surrogate infrared and visible sensors such as the AF Maui Optical Station (AMOS) telescopes and High Altitude Observatory (HALO) II aircraft, replicating the processing and interfaces of the Block 2006 satellite ground station. The SSTB is a key pathfinder for the Block 2006 integration into the BMDS. The SSTB will be primarily performed by the government program office.

The STSS Surrogate Test Bed will leverage the work done on the Airborne Infrared Surveillance (AIRS) effort.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Space		120,427	159,950
RDT&E Articles (Quantity)			

FY 2004 Planned Program:

- Complete Track Sensor Assembly Integration and Test (AI&T)
- Conduct Delta CDR

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors	
<p>- Complete Payload Software Build 2</p> <p>- Complete Closed Loop testing of Sensor Payload Software</p> <p>- Initial payment to NASA toward Launch Services for the 2 Block 2006 satellites</p> <p>FY 2005 Planned Program:</p> <p>- Complete Payload Software Build 3</p> <p>- Conduct System Compatibility Tests (Payload and Satellite Bus)</p> <p>- Initiate Space Vehicle Integration</p> <p>- Continue payment to NASA toward Launch Services for the 2 Block 2006 satellites</p>			
	FY 2003	FY 2004	FY 2005
Ground		44,075	22,834
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <p>- Mature Ground System Design</p> <p>- Initiate Satellite Operation Training Plan</p> <p>FY 2005 Planned Program:</p> <p>- Ground Hardware Integration</p> <p>- Conduct Initial Crew Training</p>			
	FY 2003	FY 2004	FY 2005
Government		21,345	23,620
RDT&E Articles (Quantity)			
<p>FY 2004 Planned Program:</p> <p>- FFRDC Requirements includes Aerospace and Mitre Personnel Support</p> <p>- Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors	
FY 2005 Planned Program:			
<ul style="list-style-type: none"> - FFRDC Requirements includes Aerospace and Mitre Personnel Support - Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies 			
	FY 2003	FY 2004	FY 2005
SE/PM		68,459	61,848
RDT&E Articles (Quantity)			
FY 2004 Planned Program:			
<ul style="list-style-type: none"> - Perform ground test data analysis. - Conduct initial System Compatibility Tests (Payload and Satellite Bus and Ground System) - Advanced Algorithm Development 			
FY 2005 Planned Program:			
<ul style="list-style-type: none"> - Conduct System Compatibility Tests (Payload, Satellite Bus and Ground System) - Advanced Algorithm Development 			
	FY 2003	FY 2004	FY 2005
IR Engagement Sequence		12,295	5,686
RDT&E Articles (Quantity)			
FY 2004 Planned Program:			
<ul style="list-style-type: none"> - Perform HALO II aircraft modifications to enhance tracking and operational performance in support of the Airborne Infrared Surveillance (AIRS) acquisition strategy - Evaluate the utility of IR/Vis sensors in BMDS Engagement sequences using HALO II measurements - Develop acquisition strategy for next generation airborne IR/Vis capability if supported by HALO II performance - Continue developing connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS - The STSS Surrogate Test Bed (SSTB) will be integrated with the Command and Control Battle Management Center(C2BMC) X-Lab at the Joint National Integration Center (JNIC) 			
FY 2005 Planned Program			
<ul style="list-style-type: none"> - Continue evaluation of IR/Vis sensors' utility in BMDS Engagement sequences using HALO II measurements - Continue developing connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS - The SSTB Fusion Workstation will physically move from the MHPCC at Maui to the STSS Joint Satellite Control Facility (JSCF) at the Joint National Integration Center (JNIC) and become a part of the STSS Ground Segment. 			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors	
<p><u>D. Acquisition Strategy</u></p> <p>STSS follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.</p> <p>The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), formerly TRW, with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the Block 2006 activity and the initial definition work on Block 2010 was awarded in fourth quarter FY 2002.</p> <p>The restructured program implements MDA's capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS. From an overall system standpoint, MDA will measure the capabilities of each development cycle and make decisions about the sensor complex for eventual integration into the BMDS.</p> <p>Acquisition Strategy For the AIRS Program:</p> <ul style="list-style-type: none">- Phase I-A and Phase I-B run concurrently- Phase I-A: HALO II demonstration effort- Phase I-B: AIRS Acquisition Strategy Development- Phase II (AIRS Procurement) implemented if results of Phase I warrant next step		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Space										
Capability Based R&D Contract	SS/CPAF	NGST/CA		116,434		117,050		CONT.	233,484	CONT.
Launch Vehicle Integration	Various	Various/Various		3,993	1/3Q	42,700	1/3Q	TBD	46,693	TBD
Target Acquisition	Various	Various/Various				200	1/3Q	TBD	200	TBD
Ground										
Capability Based R&D Contract	SS/CPAF	NGST/CA		44,075		22,834		CONT.	66,909	CONT.
SE/PM										
Capability Based R&D Contract	SS/CPAF	NGST/CA		63,694		56,202		CONT.	119,896	CONT.
Advanced Algorithm Development	Various	Various/Various		4,765	1/3Q	5,646	1/3Q	TBD	10,411	TBD
IR Engagement Sequence										
Airborne Infrared Surveillance (AIRS)	Various	Various/Various		7,500	3Q			TBD	7,500	TBD
STSS Surrogate Test Bed	Various	Various/Various		4,795	1/3Q	5,686	1/3Q	TBD	10,481	TBD
Subtotal Product Development			0	245,256		250,318		0	495574	
Remarks										
The Capability Based R&D contract was awarded in FY 2002. Prior year and FY 2003 costs are described in Project 5041.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government										
System Program Office Support	Various	Various/ CA		9,905	1/4Q	9,500	1/4Q	TBD	19,405	TBD
Subtotal Support Costs			0	9,905		9,500		0	19405	
Remarks										
All system program office support costs have been allocated to Block 2006, through the launch in FY07.										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government										
FFRDC	FFRDC	AEROSPACE/ CA		11,440	1/2Q	14,120	1/2Q	CONT.	25,560	CONT.
Subtotal Management Services			0	11,440		14,120		0	25560	
Remarks										
All FFRDC costs have been allocated to Block 2006, through the launch in FY07.										
Project Total Cost			0	266,601		273,938			540,539	
Remarks										

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

R-1 NOMENCLATURE
0603884C Ballistic Missile Defense Sensors

Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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																												
IR Engagement Sequence	▲————▲				△————△																							
STSS Initial Hardware Checkout	▲————▲																											
STSS Capability Review			▲																									
STSS Delta PDR			▲																									
STSS Delta CDR				▲																								
System Compatibility Tests						△	△			△	△	△																
System Test/Operational Planning	▲————▲				△————△																							
Operational and Test Readiness										△	△	△	△————△															
Spacecraft Testbed	▲————▲				△————△																							
Spacecraft Integration and Test				△	△————△																							
Payload Redesign	▲————▲																											
Payload Fabrication and Integration & Test	▲————▲				△————△																							
Satellite Integration and Test										△	△	△	△————△															
Ground Station Design	▲————▲				△————△																							
Ground Software Development	▲————▲				△————△																							

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2006							
IR Engagement Sequence	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
STSS Initial Hardware Checkout	1Q-4Q						
STSS Capability Review	3Q						
STSS Delta PDR	3Q						
STSS Delta CDR		1Q					
System Compatibility Tests		3Q,4Q	3Q,4Q	1Q			
System Test/Operational Planning	1Q-4Q	1Q-4Q	1Q-4Q				
Operational and Test Readiness			3Q-4Q	1Q-4Q	1Q-3Q		
Spacecraft Testbed	1Q-4Q	1Q-4Q					
Spacecraft Integration and Test		1Q-4Q	1Q-4Q				
Payload Redesign	1Q-4Q						
Payload Fabrication and Integration & Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q			
Satellite Integration and Test			2Q-4Q	1Q-4Q	1Q		
Ground Station Design	1Q-4Q	1Q-3Q					
Ground Software Development	1Q-4Q	1Q-4Q	1Q-4Q	1Q			
Ground Hardware/Segment Integration & Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q			
Launch Integration and Test					1Q-2Q		
Launch (2 Satellites)					3Q		
STSS On-Orbit Operations					3Q-4Q	1Q-4Q	1Q-3Q

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	0	24,905	29,770	19,687
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: In FY 2003 STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 0012. This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks.

A. Mission Description and Budget Item Justification

STSS is an element of the BMDS. Through a spiral development process it will provide space-based infrared capability to acquire, track and discriminate ballistic missiles and supply over-the-horizon fire control to BMDS weapon systems extending their effective range. The near-term emphasis for STSS is on tracking performance to extend the effective range of BMDS interceptors, followed by improvements in the sensor's discrimination capability.

The Block 2008 STSS upgrades the ground station and software aspects of the Block 2006 STSS configuration. There is no near term funding for this activity. Funding for this Project is not programmed until FY07.

The Block 2008 STSS continues integrated operations with other BMD Elements and Test Bed activities with visible and IR tracking of a variety of short and long range test targets. All testing will be orchestrated to allow BMDS participation. Refinements will be made to ground station software to achieve near-real-time mission data processing and connectivity to the C2BMC elements.

As the Block 2008 activity builds on the Block 2006 ground segment, and operates, collects and analyses data from the Block 2006 satellites, funding in this project is not programmed until FY07.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Funding in this project is not programmed until FY07.			
RDT&E Articles (Quantity)			

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

STSS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development and evolutionary acquisition through the use of two-year capability blocks.

The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), formerly TRW, with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the Block 06 activity and the initial definition work on Block 10 was awarded in fourth quarter FY 2002. Additional options or new contracts will be awarded to accomplish future work on Block 08 and out.

Project 0912 activity is not included in the Block 06 contract. Work planned for the upgrades to the Block 06 ground configuration and software may be accomplished through modification to the Block 2006 contract. Based on the Block 2006 plan, such modification may take place in the FY 2007 timeframe.

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2008							
Contract Modification					1Q		
Ground Station Upgrades					2Q-4Q	1Q-4Q	1Q-4Q
Studies & Analyses							
Data Analysis					2Q-4Q	1Q-4Q	1Q-2Q

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004				
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009			
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	22,263	47,833	253,828	637,215	919,830	1,112,973			
RDT&E Articles Qty	0	0	0	0	0	0	0			
<i>Note: Activity beyond the Block 2006/2008 STSS program is described elsewhere due to classification.</i>										
<u>A. Mission Description and Budget Item Justification</u>										
Activity beyond the Block 2006/2008 STSS program is described elsewhere due to classification.										
<u>B. Accomplishments/Planned Program</u>										
	FY 2003		FY 2004		FY 2005					
Future Block Development				22,263					47,833	
RDT&E Articles (Quantity)										
<i>Activity beyond the Block 2006/2008 STSS program is described elsewhere due to classification.</i>										
<u>C. Other Program Funding Summary</u>										
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost	
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing	
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing	
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing	
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing	
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing	
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing	
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing	

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603884C Ballistic Missile Defense Sensors				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

Activity beyond the Block 2006/2008 STSS program is described elsewhere due to classification.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004																										
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors																											
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009																								
5049 Russian-American Observation Satellite(s) Program (RAMOS)	25,761	0	0	0	0	0	0																								
RDT&E Articles Qty	0	0	0	0	0	0	0																								
<p><i>Note: The FY04 funding for RAMOS is captured in PE 0603884C in Project 0403.</i></p> <p>A. Mission Description and Budget Item Justification Due to the lack of progress on the RAMOS Government-to-Government agreement with Russia, and the uncertainty this causes, MDA intends to terminate the RAMOS program. MDA received the Russian Government's draft MOU in July 2002 and despite 17 months of discussions, have been unable to complete a government-to-government agreement. Without this agreement, which includes the fundamental issue of taxes and liabilities, the RAMOS program cannot be executed beyond the design stage.</p> <p>MDA will continue to discuss an overarching MOU to govern defense cooperation with Russia, and is actively exploring alternative more beneficial missile defense cooperative projects with Russia that enjoy the support of the Government of the Russian Federation.</p> <p>B. Accomplishments/Planned Program</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Design and Development</td> <td align="right">19,469</td> <td align="right">0</td> <td align="right">0</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>FY 2003 accomplishments: - Completed preliminary design of the payload, satellite, and science experiment program - Conducted a US-only Preliminary Design Review of the US payload, and a Joint Preliminary Design Review of the RAMOS system - Continued preliminary design of the ground system - Began detailed design of the satellite sensors, payload support equipment, ground support equipment, and all associated projects to accomplish the space experiments</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>RAMOS Solar Arrays</td> <td align="right">6,292</td> <td align="right">0</td> <td align="right">0</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Activities are aimed at demonstrating improved efficiencies associated with amorphous silicon substrate based solar cell technology, space-qualification of prototype units, and successful integration of a "blanket" of solar cells for test and evaluation of future space vehicle applications. The goal is to increase the specific power of a Si solar cell from 400 W/kg to greater than 500 W/kg.</p> <p>FY 2003 accomplishments: - Optimized front and back bus bar design and materials to minimize mass and electrical losses - Began trials to reduce substrate thickness to 0.5 mil - Developed automated interconnect technology</p>									FY 2003	FY 2004	FY 2005	Design and Development	19,469	0	0	RDT&E Articles (Quantity)					FY 2003	FY 2004	FY 2005	RAMOS Solar Arrays	6,292	0	0	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																												
Design and Development	19,469	0	0																												
RDT&E Articles (Quantity)																															
	FY 2003	FY 2004	FY 2005																												
RAMOS Solar Arrays	6,292	0	0																												
RDT&E Articles (Quantity)																															

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
D. Acquisition Strategy									
This program has been terminated.									

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
U.S. Hardware Development	SS/CPFF	Utah State Univ/SDL/ Logan, UT	41,167						41,167	
R.F. Hardware Development	SS	Rosoboronexport, RF	33,828						33,828	
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/ Broomfield, CO	21,561						21,561	
RAMOS Solar Arrays										
Design and Development	MIPR	AFRL/Kirtland AFB, NM	6,292						6,292	
Subtotal Product Development			102,848	0		0		0	102848	
Remarks										
Follow-on FY 2004 contract activity involves termination of this program and is described in this PE's Project 0403 R3 Remarks. The RAMOS program has been terminated in FY 2004 due to continuing lack of progress with Russia. The funds originally designated for this program have been used to fund the Agency's Block 2006 fielding increment as described in the President's Budget FY 2005 Overview.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
Development Support	MIPR	AFRL/ Hansom AFB, MA	1,946						1,946	
Subtotal Support Costs			1,946	0		0		0	1946	
Remarks										
Provide support to US and Joint US-RF data management and data system definition, coordination, development, testing, and operations efforts. Includes support to the RAMOS Program Office with scientific analysis, modeling and simulation, user-community coordination, data processing and database development, and calibration method definition and execution to assure that RAMOS measurement data and scientific data products satisfy the overall RAMOS mission objectives.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
Security Monitoring Supt	MIPR	DTSA	230						230	
Interpreter Support	MIPR	DOS	480						480	
Subtotal Management Services			710	0		0		0	710	
Remarks										
DTSA Provides security monitoring (ITAR and TAA compliance) support services during US-RF technical interchange meetings in the United States and Russian Federation. DOS provides Russian-English interpreting support during US-RF technical interchange meetings in the United States and Russian Federation.										
Project Total Cost			105,504	0		0			105,504	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
PDR							
RAMOS Joint Preliminary Design Review	3Q						
Decisions							
Start Detailed Design	4Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0403 Russian-American Observation Satellite(s) Program (RAMOS)	0	29,285	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: The FY03 funding for RAMOS is captured in PE 0603884C in Project 5049.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
Due to the lack of progress on the RAMOS Government-to-Government agreement with Russia, and the uncertainty this causes, MDA intends to terminate the RAMOS program. MDA received the Russian Government's draft MOU in July 2002 and despite 17 months of discussions, have been unable to complete a government-to-government agreement. Without this agreement, which includes the fundamental issue of taxes and liabilities, the RAMOS program cannot be executed beyond the design stage.							
MDA will continue to discuss an overarching MOU to govern defense cooperation with Russia, and is actively exploring alternative more beneficial missile defense cooperative projects with Russia that enjoy the support of the Government of the Russian Federation.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Design and Development	0		28,877		0		
RDT&E Articles (Quantity)							
FY 2004 activities:							
- Continue detailed design of the satellite sensors, payload support equipment, ground support equipment, and all associated projects to accomplish the space experiments							
- Continue preliminary design of ground facilities							
- Design and begin fabricating sensor prototypes to be used during interface testing							
- Begin writing sensor software							
- Continue development of models and simulations to test the design and concepts							
	FY 2003		FY 2004		FY 2005		
RAMOS Solar Arrays	0		408		0		
RDT&E Articles (Quantity)							
Activities are aimed at demonstrating improved efficiencies associated with amorphous silicon substrate based solar cell technology, space-qualification of prototype units, and successful integration of a "blanket" of solar cells for test and evaluation of future space vehicle applications. The goal is to increase the specific power of a Si solar cell from 400 W/kg to greater than 500 W/kg.							
FY 2004 activities:							
- Optimize interconnect technology, minimizing both electrical and area losses							
- Develop stowing/deployment mechanism for flexible thin-film photovoltaic blankets							
- Develop new area design to optimize total area cell efficiency and minimize area losses							
- Optimize substrate thinning process							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
D. Acquisition Strategy									
This program has been terminated.									

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
U.S. Hardware Development	SS/CPFF	Utah State Univ/SDL/ Logan, UT	41,267	14,177				12,400	67,844	
R.F. Hardware Development	SS	Rosoboronexport, RF	33,828	7,510				0	41,338	
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/ Broomfield, CO	21,561	5,400				1,000	27,961	
RAMOS Solar Arrays										
Design and Development	MIPR	AFRL/Kirtland AFB, NM	6,292	408					6,700	
Subtotal Product Development			102,948	27,495		0		0	143843	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
Development Support	MIPR	AFRL/ Hansom AFB, MA	1,946	1,440					3,386	
Subtotal Support Costs			1,946	1,440		0		0	3386	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development										
Security Monitoring Supt	MIPR	DTSA	230	50					280	
Interpreter Support	MIPR	DOS	480	300					780	
Subtotal Management Services			710	350		0		0	1060	
Remarks										
Project Total Cost			105,604	29,285		0			148,289	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
PDR							
RAMOS Joint Preliminary Design Review	3Q						
Decisions							
Program Termination		1Q-4Q					
Start Detailed Design	4Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5011 Ballistic Missile Defense Radars Block 2006	12,000	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: The FY 2003 Forward Deployable Radar development is described in Project 5011. For FY 2004 and beyond, the Forward Deployable Radar effort is described in two Projects: 0811 and 0911.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>Block 2006. The Forward Deployable Radar will enhance the BMDS capability to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. The objective of the Forward Deployable Radar project is to validate the BMDS sensor-layering concept and to validate and integrate forward-based algorithms. This effort makes use of existing radar configurations. The BMDS Radar provides a sensor with capability for detection of ballistic missiles early in their flight and for providing precise tracking information for use by other elements of the BMD System for engagement of targets.</p> <p>Due to the demise of the ABM Treaty the BMDS can deploy forward based radars (both land and sea based) supporting a layered sensor strategy. This approach provides overlapping sensor coverage and the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. The Forward Deployable Radar will pass target data to the command and control system for use by mid-course sensors and weapons for tracking and subsequent interception. Earlier detection with forward based radars coupled with layered sensors, gives the BMDS a continuous tracking and discrimination capability with more time and opportunities to engage the target, resulting in an increased probability of success.</p> <p>The forward based radar broadens BMDS capability in the near future, adding robustness against a wide range of threats and may be used to provide support for increased protection of forward based military assets, allies, and friends. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the Forward Deployable Radar is planned to be ground based with the potential for sea basing. The Forward Deployable Radar capability now under development will: extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system. Analysis of the capabilities that the Forward Deployable Radar adds to the Ballistic Missile Defense System was coordinated with Missile Defense National Team (MDNT) assistance.</p> <p>Forward Deployable Radar will consist of existing X-band radar hardware, modified software algorithms for tracking and discrimination, and a direct interface with the BMDS command and control system. The Forward Deployable Radar design leverages existing radar configurations and technologies. This commonality allows for the accelerated procurement/development of the Forward Deployable Radar to satisfy Block 2006 capability requirements. Hercules algorithms will be used to enhance the Forward Deployable Radar software. The TPS-X radar will serve as a Test Bed to validate the algorithms and interface with the C2BMC prior to their inclusion in the Forward Deployable radar design. The TPS-X may also support forward based capability and enhancement of the BMDS Block 2004, if required.</p> <p>In FY 2003, Forward Deployable Radar executed \$32.219 million for the program and technical support used to establish the Forward Deployable Radar program, including SETA, FFRDC, UARC; and provide initial funding for the Forward Deployable Radar letter contract. In addition, the BMDS program executed \$12.0 million to improve the TPS-X as a Test Bed which will be use as a risk reduction asset to mature, validate and test the tracking and discrimination algorithms prior to the delivery of the Forward Deployable Radar equipment.</p> <p>The project also provides analysis of multi-spectral sensor enhancements for the BMDS leading to a sensor architecture and roadmap defining the paths for future sensor capabilities. The roadmap includes the evaluation of EO-IR sensors as enhancements to BMDS.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Capability Development	12,000		
RDT&E Articles (Quantity)			

FY 2003 Accomplishments:

- Completed Forward Deployable Radar project planning
- Initiated and completed definition of acquisition strategy for Block 2006 radar configuration
- Awarded letter contract to meet block 2006 delivery
- Identified and initiated TPS-X radar improvements for use as a test asset for advanced algorithm validation and risk reduction on C2BMC interfaces
- Finalized Concept Validation (CV) plans for the initial set of algorithms
- Identified additional sensors to enhance BMDS mission performance

FY 2004 and 2005 are described in Project 0811.

C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603884C Ballistic Missile Defense Sensors				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Forward Deployable Radar project will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

The Forward Deployable Radar project acquisition strategy leverages existing radar configurations and technologies as part of the development of the forward based Forward Deployable Radar. The project awarded a letter contract to build a radar using X-band technology and existing radar designs to minimize development costs and schedule. Design enhancements will focus on software changes for the forward based algorithms and modified C2BMC connectivity. The contract is a cost plus-award fee effort, and includes options for up to three additional radars.

An ECP to the TPS-X test instrumentation radar was funded to implement improvements so the radar could be used as Test Bed to support Forward Deployable Radar software development. This is a risk reduction asset that will be used to mature, validate and test the Hercules based tracking and discrimination algorithms. The TPS-X also will be used to test the C2BMC communications before they are integrated into the forward based radar. The TPS-X will allow testing to begin a year earlier providing more time for maturing the software prior to the Forward Deployable Radar equipment delivery.

The Forward Deployable Radar project is planned to include a research and development program to provide for upgrades to future radars or sensors as required to support BMDS spiral development.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Capability Development										
RADAR										
Capability Based R&D Contract	SS/CPAF	Raytheon/ MA	12,000						12,000	
Subtotal Product Development			12,000	0		0		0	12000	
Remarks										
In FY 2003, the Forward Deployable Radar project executed \$18.0 million for a Forward Deployable Radar contract to meet the Block 2006 delivery requirement schedule and \$6.0 million for improvements to the TPS-X for use as a Test Bed to validate algorithms and test C2BMC. The radar project was funded from PE 0603884C project 5011, \$12.0 million; PE 0604861C project 2018, \$10.5 million; and PE 0603882C project 3021, \$1.5 million. The \$1.5 million was part of the Congressional earmarked \$9.719 million.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Capability Development										
Subtotal Support Costs			0	0		0		0	0	
Remarks										
In FY 2003, Congressional earmark \$9.719 million from PE 0603882C project 3021 of which \$3.310 million, was used for program and engineering support to the Forward Deployable Radar project. The program and engineering efforts supported the completion of the Forward Deployable Radar project planning, the awarding of a letter contract to meet the block 2006 delivery, identified and initiated TPS-X radar improvement, and finalized Concept Validation (CV) plans for the initial set of algorithms.										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			12,000	0		0			12,000	
Remarks Forward Deployable Radar project executed \$4.908 million from the \$9.719 million Congressional earmark from PE 0603882C project 3021 in FY 2003 for management services. These services were for the FFRDC/UARC support to the Forward Deployable Radar project. This effort supported the completion of the Forward Deployable Radar project planning, identified and initiated TPS-X radar improvement, and finalized Concept Validation (CV) plans for the initial set of algorithms.										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004															
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors																						
Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Acquisition Milestones																																
Definitize Forward Deployable Radar Contract					▲																											
Studies & Analyses																																
Evaluate FBR Algorithms (TPS-X)			△									△																				
Sensor Architecture Analysis				△												△																
Development Milestones																																
Forward Deployable Radar Software CDR											△																					
Forward Deployable Radar System Design Review							△																									
TPS-X FBR Algorithm Integration Complete												△																				
Testing Milestones																																
Forward Deployable Radar Performance Demonstration																◇																
TPS-X FBR Algorithm Flight Test												△																				
Program Milestones																																
Forward Deployable Radar Capability Achieved																△																
Manufacturing Processes and Advanced Materials																																
Forward Deployable Radar Integrated w/Release 1																△																
Mature FBR Algorithms												△																				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones							
Award Forward Deployable Radar Letter Contract	3Q						
Definitize Forward Deployable Radar Contract		1Q					
Finalize TPS-X FBR Task Order		1Q					
Studies & Analyses							
Evaluate FBR Algorithms (TPS-X)	3Q-4Q	1Q-4Q	1Q-4Q				
Sensor Architecture Analysis	4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Development Milestones							
Forward Deployable Radar Software CDR			2Q				
Forward Deployable Radar Software PDR		4Q					
Forward Deployable Radar System Design Review		3Q					
Forward Deployable Radar System Rqmts Review (SRR)		1Q					
TPS-X FBR Algorithm Integration Complete			4Q				
TPS-X FBR Algorithm PDR		1Q					
TPS-X RBR Algorithm CDR		3Q					
Testing Milestones							
Forward Deployable Radar Performance Demonstration				2Q			
TPS-X FBR Algorithm Flight Test		2Q					
Forward Deployable Radar Software Funct Qual Test			3Q				
Forward Deployable Radar Near Field Range Test			1Q				
Forward Deploy Radar High Power & Integration Test			2Q				
TPS-X FBR Algorithm Flight Test			1Q,2Q,3Q,4Q				
Program Milestones							
Forward Deploy Radar Integration & Test Complete			3Q				
Forward Deploy Radar System Rqmts Phase Complete		3Q					
Forward Deployable Radar Capability Achieved				3Q			

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
TPS-X FBR Algorithm Progress Reviews			1Q,3Q,4Q				
Manufacturing Processes and Advanced Materials							
Forward Deployable Radar Integrated w/Release 1				2Q			
Mature FBR Algorithms			4Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0811 Ballistic Missile Defense Radars Block 2006	0	99,848	256,101	260,114	487,212	216	221
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: In FY 2003 Forward Deployable Radar development is described in Project 5011. For FY 2004 and beyond, the BMDS development effort is described in two Projects: 8011 and 0911.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>Block 2006. The Forward Deployable Radar will enhance the BMDS capability to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. The objective of the Forward Deployable Radar project is to validate the BMDS sensor-layering concept. The Forward Deployable Radar provides a sensor with capability for detection of ballistic missiles early in their flight and for providing precise tracking information for use by other elements of the BMD System for engagement of targets.</p> <p>Due to the demise of the ABM Treaty the BMDS can deploy forward based radars (both land and sea based) supporting a layered sensor strategy. This approach provides overlapping sensor coverage and the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. The Forward Deployable Radar will pass target data to the command and control system for use by mid-course sensors and weapons for tracking and subsequent interception. Earlier detection with forward based radars coupled with layered sensors gives the BMDS a continuous tracking and discrimination capability with more time and opportunities to engage the target, resulting in an increased probability of success.</p> <p>The forward based radar broadens BMDS capability in the near future, adding robustness against a wide range of threats and may be used to provide support for increased protection of forward based military assets, allies, and friends. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the Forward Deployable Radar is planned to be ground based with the potential for sea basing. The Forward Deployable Radar capability now under development will: extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system. Analysis of the capabilities that the Forward Deployable Radar add to the Ballistic Missile Defense System was coordinated with Missile Defense National Team (MDNT) assistance.</p> <p>The Forward Deployable Radar will consist of existing X-band radar hardware, modified software algorithms for tracking and discrimination, and a direct interface with the BMDS command and control system. The Forward Deployable Radar design leverages existing radar configurations and technologies. This commonality allows for the accelerated procurement/development of the Forward Deployable Radar to satisfy Block 2006 capability requirements. Hercules algorithms will be used to enhance the Forward Deployable Radar software. The TPS-X radar will serve as a Test Bed to validate the algorithms and interface with the C2BMC prior to their inclusion in the Forward Deployable radar design. The TPS-X may also support forward based capability and enhancement of the BMDS Block 2004, if required.</p> <p>The addition of forward-based radars in the ESG for Block 06 adds to the BMDS by eliminating sensor coverage gaps in certain areas where a ballistic missile threat exists. Forward basing the radars gives the BMDS improved initial search, early detection and tracking capabilities in various forward locations as needed to counter ballistic missiles in the early or boost stage of flight, and hand off tracking responsibility to other BMDS sensors as part of a layered defense. This allows better information about the threat to improve system performance. Forward basing allows the radar to provide a cue to interceptors as a launch on remote capability. The mobility of the forward based radars gives the BMDS the flexibility to adjust sensor coverage to suite changes in the threat environments.</p> <p>In FY 2003, Forward Deployable Radar executed \$32.219 million for program and technical support used to establish the Forward Deployable Radar program, including SETA, FFRDC, UARC; and provide initial funding for the Forward Deployable Radar letter contract. In addition, the BMDS program executed \$12.0 million to improve the TPS-X as a Test Bed which will be use as a risk reduction asset to mature, validate and test the tracking and discrimination algorithms prior to the delivery of the Forward Deployable Radar equipment.</p> <p>The project also provides analysis of multi-spectral sensor enhancements for the BMDS leading to a sensor architecture and roadmap defining the paths for future sensor capabilities. The roadmap includes the evaluation of EO-IR sensors as enhancements to BMDS.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Capability Development	0	99,848	256,101
RDT&E Articles (Quantity)			
FY 2003 Accomplishments: (Funded in Project 5011)			
<ul style="list-style-type: none"> - Completed Forward Deployable Radar project planning - Initiated and completed definition of acquisition strategy for Block 2006 radar configuration - Awarded letter contract to meet block 2006 delivery - Identified and initiated TPS-X radar improvements for use as a test asset for advanced algorithm validation and risk reduction on C2BMC interfaces - Finalized Concept Validation (CV) plans for the initial set of algorithms - Identified additional sensors to enhance BMDS mission performance 			
FY 2004 Planned Program:			
<ul style="list-style-type: none"> - Define Forward Deployable Radar letter contract for Block 2006 radar configuration - Continue Forward Deployable Radar integration - Define a BMDS sensor architecture and roadmap - Complete sensor analysis to support definition of BMDS sensor architecture - Continue to evaluate tracking and discrimination algorithms - Develop test plans and begin algorithm assessment with TPS-X radar 			
FY 2005 Planned Program:			
<ul style="list-style-type: none"> - Delivery of Forward Deployable Radar hardware for field-testing - Delivery of engineering software release 1 - Continue Forward Deployable Radar integration and tests efforts - Update sensor architecture and roadmap - Deliver validated algorithms for Forward Deployable Radar - Continue TPS-X advanced algorithm assessments - Continue assessment of advanced algorithms in software release 1 - Execute Forward Deployable Radar C2BMC and platform integration efforts - Initiate development of BMDS sensor enhancements to support BMDS spiral upgrades - Execute contract option for 2nd Forward Deployable Radar 			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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<p>MDA Exhibit R-2A RDT&E Project Justification</p>		<p>Date February 2004</p>
<p>APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)</p>	<p>R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors</p>	
<p><u>D. Acquisition Strategy</u></p> <p>The Forward Deployable Radar project will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.</p> <p>The Forward Deployable Radar project acquisition strategy leverages existing radar configurations and technologies as part of the development of the forward based Forward Deployable Radar. The project awarded a letter contract to build a radar using X-band technology and existing radar designs to minimize development costs and schedule. Design enhancements will focus on software changes for the forward based algorithms and modified C2BMC connectivity. The contract is a cost plus-award fee effort, and includes options for up to three additional radars. Contract options for three additional forward based radars will be executed in FY 2005, FY 2006 and FY 2007, respectively.</p> <p>An ECP to the TPS-X test instrumentation radar was funded to implement improvements so the radar could be used as a Test Bed to support Forward Deployable Radar software development. This is a risk reduction asset that will be used to mature, validate and test the Hercules based tracking and discrimination algorithms. The TPS-X also will be used to test the C2BMC communications before they are integrated into the forward based radar. The TPS-X will allow testing to begin a year earlier providing more time for maturing the software prior to the Forward Deployable Radar equipment delivery.</p> <p>The Forward Deployable Radar project is planned to include a research and development program to provide for upgrades to future radars or sensors as required to support BMDS spiral development.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Capability Development										
RADAR										
Capability Based R&D Contract	SS/CPAF	Raytheon/ MA		79,125	1Q	149,477	1Q	CONT.	228,602	TBD
Additional Forward Deployable Radars	SS/CPAF	Raytheon/ MA				75,000	1Q	CONT.	75,000	TBD
TPS-X										
Capability Based R&D Contract	SS/CPAF	Raytheon/ MA		1,424	1Q	3,050	1Q	CONT.	4,474	TBD
Capability Based R&D Contract	MIPR	MIT/LL/ MA		10,009	1Q	9,650	1Q	CONT.	19,659	TBD
Capability Based R&D Contract	MIPR	PMRF				1,750	1Q		1,750	
TPS-X O&S										
Maintain Test Asset	SS/CPAF	Raytheon/ MA				4,200	1Q		4,200	
Maintain Test Asset	MIPR	MIT/LL/ MA				1,200	1Q		1,200	
Subtotal Product Development			0	90,558		244,327		0	334885	
Remarks FY 2003 Project Costs are described in Project 5011.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Capability Development										
Program Management										
	FFP	TASC/ VA		2,500	1Q	2,600	1Q		5,100	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Engineering Support										
	FFP	CSC/VA		2,300	1Q	2,400	1Q		4,700	
Program Support										
	Various	Various		472	1Q	1,304	1Q		1,776	
Subtotal Support Costs			0	5,272		6,304		0	11576	
Remarks FY 2003 Project Costs are described in Project 5011.										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Capability Development										
FFRDC/UARC	Various	MIT/LL, MITRE, JHU/APL		4,018	1Q	5,470	1Q		9,488	
Subtotal Management Services			0	4,018		5,470		0	9488	
Remarks FY 2003 Project Costs are described in Project 5011.										
Project Total Cost			0	99,848		256,101			355,949	
Remarks FY 2003 Project Costs are described in Project 5011.										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004															
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors																						
Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Acquisition Milestones																																
Definitize Forward Deployable Radar Contract					▲																											
Exercise Option for Forward Deployable Radar #2									Δ																							
Exercise Option for Forward Deployable Radar #3													Δ																			
Exercise Option for Forward Deployable Radar #4																	Δ															
Studies & Analyses																																
Evaluate FBR Algorithms (TPS-X)					Δ				=====	Δ																						
Sensor Architecture Analysis					Δ				=====	=====	Δ																					
Development Milestones																																
Forward Deployable Radar Software CDR													Δ																			
Forward Deployable Radar System Design Review									Δ																							
TPS-X FBR Algorithm Integration Complete																	Δ															
Testing Milestones																																
Forward Deployable Radar Performance Demonstration																					◇											
TPS-X FBR Algorithm Flight Test													Δ																			

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones							
Finalize TPS-X FBR Task Order		1Q					
Definitize Forward Deployable Radar Contract		1Q					
Exercise Option for Forward Deployable Radar #2			1Q				
Exercise Option for Forward Deployable Radar #3				1Q			
Exercise Option for Forward Deployable Radar #4					1Q		
Studies & Analyses							
Evaluate FBR Algorithms (TPS-X)		1Q-4Q	1Q-4Q				
Sensor Architecture Analysis		1Q-4Q	1Q-4Q	1Q-4Q			
Development Milestones							
BMDS Radar Software PDR		4Q					
BMDS Radar System Requirements Review (SRR)		1Q					
Forward Deployable Radar Software CDR			2Q				
Forward Deployable Radar System Design Review		3Q					
TPS-X FBR Algorithm CDR		3Q					
TPS-X FBR Algorithm Integration Complete			4Q				
TPS-X FBR Algorithm PDR		1Q					
Testing Milestones							
TPS-X FBR Algorithm Flight Test		2Q					
BMDS Radar Software Functional Qualification Test			3Q				
Forward Deployable Radar Performance Demonstration				2Q			
TPS-X FBR Algorithm Flight Test			1Q,2Q,3Q				
BMDS Radar High Power & Integration Test			2Q				
BMDS Radar Near Field Range Test			1Q				
TPS-X FBR Algorithm Flight Test			4Q				
Program Milestones							
BMDS Radar System Requirements Phase Complete		3Q					
BMDS Radar Integration and Test Complete			3Q				
Deliver Forward Deployable Radar #2					1Q		
Deliver Forward Deployable Radar #3						1Q	
Deliver Forward Deployable Radar #4							1Q

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MDA Exhibit R-4A Schedule Detail						Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Forward Deployable Radar Capability Achieved				3Q			
TPS-X FBR Algorithm Progress Reviews			1Q,3Q,4Q				
Manufacturing Processes and Advanced Materials							
Mature FBR Algorithms			4Q				
Forward Deployable Radar Integrated w/Release 1				2Q			

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0911 Ballistic Missile Defense Radars Block 2008	0	0	0	0	100,620	102,207	22,130
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Block 2008: This project will enhance the BMDS capability to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. Enhancement of the existing sensor architecture will be based on continued sensor coverage gap analysis and architecture studies. The studies will take into account existing sensors (land, sea, air and space based), new sensor technologies and techniques to enhance sensor coverage and advanced sensor algorithms. The studies will examine integration of a Larger Phased Array, SBX Radar, dish radars, passive and active Electro-Optical/Infrared (EO/IR) sensors, and the Forward Deployable Radar into BMDS. The analysis will result in various options to increase coverage, the best of which will be subject to cost-study trade-offs and feasibility for inclusion in Block 08 acquisition, and follow-on spiral development efforts.

Continuing from the Block 2006 design effort, Block 2008 is a spiral enhancement of the BMDS with additional algorithms and software to increase the robustness of the radar. In parallel with new sensor hardware capabilities derived from the studies, the Forward Deployable Radar software will be upgraded to enhance discrimination and tracking as needed to support the BMDS Block 2008 sensor architecture. Options for additional radar or non-radar sensor hardware offer the potential to expand locations and sensor network.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Funding in this period is not programmed until FY07			
RDT&E Articles (Quantity)			

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

The Forward Deployable Radar project will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

Planning for spiral upgrades for Blocks 2008 and 2010 will proceed consistent with the Block 2006 Forward Deployable Radar acquisition strategy and could be impacted by the decision to procure additional radars or sensors.

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones							
Initiate Acquisition of SBX 2					3Q		
Development Milestones							
Insert Mature Technologies into Existing Sensors					2Q		
Sensor Diversity both in RF Radar and in OE/IR						1Q	

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5060 Test & Evaluation	4,478	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY 2002 funding is for Advanced Concept Studies under the Advanced Systems Deputate. Funding for this activity continues under PE 0603880C in FY 2003. The above FY 2003 funding is for the congressionally directed Airborne Infrared Surveillance (AIRS) Project. Funding for AIRS in FY 2002 was under the BMD Technology PE (0603175C).

A. Mission Description and Budget Item Justification

The Advanced Concept Studies were managed under Project Hercules in FY 2002 and has become part of the Advanced Systems Deputate. The goal of this funding was to establish the Advanced Systems Innovation Cell, the Small Business Innovation Research evaluation group, and to allow the creation of a decision architecture prototype.

The Airborne Infrared Surveillance Project (AIRS) is a demonstration activity to provide a pathfinder for airborne infrared surveillance and fire control in the Ballistic Missile Defense (BMDS) Block 2006 or earlier. These activities will include maturing techniques and technologies that provide a bridge between the Test and Evaluation (T&E) data collection asset and a mature airborne infrared surveillance and fire control asset. Specifically, activities will include efforts on self-cueing, communications, and real-time discrimination.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Airborne Infrared Surveillance System	4,478		
RDT&E Articles (Quantity)			

FY 2003 AIRS ACCOMPLISHMENTS

Continued sensor and pointing system improvements. Evaluated deploying the Heimdall sensor suite on platforms such as the Global Hawk and Predator B UAVs. Collected prelaunch and boost phase data on a TEL on the ADE 4 mission. Demonstrated the ability to develop fire control quality 3-D tracks on the ASFT (Red Dog) missions. Completed AIRS Software Critical Design Review (CDR) for integration of tracking system enhancements, integration of communications systems, and hosting GFE discrimination algorithms. (TRL 3-5)

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

D. Acquisition Strategy

Acquisition strategy is to leverage existing T&E asset to mature necessary functions and aspects of surveillance and fire control and to serve as part of a contingency/emergency capability as a part of the BMDS Test Bed. Technology and techniques developed under AIRS will serve as a pathfinder for similar technologies in the high altitude, long endurance, stratospheric airship under study as well as the Spaced Based Infrared Radar (SBIR) technology. The contracting strategy for FY 2003 as a follow on effort to FY 2002 is the sole source of approximately 80% of the effort. They have met the necessary criteria in that no other source is available with the necessary technical expertise, the availability of access and modification of the HALO II aircraft.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Airborne Infrared Surveillance System										
AIRS	CPFF		4,478						4,478	
Subtotal Product Development			4,478	0		0		0	4478	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			4,478	0		0			4,478	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
AIRS																																
FBE Kilo			▲																													
First Tracking Upgrade	▲																															
Geo Registration				▲																												
Pointing System Upgrade		▲																														
Space Object Tracking			▲																													
Space Track Demo		▲																														
Celestial Alignment Upgrade				▲																												
Image Enhancement		▲																														
GFE CDC Installation				▲																												
Integration & Test Iridium	▲	▲																														

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
AIRS							
FBE Kilo	3Q						
First Tracking Upgrade	1Q						
Geo Registration	4Q						
Pointing System Upgrade	2Q						
Space Object Tracking	3Q						
Space Track Demo	2Q						
Celestial Alignment Upgrade	4Q						
Image Enhancement	2Q						
GFE CDC Installation	4Q						
Integration & Test Iridium	1Q-2Q						

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
5090 Program-Wide Support	34,878	0	0	0	0	0	0												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: Fiscal Year 2003 is reflected in project 5090 and Fiscal Years 2004 and out are in project 0602.</i></p> <p><u>A. Mission Description and Budget Item Justification</u> This project covers personnel and related support costs, statutory and fiscal requirements.</p> <p>Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.</p> <p>Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.</p> <p>Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.</p> <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Civilian Salaries and Support</td> <td align="right">34,878</td> <td align="right">0</td> <td align="right">0</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.</p> <p>Management Support: Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.</p> <p>Fiscal Requirements: This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.</p>									FY 2003	FY 2004	FY 2005	Civilian Salaries and Support	34,878	0	0	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Civilian Salaries and Support	34,878	0	0																
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603884C Ballistic Missile Defense Sensors				

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	7,424	14,085	16,703	20,871	22,892	26,379
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in project 5090 and Fiscal Years 2004 and out are in project 0602.

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	0	7,424	14,085
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
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IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322
0013 Ballistic Missile Defense Interceptor Block 2010	0	112,209	451,383	971,306	1,275,132	1,215,064	670,235
R113 Ballistic Missile Defense Interceptor Block 2012	0	0	47,475	130,856	421,608	946,953	1,739,069
0602 Program-Wide Support	0	5,510	12,404	16,437	20,740	34,514	40,018

Note: The Missile Defense Agency created the Ballistic Missile Defense System Interceptors Program Element (PE) in FY 2004. PE 0603883C, Projects 4010, 4020, and 4040 describe the budget documentation for FY 2003 Kinetic Energy Interceptors program. PE 0603886C consolidates all kinetic energy interceptor efforts (land, sea, space and experimentation) into one BMDS Interceptor program. This documentation addresses Blocks 2010 and 2012.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the Ballistic Missile Defense System (BMDS) on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the BMDS on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

Over the years, the Anti-Ballistic Missile (ABM) treaty shaped the nation's missile defense program, permitting only the development of theater missile defense systems and a limited number of silo-based national missile defense interceptors, confined to a single site in the continental United States. These ABM treaty constraints strictly limited the BMDS architecture options and drove us to focus on systems like the Standard Missile-3 (SM-3), Theater High Altitude Area Defense (THAAD) and Ground Based Interceptor that target the enemy's missiles during the mid-course and terminal portions of their trajectories.

With treaty constraints removed, the Missile Defense National Team (MDNT) identified the addition of a mobile, high performance kinetic boost/ascent layer as the highest priority weapon enhancement to the BMDS. A Missile Defense Agency (MDA) investment analysis considered all possible interceptor upgrade alternatives prior to reaching this conclusion. The MDNT studies prove, and the Defense Science Board (DSB) agrees, that a fast burn, high velocity, mobile interceptor, roughly two to three times as fast as the SM-3 and THAAD interceptors respectively, is a very effective weapon in the boost/ascent phase. Specifically, the DSB panel recommended the Secretary of Defense: 1) Direct R&D/engineering to expand surface-based capabilities with higher velocity/high acceleration missiles and supporting sensor network and 2) Initiate a boost/ascent phase development program against Intermediate Range Ballistic Missiles (IRBM) and Intercontinental Ballistic Missiles (ICBM). The Kinetic Energy Interceptor (KEI) and Airborne Laser (ABL) complement each other in defeating threat missiles in the boost phase of flight. The KEI booster vehicle and mobile launcher capabilities resulting from the boost/ascent development provide a critical building block for future midcourse and terminal phase upgrades. A foundation piece of the agency's BMDS block evolution strategy is to mate advanced payloads with the KEI common booster/mobile launcher.

In April 2003 we awarded Concept Design (CD) contracts to two U.S. industry teams (Northrop Grumman and Lockheed Martin) to use a capability based acquisition approach to competitively design a mobile, kinetic boost/ascent element and develop a detailed, low risk Development and Test (D&T) phase program plan. Industry's response to our capability-based solicitation surpassed our expectations. Northrop Grumman's winning proposal features an innovative integration of mature technologies that offers very high performance and military utility. During the CD phase, the Northrop Grumman team successfully developed high fidelity simulations of the boost element, built and exercised Hardware-in-the-Loop facilities to test kill vehicle seeker alternatives and plume-to-hardbody/homing guidance algorithms, performed a second-stage rocket motor static firing to confirm critical booster and thrust vector control technology readiness levels, and designed and built a prototype mobile launcher. In addition, a separate Northrop Grumman team (fire-walled from the competition) successfully conducted a series of real-time command and control battle management and communication (C2BMC)/fire control experiments utilizing actual solid and liquid ICBM and Satellite Launch Vehicle (SLV) launches to validate the ability to close a KEI fire control loop with overhead non-imaging infrared (ONIR) sensors. In December 2003, we awarded a 98 month contract to Northrop Grumman for Block 10 KEI D&T.

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MDA Exhibit R-2 RDT&E Budget Item Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors	
<p>The Block 10 KEI D&T program takes a non-traditional development approach. The program relies heavily on existing hardware and mature technologies, many of which have been proven in flight test for different missions. This high level of component maturity enables the program to execute a single design cycle with an immediate focus on producibility, manufacturing, quality, and affordability in addition to performance. Our number one D&T program priority is mission assurance, which translates into design for manufacture and assembly combined with an early and robust ground test program. Early proofing of hardware and software products on the actual production line and mandating that the third integrated flight test (IT-3) is production representative in every way are program keystones. To ensure this new approach to capability development gets implemented in a disciplined manner, product design and production maturity will be tracked against structured criteria using MDA-defined Engineering and Manufacturing Readiness Levels (EMRL) and Software Readiness Levels (SWRL). The steep "ramp-up" of funds in FY 2005 and FY 2006 corresponds with this acquisition approach. In FY 2005 and FY 2006, we conduct design reviews with the EMRL and SWRL knowledge points as entrance criteria, complete full scale risk mitigation tests of critical components (e.g. eight rocket motor/thrust vector assembly static firings, kill vehicle hardware-in-the-loop), activate test and integration facilities, design the production lines and evaluate critical tooling and materials, execute two integrated element ground tests, fabricate and test kill vehicle engineering units, and initiate procurement for dedicated target vehicles.</p> <p>Northrop Grumman is developing a mobile interceptor common to both land and sea basing. They will initially test from a national range using the land based, mobile launcher. Next, they will install the launcher on a containership, permitting testing of a wider spectrum of engagement geometries. In Block 12, Northrop Grumman will complete integration and test on a sea based platform, likely a surface based combatant or submarine. Also in Block 12, they begin testing the inherent mid-course capability of the system against targets in the mid-course and exoatmospheric terminal phase, expanding the military utility of the inherent BMDS interceptor capabilities.</p> <p>MDA continues to conduct a disciplined approach to collecting data to better understand the physics of boosting flight. This measurements test program exploits existing targets of opportunity flights such as ICBM and space launches through the use of ground, aircraft-borne and space based sensors. The importance of these data products enables improvements to be made to guidance algorithms, scene generation fidelity levels, and modeling and simulation results that are used to analyze interceptor performance capabilities against various threat type characteristics to include plume to hard body discrimination under different scenarios. In FY 2003 we conducted six of these missions against both liquid and solid rocket ICBMs and SLVs. These test results proved we could rely on data provided by overhead non-imaging infrared sensors to give us the accuracy we need to launch and navigate the interceptor through the various stages of tracking and engaging a target to intercept. During FY 2004 and beyond we intend to conduct additional target of opportunity flights, varying the geometries of the flight test scenarios and instrument set-ups to improve our fidelity of data sets to include near field data needs throughout boost. Near field InfraRed measurements of the plume and rocket body during boost are one area where MDA desires additional data to reduce risk. To address this need, MDA plans to launch a space based Near Field InfraRed Experiments (NFIRE) satellite in FY 2006. Results from these experiments will anchor the boost/ascent guidance algorithms and simulations and will verify plume-to-hard body discrimination.</p> <p>International cooperation in the boost/ascent kinetic energy interceptor program is an important part of MDA's overall strategy on international cooperation and is in accordance with Presidential direction. Our objective is to encourage participation of friends and allies in the development of alternate boost/ascent phase system components such as booster, kill vehicle, or C2BMC system. This approach reduces risk, produces competitive pressure, provides added options for component evolution, and importantly, fosters collaboration with our friends and allies. In FY 2005 we intend to award a contract to start an international industry development program that will produce viable alternate system components for potential insertion into Block 12 and succeeding Blocks. These alternate components will have boost/ascent and mid-course capability and will be compatible with land, sea and space environments.</p> <p>Building on past technology and architecture studies of space based missile defenses, in FY 2004 we will conduct an analytical effort with the MDNT to identify the benefits of incorporating space based interceptors into a layered ballistic missile defense system. The MDNT will continue this effort by outlining an operations concept, forming a framework for future war-games at the Joint National Integration Center. Beginning in FY 2005 and continuing through FY 2009, the space based program will begin a risk reduction effort. We will initiate development of miniaturized, lightweight interceptor components, with the initial emphasis on developing a liquid axial stage. The program will also focus on the miniaturization and weight reduction of Kill Vehicles (KV) and lifejackets. Building on the MDNT efforts in FY 2004, the program will initiate a modeling and simulation effort to address the risks associated with BMDS integration, battle management and constellation management and control. The program will continually update these simulation and modeling tools throughout the life of the program. Depending on the technology program's progress, the first set of space-based experiments will be on orbit in 2010 - 2011. By 2011 - 2012, our space based test bed will have a thin constellation of 3 to 6 spacecraft on orbit.</p>		

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	0	301,052	541,178
Current President's Budget (FY 2005 PB)	0	117,719	511,262
Total Adjustments	0	-183,333	-29,916
Congressional Specific Program Adjustments	0	-182,000	0
Congressional Undistributed Adjustments	0	-1,333	0
Reprogrammings	0	0	-29,916
SBIR/STTR Transfer	0	0	0

The FY 2004 reduction of \$182,000,000 was made to BMDS Interceptor program growth.

The FY 2005 decrease of \$29,916,000 reflects the Missile Defense Agency's realignment of resources to support higher Agency priorities.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0013 Ballistic Missile Defense Interceptor Block 2010	0	112,209	451,383	971,306	1,275,132	1,215,064	670,235
RDT&E Articles Qty	0	0	2	5	12	9	4

A. Mission Description and Budget Item Justification

The Missile Defense Agency's (MDA) goal for Block 10 is to add a kinetic energy boost layer to the Ballistic Missile Defense System (BMDS). There are two major efforts to achieve this goal. Development and test of a mobile, land based boost ascent interceptor element and the NFIRE risk reduction activity.

In last year's budget documentation, we described our plan to deliver land based kinetic energy boost capabilities to the BMDS in Block 08. The results of our contracted concept design efforts and the FY 2004 budget reductions forced us to adjust our expectations for delivering these capabilities. We will complete development of a land based, boost/ascent element in Block 10.

In FY 2003 we awarded two contracts to design a mobile, boost/ascent element and develop a detailed plan to achieve this capability. Block 10 program priorities in rank order are mission assurance, schedule, performance and cost. These priorities resulted in the contractors proposing existing hardware, software and proven technologies in their design concept. During the Concept Design phase the Northrop Grumman team completed initial hardware-in-the loop testing of a kill vehicle seeker, built and tested a full-scale prototype launcher, static fired the second-stage rocket motor with trapped-ball thrust vector control, conducted real-time C2BMC/Fire Control experiments with Overhead Non-Imaging Infrared (ONIR) sensors, and built and exercised a high-fidelity simulation of entire Kinetic Energy Interceptor (KEI) element concept. In December 2003, we awarded a follow-on contract for the KEI Development and Test (D&T) Program to Northrop Grumman.

The KEI land based element design is based on mature technologies proven in ground and flight test at the component level. The Raytheon KEI kill vehicle combines the SM-3 seeker/avionics with an Exoatmospheric Kill Vehicle (EKV) liquid divert and attitude control system to achieve a high performance boost/ascent interceptor with inherent midcourse defense capability. The KEI third stage is a production SM-3 third stage rocket motor (TSRM) with a new attitude and control subsystem derived from Ground-based Midcourse Defense (GMD). The Alliant Technology (ATK) first and second stage motors utilize advanced solid axial stage (ASAS) technologies we have been developing and testing incrementally over the last decade. The Northrop Grumman C2BMC component builds upon an extensive suite of concept design phase algorithms and Northrop's substantial investments as lead developer of the GMD C2BMC capability. The mobile launcher is a modification of military-off-the-shelf (MOTS) equipment.

The KEI D&T program is structured much differently than predecessor missile defense programs. The Northrop Grumman D&T integrated master plan/integrated master schedule (IMP/IMS) features an unprecedented mix of program content during the early years of execution. This content is driven by newly defined MDA engineering & manufacturing, software, and operational readiness level criteria. The MDA has defined the new readiness levels as exit criteria (knowledge points) for design reviews and the Block 10 capability milestone. Our objective is to focus early Northrop Grumman development work on manufacturing, producibility, quality, affordability, and operational suitability in addition to the traditional upfront emphasis on technical performance. The FY 2004/FY 2005 D&T program content includes: 1) mitigation of key risks through early build and test of full scale prototypes based on mature technologies, 2) complete definition of all requirements and interfaces by Design Review-1, 3) design of the interceptor, C2BMC, and launcher production lines, 4) establishment of machines and tooling in a laboratory environment for selected items, 5) development of engineering models as flight test unit pathfinders, 6) initiating builds of all integration labs and activating test facilities, 7) initiate procurement of flight test targets and 8) extensive involvement of the User (USSTRATCOM, USNORTHCOM, Army) in KEI capability design and operations concept definition. Northrop Grumman will conduct this work across multiple geographic centers where the integrated product teams are based.

Mobility of the interceptor is an essential characteristic enhancing its military utility. The KEI contractor is developing a canisterized interceptor which is completely common to both land and sea basing and compatible with land and sea environments. These attributes will provide both flexibility and robustness to the test program, and ease the transition to a fully integrated sea based capability. Developing a realistic, robust test program for the BMDS Interceptor element is paramount to the BMDS. Beginning in FY 2008 Northrop Grumman will test the interceptor from both land based ranges and a sea based platform. Launching the interceptor from a sea based platform is critical to providing realistic coverage of the operational envelope and intercept geometries. Based on results of a Military Sealift Command (MSC) market survey, the agency, through MSC, will acquire a containership to support the BMDS interceptor testing. While serving to enhance the flexibility of the BMDS test bed, the containership may be deployed in case of a national emergency.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603886C Ballistic Missile Defense System Interceptors	
<p>We will execute a series of two contractor flight tests (Element Characterization Flight and Ship-launched Risk Reduction Flight) and five Integrated Flight Tests (IT 1-5) against targets during the D&T. These flight tests will be preceded by a robust series of ground testing including multiple static fire tests of all three rocket motor stages and integrated Kill Vehicle hover testing as well as a Booster Flight (BF) test, a Partial Full Scale (PFS) flight test and a Control Test Vehicle (CTV) flight test. Numerous integrated ground tests of the Element C2BMC with the BMDs and the Element C2BMC with the launcher will also be conducted. All five IT missions will have the objective of intercepting the target. Beginning with IT-3, the element will be tested using production hardware and software with IT-5 mission conducted by the user. To support this strategy we will procure nine targets (including two spares).</p> <p>Block 10 testing focuses on boost/ascent phase intercept. Technical and operational issues resolved during land based development and testing mitigate risks for future evolutions of this mobile and highly effective capability.</p> <p>MDA continues to conduct a disciplined approach to collecting data to better understand the physics and phenomenology of boosting flight. This measurements test program exploits existing targets of opportunity flights such as ICBM and space launches through the use of ground, aircraft-borne and space based sensors. The importance of these data products enables improvements to be made to guidance algorithms, scene generation fidelity levels, and modeling and simulation results that are used to analyze interceptor performance capabilities against various threat type characteristics to include plume to hard body discrimination under different scenarios. In FY 2003 we conducted six of these missions against both liquid and solid rocket ICBMs and SLVs. These test results proved we could rely on data provided by overhead non-imaging infrared sensors to give us the accuracy we need to launch and navigate the interceptor through the various stages of tracking and engaging a target to intercept. Data from the aircraft sensors validated our approach for guidance and control during interceptor acquisition and track. During FY04 and beyond, we intend to conduct additional target of opportunity flights, varying the geometries of the flight test scenarios and instrument set-ups to improve our fidelity of data sets to include near field data needs throughout boost.</p> <p>The collection of the near field infrared measurements of boosting targets will be from an on-orbit satellite. Currently, MDA is building the Near Field InfraRed Experiments (NFIRE) satellite. The major objective of this effort is to collect near field long, medium and short wave infrared (LWIR, MWIR, SWIR) measurements of the rocket plume and body in the boost phase of flight to anchor our understanding of the plume phenomenology and plume to rocket body discrimination. MDA will also use this data to validate the models and simulations that are fundamental to developing the navigation, guidance and control and endgame homing algorithms for the KEI D&T program</p> <p>Two payloads will be integrated onto the satellite to meet this objective. The first is a multi spectral, missile tracking system built by SAIC, San Diego, California, that will provide sub-meter near field infrared (IR) data for two dedicated target flights. This payload consists of sensors spanning the electromagnetic spectrum in the LWIR, MWIR, SWIR and visible wavebands. The second payload, built by Raytheon Systems Company in Tucson, AZ, is a maneuvering kill vehicle that deploys from the spacecraft for a fly-by of a boosting ICBM-like target to collect sub-meter endgame IR imagery.</p> <p>Over the one-year lifetime of the satellite, we execute four mission types. The first mission set tracks ground targets such as forest fires, volcanoes, and static tests of rocket engines. This mission will verify, on-orbit, the pointing accuracy of the gimbaled system and calibrate the tracking sensors. The second mission set tracks targets of opportunity worldwide that take place regardless of the NFIRE experiment. These might include aircraft flights, space launches and operational missile tests. The two primary missions require the spacecraft to maneuver to view a boosting ICBM closing on the spacecraft. During the second of these two missions, the spacecraft releases the kill vehicle for a fly-by of the burning missile.</p> <p>Spectrum Astro in Gilbert, AZ will build the spacecraft and integrate the two mission payloads into the spacecraft. An Orbital Sciences Corporation built Minotaur Launch Vehicle will launch the NFIRE satellite in the first quarter FY 2006.</p>		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Land Based		62,030	375,006
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments: (The funding that corresponds to FY 2003 Accomplishments can be found in PE 0603883C, Project 4010.)</p> <ul style="list-style-type: none"> - Awarded two Concept Design contracts for down-select to one capability developer in FY 2004. - Conducted Boost/Ascent capability Concept Design phase using capability-based acquisition approach - Conducted high fidelity modeling and technical evaluation of competitor capabilities - Conducted rolling down select for Development and Test (D&T) phase - Conducted Sea-Based Commonality/Compatibility evaluation of Land-Based Boost/Ascent Concept - Initiated operational sea basing platform study - Selected containership for sea based test bed following Military Sealift Command market survey - Completed initial hardware-in-the-loop testing of a kill vehicle seeker - Built and tested a full-scale prototype launcher - Static fired the second stage rocket motor with trapped ball thrust vector control - Conducted real time C2BMC/Fire Control experiments with Overhead Non-imaging infrared (ONIR) sensors - Built and exercised a high-fidelity simulation of entire KEI element concept - Collected critical boost/ascent phenomenology data with ground, airborne, and space test assets. <p>FY 2004 Planned Program:</p> <p>Key Element level FY 2004 activities include:</p> <ul style="list-style-type: none"> - Award KEI Block 10 Boost/Ascent capability Development & Test (D&T) contract - Conduct D&T contract Integrated Baseline Review (IBR) to solidify work packages and cost baseline - Conduct the System Requirements Review (SRR) and baseline KEI Block 10 Boost/Ascent Capability Specification - Develop Element Simulations and Models - Establish D&T contract Risk Mitigation Plans and begin risk mitigation activities - Conduct Mission Assurance Actions - Establish Master Developmental Test Plan - Initiate range and range safety planning and coordination - Establish target requirements - Finalize acquisition plans for sea-based test bed platform - Procure and install special test equipment (STE) - Initiate Concept of Operations (CONOPS) development with the Navy and USSTRATCOM - Conduct User Table Top discussions - Continue collection of critical boost/ascent phenomenology data with ground, airborne, and space test assets - Evaluate contribution of other BMDS sensors to the KEI boost/ascent element 			

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<p>MDA Exhibit R-2A RDT&E Project Justification</p>		<p>Date February 2004</p>
<p>APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)</p>	<p>R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors</p>	
<p>Key Interceptor level FY 2004 activities include:</p> <ul style="list-style-type: none">- Conduct Interceptor System Requirements Review and flow down of Interceptor and Canister subcomponent requirements- Design and fabricate STE for design verification testing- Establish Manufacturing Process Lab- LDACS Thruster risk reduction demonstration- Conduct Static Booster Motor Firing (Tactical Diameter) <p>Key C2BMC level FY 2004 activities include:</p> <ul style="list-style-type: none">- Conduct C2BMC System Requirements Review and flow down C2BMC subcomponent requirements- Develop interface requirements between KEI boost/ascent element and the BMDs C2BMC- Prototype BMDs C2BMC Interface to the KEI C2BMC- Conduct Algorithm/Timeline Demonstration- Conduct Static Booster Motor Firing (Tactical Diameter)- Conduct Direct Downlink Experiment- Conduct Human Machine Interface (HMI) Demonstration <p>Key Launcher level FY 2004 activities include:</p> <ul style="list-style-type: none">- Conduct Launcher System Requirements Review and flow down launcher subcomponent requirements- Initiate Launcher Control Electronic Assembly Development <p>FY 2005 Planned Program:</p> <p>Key Element level FY 2005 activities include:</p> <ul style="list-style-type: none">- Continue Block 10 Boost/Ascent capability Development and Test- Establish Interim System Integration Laboratory (SIL) to allow early integration testing- Conduct Integrated Ground Test 1- Continue assessment of Engineering and Manufacturing Readiness Levels and Software Readiness Levels- Update Element and Simulation Models- Demonstrate through modeling and simulation boost/ascent phase sensor, fire control, and C2BMC capabilities in BMDs Test Bed.- Continue collection of critical boost/ascent phenomenology data with ground, airborne, and space test assets.- Conduct Risk Mitigation Activities and Mission Assurance Actions- Continue test planning and update Master Developmental Test Plan- Continue range and range safety planning and coordination- Initiate target procurement- Finalize procurement plans for sea based test bed- Conduct User CONOPS table top exercises- Finalize operational sea-basing CONOPS development- Continue operational sea-based platform coordination with the Navy and USSTRATCOM- Continue User Table Top discussions		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603886C Ballistic Missile Defense System Interceptors	
<p>Key Interceptor level FY 2005 activities include:</p> <ul style="list-style-type: none"> - Fabricate and deliver COTS SW evaluation station - Kill Vehicle Bench Testing - Interstage bench testing - STE design and fabrication - Manufacturing process development - Update HW and SW for SIL - Begin prototype of production line - Fabricate production HW (pathfinder) - Begin fabrication of engineering test HW - Build and integrate static fire booster HW and prepare for a series of rocket motor static firings - Conduct engineering and design activities in support of initial design release for ground test hardware - Establish Interceptor Component Integration Laboratory (CIL) - Continue bench testing and initiate ground testing of key Interceptor and Canister sub-components - Define Interceptor and Canister functional and physical interface requirements - Begin validation of key design algorithms through modeling and simulation and hardware in the loop testing - Complete Interceptor and Canister test plans and establish developmental HW and SW test plan - Commence Interceptor and Canister production facility planning and implementation <p>Key C2BMC level FY 2005 activities include:</p> <ul style="list-style-type: none"> - Conduct engineering and design activities in support of initial design release for ground test hardware - Define C2BMC functional and physical interface requirements - Baseline interface requirements between KEI Boost/Ascent element and the BMDS C2BMC - Establish C2BMC Component Integration Laboratory (CIL) - Interim SIL Operational - HW/SW procurement for SIL and SIF integration - Complete KEI Inflight Communication System (KICS) Engineering Bread Board development - Begin validation key design algorithms through modeling and simulation and hardware in the loop testing - Continue bench testing and initiate ground testing of key sub-components - Complete C2BMC test plans and establish developmental HW and SW test plan - Evaluate and execute sensor change requests in support of improved KEI element performance as deemed appropriate - Commence C2BMC production facility planning and implementation <p>Key Launcher level FY 2005 activities include:</p> <ul style="list-style-type: none"> - Activate Launcher Production Line - Complete proof of concept testing - Upgrade Concept Design prototype launcher to support D&T - Fabricate 2 launchers to support D&T - Conduct engineering and design activities in support of initial design release for ground test hardware - Define Launcher functional and physical interface requirements 		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors	
<ul style="list-style-type: none"> - Establish Launcher Component Integration Laboratory (CIL) - Begin validation of key design algorithms through modeling and simulation and hardware in the loop testing - Continue bench testing and initiate ground testing of key sub-components - Complete Launcher test plans and establish developmental HW and SW test plan - Commence launcher production facility planning and implementation 			
	FY 2003	FY 2004	FY 2005
Experimentation & Test		44,516	68,000
RDT&E Articles (Quantity)			2
<p>RDT&E Articles: FY 2005, 1 NFIRE Space Vehicle, 1 Launch Vehicle</p> <p>FY 2003 Accomplishments: (The funding that corresponds to FY 2003 Accomplishments can be found in PE 0603883C, Project 4010.)</p> <ul style="list-style-type: none"> - Initiated procurement of spacecraft for the NFIRE - Initiated procurement for the Launch vehicle for the NFIRE - Integrated and tested the kill vehicle subcomponents in preparation for an FY 2004 Development Testing - Conducted real-time fire control/BMC2 exercises and simulated engagements using space launch and ballistic missile targets of opportunity <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Assemble Integrate and ground test Multi Spectral Tracking Sensor Payload - Complete Kill Vehicle Ground Based Testing - Assemble Integrate and Ground Test Flight Kill Vehicle - Assemble, Integrate and Ground Test Spacecraft bus - Develop Ground Segment Mission Operations Center - Initiate procurement for two (2) Multi Stage Boost Targets - Complete and Deliver Multi-Spectral Tracking Sensor Payload <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Complete Kill Vehicle Computer-In the-Loop (CIL) facility upgrade - Complete Space Vehicle Environmental Test - Complete Space Vehicle Integration and Acceptance Test - Certify Ground Segment Launch Site Readiness - Complete Kill Vehicle software - Complete ground test of flight software 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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- Complete and deliver Kill Vehicle Payload
- Complete Ground Segment Mission Operations Center
- Complete delivery and acceptance of Launch Vehicle components
- Accept delivery of two (2) Multi-Stage Boost Target

	FY 2003	FY 2004	FY 2005
Program Management & Engineering		5,663	8,377
RDT&E Articles (Quantity)			

This effort supports the program management and engineering for BMDS interceptors project including contractor support (SETA), continuing risk reduction activities, Federally Funded Research and Development Center (FFRDC) efforts, and National Laboratory efforts.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603886C Ballistic Missile Defense System Interceptors				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

KEI's acquisition strategy is an evolutionary one where the initial mobile land based boost/ascent phase system (Block 10) evolves first to a sea based one (Block 12) and then to one capable of intercepting ballistic missiles in the mid-course phase of flight. A feature distinguishing this acquisition is an early emphasis on engineering and manufacturing readiness as part of the design process. This is in contrast to the usual design process that produces engineering prototypes for test and then has a later, costly redesign to improve reliability and ease of manufacturing. This strategy implies early proofing of critical manufacturing processes as well as early, comprehensive ground subsystem testing as integral parts of the design process. It also implies a heavily, front end-loaded funding profile with the payoff coming in reduced redesign and retest, fewer test failures as well as lowered manufacturing cost. The strategy has event-based knowledge points using Engineering and Manufacturing Readiness Levels (EMRL) and Software Readiness Levels (SWRL) as maturity and risk indicators for proceeding forward with detailed design, building flight hardware and having a production off-ramp.

To implement the strategy we have competitively picked a single contractor team who offered the best balance of mission assurance confidence, technological maturity, mission capability (system performance), managerial and technical team performance and price. That contractor also offered us a competitive price commitment for the hardware we will buy as well as a firm fixed price, 10 year warranty covering virtually any reliability failure or performance shortfall relative to the performance specification. The early commitment to a production price and warranty conditions are integral to our strategy. These give the contractor a huge monetary incentive to promise only what he is certain he can deliver, to design in features that enhance reliability and lower production cost and to have a robust ground test program to uncover any systemic issues before flight test.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Land Based										
Capability Development	C/Variou	Northrop Grumman		56,000	1Q	328,658	1Q	CONT.	384,658	TBD
MDA Service Systems Engineering	Variou	Variou		6,030	3/4Q	46,348	3/4Q	CONT.	52,378	TBD
Subtotal Product Development			0	62,030		375,006		0	437036	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Management & Engineering										
SETA	C/FFP	MEI		4,463	1/2Q	6,147	1/2Q	CONT.	10,610	TBD
SETA	C/FFP	PENTA		300	1Q	330	1Q	CONT.	630	TBD
SETA	C/FFP	SPARTA, Inc/ Arlington, VA		250	1Q	275	1Q	CONT.	525	TBD
Engineering & Technical Spt	MIPR	NSWC/DD/ Dahlgren, MD		400	1Q	1,000	1Q	CONT.	1,400	TBD
Engineering & Technical Spt	MIPR	NSWC/PHD		250	1Q	625	1Q	CONT.	875	TBD
Subtotal Support Costs			0	5,663		8,377		0	14040	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Experimentation & Test										
Experimentation & Test-NFIRE	C/CPAF	Spectrum Astro		13,221	1/2Q	13,009	1/2Q	CONT.	26,230	TBD
Experimentation & Test - NFIRE	Variou	PMS422/Raytheon		13,046	1/2Q	10,350	1/2Q	CONT.	23,396	TBD
Experimentation Test -NFIRE	Variou	AFRL/SAIC		7,658	1/2Q	1,500	1/2Q	CONT.	9,158	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Experimentation Test -NFIRE	Various	SMC Det 12		6,400	1/2Q	35,116	1/2Q	CONT.	41,516	TBD
Experimentation & Test - NFIRE	MIPR	ComSec Gear		511	1Q	500	1Q	CONT.	1,011	TBD
Experimentation & Test - NFIRE	MIPR	Aerospace		200	1Q	200	1Q	CONT.	400	TBD
Experimentation & Test - NFIRE	Various	JNIC Mission Operations		2,500	1/2Q	6,740	1/2Q	CONT.	9,240	TBD
Experimentation & Test	MIPR	AEDC		420	2Q	55	1Q	CONT.	475	TBD
Experimentation & Test	Various	JCTE		50	1Q			CONT.	50	TBD
Experimentation & Test	Various	VAFB		10	2/3Q	30	1Q	CONT.	40	TBD
Subtotal Test and Evaluation			0	44,016		67,500		0	111516	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Experimentation & Test										
FFRDC/National Laboratory	MIPR	MIT/LL		500	1Q	500	1Q	CONT.	1,000	TBD
Subtotal Management Services			0	500		500		0	1000	
Remarks										
Project Total Cost			0	112,209		451,383			563,592	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Land Based Block 2010																																
Concept Design Contract Award			▲																													
Development & Test Contract Award				▲																												
Conduct KEI System Requirements Review (SRR)							Δ																									
Conduct KEI Element Initial Design Release												Δ																				
Conduct Design Review - 1 (DR-1)															Δ																	
Conduct Booster Stage 1 and 2 Static Fire Tests													Δ	—	—	Δ																
Conduct 3rd Stage Rocket Motor Static Fire Tests													Δ	—	—	Δ																
Conduct Element Detailed Design Release																			Δ													
Conduct Booster Flight (BF) flight test																				Δ												
Conduct Partial Full Scale (PFS) flight test																				Δ												
Conduct Kill Vehicle Hover Test																								Δ								
Declare Flight Test-Bed Ready																								Δ								
Conduct Hardware Design Review - 2 (DR-2)																												Δ				
Conduct Control Test Vehicle (CTV) flight test																												Δ				
Conduct Software Design Review - 2 (DR-2)																															Δ	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Land Based Block 2010							
Concept Design Contract Award	3Q						
Development & Test Contract Award		1Q					
Integrated Baseline Review (IBR) completed		2Q					
Conduct KEI System Requirements Review (SRR)		3Q					
Conduct Interceptor SRR		4Q					
Conduct C2BMC SRR		4Q					
Conduct Launcher SRR			1Q				
C2BMC Software Version 0 Delivered			2Q				
C2BMC Component Integration Laboratory (CIL) Est			2Q				
Launcher (CIL) Established			3Q				
Interim System Integration Laboratory (SIL) Est.			3Q				
Conduct Integrated Ground Test-1 (IGT-1)			4Q				
Conduct Launcher Initial Design Release			4Q				
Interceptor CIL Operational			4Q				
Conduct Interceptor Initial Design Release			4Q				
Conduct C2BMC Initial Design Release			4Q				
Conduct KEI Element Initial Design Release				1Q			
Conduct Integrated Ground Test-2 (IGT-2)				2Q			
Conduct Design Review - 1 (DR-1)				3Q			
Conduct Booster Stage 1 and 2 Static Fire Tests				1Q-4Q	1Q		
Conduct 3rd Stage Rocket Motor Static Fire Tests				2Q-4Q			
Conduct Integrated Ground Test - 3 (IGT-3)					1Q		
Conduct Element Detailed Design Release					3Q		
Conduct Booster Flight (BF) flight test						1Q	
Conduct Partial Full Scale (PFS) flight test						2Q	
Conduct Kill Vehicle Hover Test						3Q	
Declare Flight Test-Bed Ready						3Q	
Conduct Hardware Design Review - 2 (DR-2)						4Q	
Conduct Control Test Vehicle (CTV) flight test						4Q	
Conduct Software Design Review - 2 (DR-2)							1Q

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Conduct Element Characterization Flight (ECF) Test							2Q
Conduct Integrated Ground Test - 5 (IGT-5)							3Q
Conduct Ship-Launched Risk Reduction Flight test							4Q
Near Field Infrared Experiment							
Complete Space Vehicle (SV) Bus Integration		3Q					
Deliver Multi-Spectral Sensor Payload		4Q					
Complete Kill Vehicle CIL facility upgrade			2Q				
Complete Space Vehicle Environmental Test			2Q				
Complete SV Integration and Acceptance Testing			2Q				
Certify Ground Segment Launch Site Readiness			3Q				
Complete KV Boost Phase engagement software			3Q				
Complete ground test of flight software			4Q				
Complete and deliver KV Payload			4Q				
Complete Ground Segment Mission Operations Center			4Q				
Complete delivery of Launch Vehicle components			4Q				
Deliver 2 Multi-Stage Boost Target			4Q				
Complete Launch Vehicle Integration				1Q			
NFIRE Launch				1Q			
NFIRE On-orbit Operational Checks				1Q			
NFIRE Experiment				1Q-4Q			
Type 1&4 Missions - Targets of Opportunity				1Q-4Q			
Complete Multi-Stage Boost Target 1 Integration				1Q			
Type 2 Mission - Flyby				1Q			
Complete Multi-Stage Boost Target 2 Integration				2Q			
Type 3 Mission - Deploy KV During Target Flyby				2Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
R113 Ballistic Missile Defense Interceptor Block 2012	0	0	47,475	130,856	421,608	946,953	1,739,069
RDT&E Articles Qty	0	0	0	0	0	1	11

A. Mission Description and Budget Item Justification

Land and Sea Basing:

The Agency's goal for Block 12 leverages the Block 10 capability, improving the effectiveness against all phases and all ranges of the enemy's offense. In Block 12, we complete the transition from land to sea, inaugurating this capability from a Navy vessel, likely a surface combatant or a submarine. We also begin testing the system's inherent midcourse capability during Block 12, expanding the range and flexibility of the new BMDS interceptor.

Operating in international waters obviates basing restrictions that reduce the effectiveness of the land mobile interceptor element in some scenarios. Our plan leverages the completely common canisterized interceptor system built in Block 10, developing and testing those interfaces necessary for launch from a naval platform. During Block 10 containership testing, we mitigate many of the issues for transition to naval platforms.

The platform options for our Block 12 sea based capability are 1) baseline 2-4 Aegis Cruiser, 2) SSBN submarine and 3) a SSGN submarine. The Agency will work closely with the Navy and USSTRATCOM in FY 2004 to define an acquisition strategy and platform for operational integration of the interceptor. Northrop Grumman will complete a series of sea based, boost/ascent intercept flight tests in Block 2012 to demonstrate this integrated sea based capability. We will modify our contract to begin activities for integration of the interceptor into the Navy-approved platform.

International cooperation in the boost/ascent kinetic energy interceptor program is an important part of MDA's overall strategy on international cooperation and is in accordance with Presidential direction. Our objective is to encourage participation of friends and allies in the development of alternate boost/ascent phase system components such as booster, kill vehicle, or command and control battle management and communication (C2BMC) system. This approach reduces risk, produces competitive pressure, provides added options for component evolution, and importantly, fosters collaboration with our friends and allies. In FY 2005 we intend to award a contract to start an international industry development program that will produce viable alternate system components for potential insertion into Block 12 and succeeding Blocks. These alternate components will have boost/ascent and mid-course capability and will be compatible with land, sea and space environments.

We will release a Request for Information (RFI) in FY 2004. The RFI will go to both US and international contractors with the explanation that we plan to use the results from the RFI to craft an acquisition strategy involving significant industrial participation from our friends and allies. We intend that the participation include substantial development responsibilities, but not either standalone technology maturation or prototype demonstration activities. Our expectation is that the development will involve international participation and funding.

During the Block 2012 timeframe, we will continue boost/ascent testing over the full range of adversary threat space while adding intercept flight tests in the midcourse and exoatmospheric terminal phase. In support of Block 14, the contractor will modify the boost/ascent C2BMC component to incorporate additional BMDS sensor interfaces, new midcourse discrimination algorithms and an extended range in-flight communications data link. The contractor will also develop and test kill vehicle upgrades yielding enhanced BMDS exoatmospheric discrimination and/or the ability to intercept in the terminal phase high in the earth's atmosphere. Missile Defense National Team (MDNT) studies will guide the payload upgrade priorities.

Space Basing:

The KEI Block 12 strategy includes the development of a space based interceptor test bed. The Defense Science Board (DSB) has examined past space-based interceptor efforts including the Brilliant Pebbles and Space Based Interceptor programs and identified a number of technical challenges remaining unresolved. Some of the areas include: BMDS integration, battle management, kill vehicle miniaturization to reduce weight, constellation management and control, and affordability.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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The terrestrial development and test program along with the Near Field Infrared Experiment will lay the groundwork for the space based effort. These efforts along with other MDA programs, including the miniature kill vehicle program, will also address some of the technical challenges identified by the DSB. Other challenges, including BMDS integration, battle management, and constellation management and control, are amenable to simulation. In FY 2004 we will initiate an analytical effort with the MDNT to identify the benefits of incorporating space based interceptors into a layered ballistic missile defense system. The MDNT will continue this effort by outlining an operational concept, forming a framework for future war-games at the Joint National Integration Center.

Beginning in FY05 and continuing through FY 2009, the space based program will begin a ground based risk reduction effort. We will initiate development of miniaturized, lightweight interceptor components, with the initial emphasis on developing a liquid axial stage. The program will also focus on the miniaturization and weight reduction of KVs and lifejackets. Building on the MDNT efforts in FY 2004, the program will initiate a modeling and simulation effort to address the risks associated with BMDS integration, battle management and constellation management and control. The program will continually update these simulation and modeling tools throughout the life of the program.

Based on the results of these ground based risk reduction efforts, the Director, Missile Defense Agency, will make a decision in 2008 to transition to development of satellites to conduct on orbit experiments. In 2012, the space based test bed will have on orbit a thin constellation of 3 to 6 spacecraft to test the functionality of a space based BMDS.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Land Based			26,375
RDT&E Articles (Quantity)			
FY 2005 Planned Program: - Finalize International Cooperation Plans for Boost/Ascent Program - Finalize International Cooperation Agreements - Issue RFP and award contract(s) for Boost/Ascent component projects - Initiate Design of Alternate Component			
	FY 2003	FY 2004	FY 2005
Sea Based			10,550
RDT&E Articles (Quantity)			
FY 2005 Planned Program: - Finalize concept of operations for Navy platforms - Complete platform coordination with Navy and begin defining platform allocation strategy - Initiate sea-based launcher design and ship integration plan - Initiate hypergolic fuel risk mitigation project - Cooperatively fund the development of a flexible solid divert and attitude control system			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors				
	FY 2003		FY 2004		FY 2005				
Space Based									10,550
RDT&E Articles (Quantity)									
FY 2005 Planned Program: - Concept analysis and wargaming - Initiate technology development and testing of advanced, lightweight space-based interceptor components. -- Lightweight, high performance kill vehicle. -- High mass fraction, space-qualified liquid and solid axial stages									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The contractor for the Block 10, land-based interceptor will evolve the element to a sea-based capability in Block 12. Because the land-based system's design fully contemplates sea-basing, the bulk of the development activity will be to mechanically, electrically and logically integrate the canisterized interceptor into the sea platform. Depending upon technology readiness, sea-based integration may also include the substituting of a solid or non-hazardous liquid divert and attitude control section in the kill vehicle. Also as a part of Block 12 the contractor will begin testing the capability of the system to intercept missiles in the mid course phase of flight as well as missiles in the exoatmospheric terminal flight phases. Block 12 will also include development of alternate boost/ascent phase system components such as booster, kill vehicle or C2BMC system involving substantial international participation. This approach reduces risk, produces competitive pressure, provides added options for component evolution, and importantly, fosters collaboration with our friends and allies. We will develop this alternate component source as an international partnership in accordance with the President's policy to foster international cooperation in the developing of the BMDS.

For Block 12, our KEI acquisition strategy includes the development of a space-based interceptor test bed. The Defense Science Board (DSB) has examined past space-based interceptor efforts including the Brilliant Pebbles and Space Based Interceptor programs and identified a number of technical challenges remaining unresolved. Therefore, we are taking a slow and deliberate approach to better understand and resolve some of these challenges.

In FY 2004 we will initiate an analytical effort with the MDNT to identify the benefits of incorporating space-based interceptors into a layered ballistic missile defense system. The MDNT will continue this effort by outlining a concept of operations (CONOPS), forming a framework for future war-games at the Joint National Integration Center. We will also build on the foundation laid by the land based Block 2010 program along with NFIRE.

Beginning in FY 2005 and continuing through FY 2009, the space program will begin a ground based risk reduction effort. We will initiate development of miniaturized, lightweight interceptor components, with the initial emphasis on developing a liquid axial stage.

Based on the results of these risk reduction efforts, the Director, Missile Defense Agency, will make a decision in 2008 to begin the transition to develop satellites to conduct on orbit experiments. These experiments will exercise the functionality of a space-based BMDS. By 2012, the space-based test bed will have a thin constellation of 3 to 6 spacecraft on orbit.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Land Based										
International Cooperation	C/Various	TBD				26,375	2Q	CONT.	26,375	TBD
Sea Based										
Sea Development & Test Contract	C/Various	TBD				10,550	1/4Q	CONT.	10,550	TBD
Space Based										
Concept Design	C/Various	TBD				10,550	2Q	CONT.	10,550	TBD
Subtotal Product Development			0	0		47,475		0	47475	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		47,475			47,475	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Land Based Block 2012							
Initiate Int'l Boost/Ascent Phase Cooperation		2Q					
Initiate Land Based Block 12 Activities						1Q	
Sea Based Block 2012							
Initiate Sea Based Risk Mitigation			1Q-4Q				
Sea-Based Platform Decision (TBD)			1Q-4Q				
Contract Modification (TBD)				1Q-3Q			
Space Based Block 2012							
Develop Liquid Axial Stage (TBD)			1Q-4Q	1Q-4Q	1Q-2Q		
Development of First Space Based Experiment (TBD)						1Q-4Q	1Q-4Q
Initiate KV and Lifejacket Weight Reduction (TBD)			3Q-4Q	1Q-4Q	1Q-2Q		
Modeling and Simulation			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Space Basing Decision (TBD)						2Q	

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	5,510	12,404	16,437	20,740	34,514	40,018
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	0	5,510	12,404
RDT&E Articles (Quantity)			

Personnel:
Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:
Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors				
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603886C Ballistic Missile Defense System Interceptors				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	633,782	713,658	665,854	648,563	646,213	680,089
0304 Test & Evaluation	0	340,666	202,131	196,969	192,398	188,673	203,757
0704 Test & Evaluation Block 2004	0	36,976	38,920	0	0	0	0
0804 Test & Evaluation Block 2006	0	2,357	69,070	40,331	39,196	0	0
0904 Test & Evaluation Block 2008	0	951	72,514	144,707	120,937	84,611	86,269
0004 Test & Evaluation Block 2010	0	0	0	0	61,709	139,315	141,898
0305 Targets & Countermeasures Core	0	22,585	23,314	23,790	22,190	22,444	22,714
0705 Targets & Countermeasures - Block 2004	0	223,671	233,027	0	0	0	0
0805 Targets & Countermeasures - Block 2006	0	0	50,865	201,336	175,914	0	0
0905 Targets & Countermeasures - Block 2008	0	0	17,578	52,178	29,307	203,995	217,961
0602 Program-Wide Support	0	6,576	6,239	6,543	6,912	7,175	7,490

Note: Funding for this effort was previously held under the Ballistic Missile Defense System Segment (BMDS) Program Element (PE 0603880C).

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The flow down of BMDS capability specifications resulting from Missile Defense National Team efforts in C2BMC and Systems Engineering & Integration will guide the integration of Targets and Countermeasures, Test and Evaluation, and Program-Wide Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

MDA has taken an aggressive approach towards ensuring that the Director, Operational Test and Evaluation (DOT&E) and the Operational Test Agencies (OTAs) are involved in the BMDS developmental test activities. This approach allows early involvement of operational testers in the test program thereby building their understanding of the BMDS development and operations.

The BMD Test & Targets Program Element (PE) provides the resources to test and evaluate the multi-layered BMDS capability, as well as develop targets and countermeasures for use in BMDS testing. This PE is comprised of nine primary projects: Test & Evaluation (T&E); Targets & Countermeasures Core; T&E Block 2004; Targets & Countermeasures Block 2004; T&E Block 2006; Targets & Countermeasures Block 2006; T&E Block 2008; Targets & Countermeasures Block 2008; and Program-Wide Support to include personnel, related support costs and fiscal requirements. Test and Evaluation and Targets and Countermeasures Core (Projects 0304 and 0305, respectively) provide for the implementation of Block functions across test and targets programs. These projects also assist in expanding the capabilities of the BMDS in future Blocks, and develops capabilities not yet foreseen as part of a current or future Block. Block functions (i.e., Project 0704 T&E Block 2004 and Project 0705 Targets and Countermeasures Block 2004) facilitate the management and development of key infrastructure, hardware items, and long-lead material components necessary for fielding and testing a multi-layered, evolutionary BMDS capability.

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603888C Ballistic Missile Defense Test and Targets

The T&E project provides consolidated MDA-wide capabilities and resources to support the management and execution of BMDS System- and Element-level testing. T&E efforts include the development, operation, maintenance, and modernization of the T&E infrastructure supporting both BMDS System- and Element-level testing. The project funds the BMDS System Test and Assessment program that includes System-level tests, critical measurements testing and the associated assessments to characterize BMDS performance. For System Test Planning, evaluation of Engagement Sequence Groups (ESGs) supports the development of ground and flight test objectives. T&E activities are grouped in terms of System Test and Assessment, Test Resources development and maintenance; and Facilities, Siting, and Environmental management. T&E activities associated with specific BMDS Elements are captured in the respective BMDS Element.

The Targets and Countermeasures Program is a supporting BMDS program that provides targets to test the integrated, layered BMDS, including targets to support testing prior to initial defensive operational capability. This program funds new target and countermeasure development, risk reduction flights (tests of target prototypes), subsystem characterization, and the acquisition and maintenance of long lead target material items. Specifically, the Targets and Countermeasures program provides capability-based ballistic missile target systems to include missile subsystems and common target components, such as boosters, re-entry vehicles (RVs), countermeasures, guidance and control components, data and instrumentation packages, and launch support systems. Additionally, the Targets and Countermeasure program supports aging surveillance, refurbishment, and reuse of existing government furnished equipment such as Minuteman II and Lance missile hardware. Utilizing existing government inventories and the development of common target components, a BMDS target system is integrated and tested, thus reducing the cost and cycle time of developing and acquiring new target system hardware. To assist the government in this endeavor, a ten year prime contract will be awarded in FY04 to design, develop, and test all BMDS targets (see R-2a's for Projects 0705, 0805, 0905, Section D - Acquisition Strategy for prime contract. Funding for the acquisition and testing of Targets and Countermeasures activities associated with specific BMDS Elements are captured in the respective BMDS Element.

Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. Includes funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at MDA; cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	0	611,522	711,181
Current President's Budget (FY 2005 PB)	0	633,782	713,658
Total Adjustments	0	22,260	2,477
Congressional Specific Program Adjustments	0	29,450	0
Congressional Undistributed Adjustments	0	-7,190	0
Reprogrammings	0	0	2,477
SBIR/STTR Transfer	0	0	0

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0304 Test & Evaluation	0	340,666	202,131	196,969	192,398	188,673	203,757
RDT&E Articles Qty	0	3	2	0	1	0	0

Note: Funding for these Test & Evaluation efforts was previously funded in the Ballistic Missile Defense System Segment Program Element (PE 0603880C), Project 1060. The Modeling & Simulation (M&S) efforts are funded in the Ballistic Missile Defense System Core Program Element (PE 0603890C) in FY 2004 and beyond.

A. Mission Description and Budget Item Justification

In FY 2004 and beyond the Test & Evaluation (T&E) Project consolidates all System-wide T&E resources. This allows for the more cohesive integration, management and execution of test activities for a single BMD System. This activity provides the resources needed for the test infrastructure and analytical tools needed by the Missile Defense Agency (MDA) to execute a System-Wide Test Program. Element-unique costs are captured in the respective BMDS element.

MDA's testing needs continue to expand beyond those of the individual BMDS elements. To address this issue, the Responsible Test Organization and the Combined Test Force (RTO and CTF) have been established to provide a single point of responsibility, authority, and accountability for BMD System testing. The RTO draws together test planning and reporting, corporate range infrastructure, environmental planning, resourcing and mission assurance. It also establishes common, repeatable processes and procedures for test planning. The CTF serves as the execution arm of the RTO focusing on the execution of system-level tests. The CTF is responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and Measurements testing.

The System Test & Assessment Program continues to provide for the test planning, management, and execution of the BMDS Test Program and the BMDS Measurements Program.

The BMDS Test Program provides for a cohesive program of testing to include: System Integrated Flight Tests (SIFTs); Critical Measurements/Countermeasure (CM/CM) Tests and associated vehicles (NOTE: Funding for FY04 is included in Project 0304, however, starting in FY05 funding for these tests will be in the T&E Block Projects); the Missile Defense Integrated Exercises (MDIEs), and the Missile Defense Wargames. The mission description, planned program, and funding for these tests is included in the T&E Block documentation. Funding for all SETA and SMDC support personnel is included in this project as most personnel support multiple blocks.

The BMDS Measurements Program is an integrated test program defined and established to ensure a coherent, complete, cost effective, and disciplined approach to collecting data/measurements to support characterization of the BMDS mission space. Under the Measurements Program, all MDA measurement requirements which support Block Development, Threat Characterization, M&S Validation, Phenomenology, Advanced Concepts, Lethality, Kill Assessment, and Special Tests are collected, prioritized and validated by the Measurements Program Assessment Team (MPAT). Once validated, requirements are allocated to Tests of Opportunity (either Auxiliary Sensor Participation or Piggyback Operations) or used to design the dedicated flight tests which have been designated CM/CM flight tests. All Measurements Requirements will be documented in the Measurements Master Test Plan.

The Lethality and Kill Assessment Test Programs leverage BMD intercept tests of opportunity to characterize post-intercept remnants. This characterization is essential to maintain and improve the core lethality models: PEELS, KIDD, and PEGEM and to identify successful intercepts, perform ground effects analysis, support systems engineering assessments, and facilitate development of real time decision tools to support tactics and engagement doctrines.

To support the Measurements and BMDS Test Program development, program objectives, and performance characterization, MDA Test and Evaluation provides resources to support the Data Collection, Analysis, and Exploitation activities of the Optical Data Analysis (ODA), and Radar Data Analysis (RDA) groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis), explore phenomenology to improve future BMDS systems and new mission areas, and provide characterization and assessment for Measurements and BMDS testing. Funds also support the MDA Data Centers for Legacy Data identification and archive, as well as Disaster Recovery preparation.

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603888C Ballistic Missile Defense Test and Targets

The Test Resources Program provides the resources for the development, sustainment, and modernization of core corporate T&E infrastructure facilities of the BMDS test bed to support system and element-level testing. This includes support at BMD-unique ground test facilities and MDA Data Centers:

- Kinetic Kill Vehicle Hardware in the Loop Simulator (KHILS) at Eglin AFB in Fort Walton Beach, FL
- Arnold Engineering and Development Center (AEDC) Hypervelocity Wind Tunnel Number 9 (Tunnel 9) at White Oak, MD
- Infrared and Blackbody Standards at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD
- Hypervelocity Ballistic Range G Light Gas Gun Von Karman Facilities (VKF) at AEDC in Arnold AFB, TN
- 7V and 10V Space Chambers at AEDC, Arnold AFB, TN
- National Hover Test Facility (NHTF) at Edwards AFB, CA
- Army Missile Optical Range (AMOR) at Redstone Arsenal, AL
- Aero-Optic Evaluation Center (AOEC) at Calspan-University of Buffalo Research Center (CUBRC), NY
- Holloman High Speed Test Track (HHSTT) at Holloman AFB, NM
- Innovative Science & Technology Experimentations Facility (ISTEF) at Patrick AFB, FL

MDA Data Centers:

- Advanced Missile Signature Center (AMSC) Arnold AFB
- Ballistic Missile Defense System Integration Data Center (BMDS IDC) JNIC - Schriever AFB, CO
- Missile Defense Data Center (MDDC) Huntsville, Alabama
- Navy Surface Warfare Center (NSWC) Corona, CA

BMD-unique range assets at various DoD test ranges and Commercial Space Port Facilities:

- White Sands Missile Range (WSMR) in Las Cruces, NM including Ft. Wingate Launch Complex near Gallup, NM
- Reagan Test Site (RTS) at the United States Army Kwajalein Atoll
- Pacific Missile Range Facility (PMRF) and Kauai Test Facility (KTF) at Kauai, HI
- Wake Island Air Station Launch Complex
- Naval Air Warfare Center, Weapons Division, Pt Mugu, CA
- Kodiak Launch Complex (KLC)
- Vandenberg AFB, FL

Airborne sensors, data collection assets, and special test equipment:

- High Altitude Observatory II (HALO-II)
- Wide-body Airborne Sensor Platform (WASP)
- High Altitude Observatory I (HALO-I)
- NP-3D Remote Area Surveillance Aircraft

All of these assets provide valuable program risk reduction and test implementation capability in support of BMDS activities. Individual BMDS elements pay only the direct costs associated with their specific test efforts. The Test Resources effort also supports the development of target requirements and the certification that targets satisfy test objectives.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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The Test Resource Program uses the engagement sequences to evaluate how the BMDS elements and components might test in future Blocks. This analysis is used to identify the test infrastructure needed to test the BMDS elements and components as part of the engagement sequences.

The Facilities, Siting and Environmental program provides guidance, environmental impact analyses and documentation, real property facility siting, acquisition, and facility operational support for the BMD systems. This project plans, programs, budgets, and oversees facility acquisition through the Military Construction (MILCON) and RDT&E construction programs. This project provides guidance and supports the Environmental Assessment and Environmental Impact Statement process, environmental compliance, pollution prevention, and other environmental efforts. This project provides leadership and consultation to facilities environmental stewardship and compliance of all BMDS activities with federal, state, local, DOD and international law, treaties and regulations.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Test Resources		184,320	147,858
RDT&E Articles (Quantity)		1	2

FY 2004 RDT&E Article: Completion of WASP IOC
 FY 2005 RDT&E Articles: Delivery of Two (2) Transportable Telemetry Systems

FY 2004 Planned Programs

- Provide for operations, sustainment, and modernization of the core corporate test and evaluation infrastructure components of the BMDS Test Bed. This includes ranges and instrumentation, airborne sensors, mobile launch platform and ground test facilities to support element- and system-level testing.
- Provide level-of-effort funding to ranges/instrumentation to maintain MDA-unique test facilities and instrumentation for MDA tests. (i.e. Meck Island at RTS for GMD Testing)
- Procure airborne sensor platforms HALO-I and HALO-II.
- Continue to operate, maintain and improve airborne sensors instrumentation platforms HALO-I , HALO-II and WASP to support BMDS testing and development activities.
- Provide level-of-effort funding to maintain MDA-unique ground test facilities, including wind tunnels, space-environment chambers, light gas gun, ladar performance lab, hardware-in-the-loop simulation facility, rocket-plume sensor capabilities and the hover test facility
- Support BMDS test ranges transition to a common test management and execution process as well as provide upgrades and improvements to test range hardware and software based planning and execution tools.
- Continue to improve test infrastructure in terms of capability and quantity, as recommended from continuing MDA studies. These improvements will build on the existing core test infrastructure to support element- and system-level testing.
- At RTS, improve Meck Island test infrastructure including the power grid to support GMD testing.
- At RTS, initiate cost-sharing arrangements with SMDC to support GMD, CMP, and Targets & Countermeasures testing.
- At PMRF, upgrade telemetry capability to support long-range engagements.
- Standardize flight safety procedures, analysis tools, flight hardware, and safety officer training through a three-phase program.
- Provide Level of Effort funding to maintain the MDA Data Centers Program to provide efficient data archiving, access, distribution and furnish relevant expertise for MDA Mission oriented data.
- Develop and award contract with Alaska Aerospace Development Corporation (AADC) to provide for operation and sustainment of the KLC to support MDA test launches.
- Participate in DOT&E's six-month Defense Science Board study to assess national needs for nuclear-weapon-effect simulation facilities
- Develop the Transportable Telemetry System (TTS) to provide ultra high band width telemetry collection, processing, and real time test data transmission capability thereby supporting the data collection requirements of future BMDS missions.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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- The BMD Sensors Directorate will execute \$5.495 million of FY04 Test & Evaluation funds to operate and sustain the TPS-X as a Test Bed Asset. The TPS-X is being maintained to support the BMDS Radar program in the development and validation of the algorithms and C2BMC. This test asset will enhance the risk management by providing a Test bed environment to mature algorithms prior to the availability of the BMDS radar.

FY05 Planned Programs

- Provide for operations, sustainment, and modernization of the core corporate test and evaluation infrastructure components of the BMDS Test Bed. This includes ranges and instrumentation, airborne sensors, mobile launch platform and ground test facilities to support element- and system-level testing.
- Provide level-of-effort funding to ranges/instrumentation to maintain MDA-unique test facilities and instrumentation for MDA tests.
- Continue to operate, maintain and improve airborne sensors instrumentation platforms HALO-I , HALO-II and WASP to support BMDS testing and development activities.
- Continue to provide high fidelity infrared and visible data to improve and develop BMD programs through airborne sensor platforms.
- Provide level-of-effort funding to maintain MDA-unique ground test facilities, including wind tunnels, space-environment chambers, light gas gun, ladar performance lab, hardware-in-the-loop simulation facility, rocket-plume sensor capabilities.
- Support BMDS test ranges transition to a common test management and execution process as well as provide upgrades and improvements to test range hardware and software based planning and execution tools.
- Continue to improve test infrastructure in terms of capability and quantity, as recommended from continuing MDA studies. These improvements will build on the existing core test infrastructure to support element- and system-level testing.
- Procure transportable range safety/telemetry collection systems to provide depth and flexibility for emerging flight test scenarios and support MDA testing at remote locations.
- At the RTS, continue improvement to Meck Island test infrastructure including the power grid to support GMD testing.
- Standardize flight safety procedures, analysis tools, flight hardware, and safety officer training through a three-phase program.
- Provide Level of Effort funding to maintain the MDA Data Centers Program to provide efficient data archiving, access, distribution and furnish relevant expertise for MDA Mission oriented data.
- Continue contract with AADC to provide for operation and sustainment of the KLC to support MDA test launches.
- Continue development of Transportable Telemetry System (TTS) to provide ultra high band width telemetry collection, processing, and real time test data transmission capability thereby supporting the data collection requirements of future BMDS missions.

	FY 2003	FY 2004	FY 2005
System Test & Assessment		150,888	48,737
RDT&E Articles (Quantity)		2	

FY 2004 RDT&E Articles two (2) Castor IVB boosters with threat-like RVs for FY04 Measurements Testing

FY 2004 Planned Program:

- Conduct test planning and test execution for LRALT Target Characterization for LRALT Risk Reduction Flight.
- Conduct test planning, sensor planning, range integration efforts, and design reviews in support of dedicated flight tests - CMCM-1&2. CMCM-1 and CMCM-2 will be designed to support: CM/CC/CM characterization, M&S validation, Spiral development of Block 2006 BMD system architecture/algorithms/technologies/CONOPS, and to address MDA National Team and System Engineering CM/CC/CM focus areas (concepts classified).

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- Complete development of 2 payload suites for CMCM-1a and 1b in 2Q/05.
- Continue payload design and development for two CMCM-2a and -2b tests. Initiate payload design and development for the two CMCM-3a and 3-b flight tests in 3Q/06.
- Collect, prioritize, validate, and document requirements for MDA Measurements Program.
- The Lethality Test Program will continue monitoring of the lethality Ground and Live Fire Test and Evaluation activities associated with various program elements, and designing flight test experiments leveraging BMD intercepts for the collection of lethality ground effect data to improve the System Lethality Models.
- The Kill Assessment Test Program will extend the analysis activities to examine data collected on the BMDS events, optimize sensors based on the present data and analyses, develop engineering models, exercise and evaluate data-driven modeling together with impact data in real time to test a draft Kill Assessment decision tool and begin the process of insertion of the KA decision capabilities into the BMDS Block 2006 C2BMC suite.
- The Data Collection, Analysis, and Exploitation Groups (Optical Data Analysis (ODA) and Radar Data Analysis (RDA)) will continue to support BMDS data collection objectives (mission planning, sensor execution, data analysis), explore phenomenology to improve future BMDS systems and new mission areas, and provide characterization and assessment for Measurements and BMDS flight test programs.

FY 2005 Planned Program:

- Conduct test planning, sensor planning, material development, range integration efforts, and design reviews in support of Tests of Opportunity (TOOs).
- Continue to collect, prioritize, validate, and document requirements for MDA Measurements Program.
- The Lethality Test Program will continue monitoring of the lethality Ground and Live Fire Test and Evaluation activities associated with various program elements, and designing flight test experiments leveraging BMD intercepts for the collection of lethality ground effect data to improve the System Lethality Models.
- The Kill Assessment Test Program will extend the analysis activities to examine data collected on the BMDS events, optimize sensors based on the present data and analyses, develop engineering models, exercise and evaluate data-driven modeling together with impact data in real time to test a draft Kill Assessment decision tool and begin the process of insertion of the KA decision capabilities into the BMDS Block 2006 C2BMC suite.
- The Data Collection, Analysis, and Exploitation Groups (Optical Data Analysis (ODA) and Radar Data Analysis (RDA)) will continue to support BMDS data collection objectives (mission planning, sensor execution, data analysis), explore phenomenology to improve future BMDS systems and new mission areas, and provide characterization and assessment for Measurements and BMDS flight test programs.

(CMCM content moved to Block Projects in FY05 and beyond.)

	FY 2003	FY 2004	FY 2005
Facilities, Siting & Environmental		5,458	5,536
RDT&E Articles (Quantity)			

- FY04 Planned Program**
- Provide for environmental program guidance, compliance, planning and NEPA support, real property facility, acquisition, facility operations, and maintenance/repair support for the BMDS.
 - Facilities & Siting efforts will focus on ensuring the MILCON, Minor MILCON, and RDT&E design and construction activities are executed in time to support BMD programs' facility requirements and ensure compliance with all applicable laws and regulations.

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<p>The Environmental Management Office within the Civil Engineering and Environmental Management Division provides leadership and consultation to facilitate environmental stewardship and compliance of all BMDS activities with federal, state, local and international laws, treaties, and regulations. Specific activities planned for FY 2004 includes:</p> <ul style="list-style-type: none"> -Planning, programming, and budgeting for the execution of MDA's environmental management program and compliance activities; -Providing scientific analysis, technical assistance, and guidance to ensure environmental quality and mission assurance; -Completion of MDA's Programmatic Environmental Impact Statement for the BMDS, eight Environmental Assessments, and 12 Records of Environmental Consideration for proposed construction and testing activities supporting the BMDS; -Complying with Executive Order 12114 for proposed activities OCONUS; -Developing and facilitating implementation of MDA's Environmental Management System, to include policies, processes, and planning to ensure effective and efficient environmental compliance management program; -Coordinating environmental information and documents across MDA offices and program elements to ensure integrated, reconvicted, and timely actions; -Identifying opportunities for integration of pollution prevention initiatives into the MDA mission; -Revision of MDA's Environmental Compliance Awareness Training course to include modules on pollution prevention and hazardous materials management; and -Maintenance of system currency and expansion of MDA's Library of Environmental Analysis Documents (LEADs), an access-based knowledge management system that houses previous environmental assessments, environmental impact statements, and other NEPA documents for automated analysis of proposed activities for existing NEPA coverage. <p>2005 Planned Programs</p> <ul style="list-style-type: none"> - Provide for environmental program guidance, compliance, planning and NEPA support, real property facility, acquisition, facility operations, and maintenance/repair support for the BMDS. - Facilities & Siting efforts will focus on ensuring the MILCON, Minor MILCON, and RDT&E design and construction activities are executed in time to support BMD programs' facility requirements and ensure compliance with all applicable laws and regulations. <p>The Environmental Management Office within the Civil Engineering and Environmental Management Division provides leadership and consultation to facilitate environmental stewardship and compliance of all BMDS activities with federal, state, local and international laws, treaties, and regulations. Specific activities planned for FY 2005 includes:</p> <ul style="list-style-type: none"> -Planning, programming, and budgeting for the execution of MDA's environmental management program and compliance activities; -Providing scientific analysis, technical assistance, and guidance to ensure environmental quality and mission assurance; -Completion of one Environmental Impact Statement, six Environmental Assessments, and 12 Records of Environmental Consideration for proposed construction and testing activities supporting the BMDS; -Complying with Executive Order 12114 for proposed activities OCONUS; -Developing and facilitating implementation of MDA's Environmental Management System, to include policies, processes, and planning to ensure effective and efficient environmental compliance management program; -Coordinating environmental information and documents across MDA offices and program elements to ensure integrated, reconvicted, and timely actions; -Identifying opportunities for integration of pollution prevention initiatives into the MDA mission; -Providing ESOH awareness training; and -Maintaining system currency and expansion of MDA's Library of Environmental Analysis Documents (LEADs), an access-based knowledge management system that houses previous environmental assessments, environmental impact statements, and other NEPA documents for automated analysis of proposed activities for existing NEPA coverage. 		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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<p><u>D. Acquisition Strategy</u></p> <p>The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.</p> <p>Beginning in FY04, the MDA Deputy for Test and Assessment is executing the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.</p> <p>The Deputy, TE, as the Director of the RTO, is functioning as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO is performing planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO has the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO is collaborating with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.</p> <p>The CTF is an embedded execution organization within the RTO. The CTF is focused on the execution of system-level tests. The CTF is also responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.</p> <p>Test and Infrastructure programs are executed utilizing a diverse acquisition strategy to take advantage of existing DoD agencies and laboratories, FFRDCs, and private industry. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Assessment										
Special Program Tests	Various	USASMDC / Hunstville, AL		1,598	1Q	1,783	1Q	CONT.	3,381	
Optical Data Analysis	Various	Various		9,197	1Q	9,514	1Q	CONT.	18,711	
RCS Data Analysis	Various	Various		6,840	1Q	7,067	1Q	CONT.	13,907	
Lethality	Various	Various		2,827	1Q	2,858	1Q	CONT.	5,685	
Kill Assessment	Various	USASMDC / Hunstville, AL		3,303	1Q	3,501	1Q	CONT.	6,804	
International Programs	Various	Various		1,048	1Q	1,070	1Q	CONT.	2,118	
Corp Data Collect and Analysis	Various	Redstone Arsenal, AL/ Quantico, VA		6,026	1Q	7,205			13,231	
CMCM-1	Various	Various		49,523	1Q				49,523	
CMCM-2	Various	Various		38,713	1Q				38,713	
CMCM-3	Various	Various		16,502	1Q				16,502	

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Facilities, Siting & Environmental										
Facilities & Siting	Various	Various		169	1Q	136	1Q	CONT.	305	
Environmental Compliance	Various	Various		270	1Q	186	1Q	CONT.	456	
Test Resources										
Ground Test Facilities	Various	Army, Air Force/ NY, AL, FL, MD, TN, CA, NM		19,136	1Q	19,735	1Q	CONT.	38,871	
Ranges and Implementation	Various	Various/ HI, NM, Marshall Is, Alaska		61,313	1Q	73,359	1Q	CONT.	134,672	
Airborne Sensors	C/Various	Raytheon, Aeromet, Boeing/ CA, OK, WA		46,734	1Q	23,676	1Q	CONT.	70,410	
Targets Cert & Reqts	Various	USASMDC, POET/ Huntsville AL, Wash DC		431	1Q	1,386	1Q	CONT.	1,817	
TPS-X	Various	MIT LL / Lexington, MA		5,495	1Q		1Q	CONT.	5,495	
PMRF Upgrades	Various	Various, HI		28,450	1Q				28,450	
Proton Neutron Pulse Capability	Various	Indiana U, Bloomington, IN		1,000	1Q				1,000	
Data Centers	Various	Various, TN, CO, AL, CA		3,195		13,378	1Q		16,573	
Subtotal Test and Evaluation				0	301,770			0	466624	
Remarks										
CMCM Funding is located in the Test & Evaluation Block Projects (2006, 2008, and 2010) in FY05 and beyond.										

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IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Assessment										
Gov't Project Personnel	Various	USASMDC/ Huntsville, AL		3,333	1Q	3,403	1Q	CONT.	6,736	
Support Contracts	C/Various	Various/ Arlington, VA		11,457	1Q	11,805	1Q	CONT.	23,262	
T&E Travel				521	1Q	531	1Q	CONT.	1,052	
Facilities, Siting & Environmental										
Support Contracts	C/Various	Various/ VA & MD		5,019	1Q	5,214	1Q	CONT.	10,233	
Test Resources										
SMDC Support		USASMDC/ Huntsville, AL		2,505	1Q	2,666	1Q	CONT.	5,171	
Support Contracts	C/Various	Various/ Arlington, VA		9,571	1Q	8,854	1Q	CONT.	18,425	
TE Govt Salaries				6,490	1Q	4,804	1Q		11,294	
Subtotal Management Services			0	38,896		37,277		0	76173	
Remarks										
Project Total Cost										
			0	340,666		202,131			542,797	
Remarks										
The Test & Evaluation program distributes the majority of its funding to Executing Agents (i.e. the Air Force, Army, Navy, Joint National Integration Center (JNIC), and DTRA) for further dissemination. These Executing Agents will use Military Interdepartmental Purchase Requests (MIPRs) and/or in-house vehicles to accomplish the tasks specified.										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones							
LRALT Characterization		1Q-3Q					
Test Asset Upgrades							
WASP Upgrade		1Q-4Q					
TTS Development		1Q-4Q	1Q-4Q	1Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0704 Test & Evaluation Block 2004	0	36,976	38,920	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).</i>							
<u>A. Mission Description and Budget Item Justification</u>							
The BMDS Test Block 2004 program provides a cohesive program of flight and ground testing to include: System Integration Flight Tests (SIFTs); Missile Defense Integrated Exercises (MDIEs), and Integrated Missile Defense (IMD) Wargames. Integrated flight and ground tests are planned and executed to provide the data necessary for analysis of BMDS capability, including Engagement Sequence Groups (ESGs) and engagement sequences.							
The BMDS Test Program provides characterization of BMDS performance as input to block assessments. Program objectives are accomplished through dedicated test events or through overlays on other test exercises. SIFTs are designed to: measure BMDS interoperability, assess BMDS capabilities, and provide truth data and validation data for models and simulations. MDIE utilizes the Missile Defense System Exerciser (MDSE) Hardware-in-the-loop (HWIL) to perform system capability assessments, measure interoperability, provide verification of element interfaces, and provide initial integration and test of block upgrades. The Missile Defense Wargame Analysis Resource (MDWAR - formerly Wargame 2000) is an Operator-in-the-Loop test tool which supports assessment of BMDS capability and development of BMDS operating concepts. To support the BMDS Test Program development, program objectives, and performance characterization, MDA Test and Evaluation provides resources to support the activities of the Radar Data Exploitation (RDE) and Test Planning. This activity supports data planning, collection and analysis of radar for missions supported by observation Island and Gray Star.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Ground Tests			15,740		17,833		
RDT&E Articles (Quantity)			0		0		
FY 2004 Planned Program							
<ul style="list-style-type: none"> - Conduct two MDIEs to measure BMDS interoperability and initial integration. - Conduct one IMD Wargame (04-1) to develop CONOPs and Tactics, Techniques and Procedures. 							
FY 2005 Planned Program							
<ul style="list-style-type: none"> - Conduct two Missile Defense Integration Exercise to measure BMDS interoperability and initial integration. - Conduct two IMD Wargames (05-1, 05-2) to develop CONOPs and Tactics, Techniques and Procedures. 							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005
Flight Tests		21,236	21,087
RDT&E Articles (Quantity)			0

FY 2004 Planned Program

- Conduct test planning, sensor planning, range integration efforts, and design reviews in support of dedicated flight tests - CMCM-1&2. CMCM-1 and CMCM-2 will be designed to: support Block 2004 BMDS Capability Assessment, CM/CC/CM characterization, M&S validation, Spiral development of Block 2006 BMD system architecture/algorithms/technologies/CONOPS, and to address MDA National Team and System Engineering CM/CC/CM focus areas (concepts classified).
- Complete development of 2 payload suites for CMCM-1a and 1b in 2Q/05.
- Continue payload design and development for two CMCM-2a and -2b tests. Initiate payload design and development for the two CMCM-3a and 3-b flight tests in 3Q/06.
- Collect, prioritize, validate, and document requirements for MDA Measurements Program.
- Support all BMDS T&E efforts to deliver an Initial Deployment capability (IDC).
- Conduct System Integration Flight Tests (SIFTs) to provide highest degree of realism to measure BMDS integration, support system capability assessments and provide validation data for models and simulations. SIFTs overlay BMD System test objectives onto planned element flight tests.

Two major SIFTs planned in FY 2004:

- SIFT 1 will be a GMD overlay with Aegis BMD participation and is planned to test components of the BMDS C2BMC architecture.
- SIFT 2 is planned to be a GMD overlay with Aegis BMD and PATRIOT participation and will test more components of the BMDS C2BMC architecture.

FY 2005 Planned Program

- Conduct System Integration Flight Tests (SIFTs) to provide highest degree of realism to measure BMDS integration, support system capability assessments and provide validation data for models and simulations. SIFTs overlay BMD System test objectives onto planned element flight tests.
- Continue SIFT 2.
- Conduct SIFT 3. This is the culminating Block 2004 test event which will consist of four BMDS events occurring simultaneously at multiple BMDS ranges and facilities.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.

Beginning in FY04, the MDA Deputy for Test and Assessment is executing the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets	
<p>The Deputy, TE, as the Director of the RTO, is functioning as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO is performing planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO has the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO is collaborating with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.</p> <p>The CTF is an embedded execution organization within the RTO. The CTF is focused on the execution of system-level tests. The CTF is also responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.</p> <p>Test and Infrastructure programs are executed utilizing a diverse acquisition strategy to take advantage of private industry competitive forces and existing DoD agency, FFRDCs, and international coalition partner capabilities. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Tests										
MDIE	Various	Various		11,177	1Q	11,625	1Q	CONT.	22,802	
Arrow-MDIE	Various	Various		3,000	1Q	3,100	1Q	CONT.	6,100	
IMD Wargames	Various	JNIC, Colorado Springs, CO		1,563	1Q	3,108	1Q	CONT.	4,671	
Flight Tests										
System Wide Tests	Various	Various including USASMDC		11,138	1Q	10,939	1Q	CONT.	22,077	
Test Planning	Various	Various, NJ, Wash DC, TN		7,348	1Q	7,435	1Q	CONT.	14,783	
Radar Data Exploitation	Various	USASMDC, Huntsville, AL		2,750	1Q	2,713	1Q	CONT.	5,463	
Subtotal Test and Evaluation			0	36,976		38,920		0	75896	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										

Remarks

Project Total Cost			0	36,976		38,920			75,896	
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Remarks

The Test & Evaluation program distributes the majority of its funding to Executing Agents (i.e. the Air Force, Army, Navy, Joint National Integration Center (JNIC), and DTRA) for further dissemination. These Executing Agents will use Military Interdepartmental Purchase Requests (MIPRs) and/or in-house vehicles to accomplish the tasks specified.

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

R-1 NOMENCLATURE
0603888C Ballistic Missile Defense Test and Targets

Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	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	
System Flight Tests																													
GMD Integrated Flight Tests					△								△																
AEGIS Flight Missions					▲						△	△	△																
THAAD Flight Tests									△	△	△	△	△																
Ground Tests																													
MDIE 04a					△																								
MDIE 04b						△																							
MDIE 05a										△																			
MDIE 05b											△																		
Wargames																													
IMD 04-1						△																							
IMD 05-1										△																			
IMD 05-2												△																	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
System Flight Tests							
GMD Integrated Flight Tests		2Q-4Q	1Q-4Q	1Q			
AEGIS Flight Missions		1Q	2Q,3Q,4Q				
THAAD Flight Tests			1Q,2Q,3Q,4Q	1Q			
Ground Tests							
MDIE 04a		2Q					
MDIE 04b		3Q					
MDIE 05a			2Q				
MDIE 05b			3Q				
Wargames							
IMD 04-1		3Q					
IMD 05-1			2Q				
IMD 05-2			4Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0804 Test & Evaluation Block 2006	0	2,357	69,070	40,331	39,196	0	0
RDT&E Articles Qty	0	0	4	0	0	0	0
<i>Note: Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The BMDS Test Block 2006 program provides a cohesive program of testing to include: System Integration Flight Tests (SIFTs); Critical Measurements/Countermeasure (CM/CM) tests and associated Measurement Vehicles; Missile Defense Integrated Exercises (MDIEs), and Missile Defense Wargames. Integrated flight and ground tests are planned and executed to provide the data necessary for analysis of BMDS capability, including Engagement Sequence Groups (ESGs) and engagement sequences.</p> <p>The BMDS Test Program provides characterization of BMDS performance as input to block assessments. Program objectives are accomplished through dedicated test events or through overlays on other test exercises. SIFTs are designed to: measure BMDS interoperability, assess BMDS capabilities, and provide truth data and validation data for models and simulations by establishing engagement sequence groups. MDIE utilizes the Missile Defense System Exerciser (MDSE) Hardware-in-the-loop (HWIL) to perform system capability assessments, measure interoperability, provide verification of element interfaces, and provide initial integration and test of block upgrades. The Missile Defense Wargame Analysis Resource (MDWAR - formerly Wargame 2000) is an Operator-in-the-Loop test tool which supports assessment of BMDS capability and development of BMDS operating concepts. CM/CM tests characterize current and future adversary and BMD technology possibilities for algorithm and model development prior to system testing. Therefore, these tests are developed to support future block assessments (i.e. tests executed in FY04/FY05 support Block 2006 BMDS). To support the BMDS Test Program development, program objectives, and performance characterization, MDA Test and Evaluation provides resources to support the activities of the Radar Data Exploitation (RDE), Test Planning, and Corporate Data Collection groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis).</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Ground Tests				933			5,128
RDT&E Articles (Quantity)							
FY 2004-2005 Planned Program							
<ul style="list-style-type: none"> - Conduct two Missile Defense Integration Exercises (MDIEs) to measure BMDS interoperability and initial integration. - Conduct BMDS Wargames to develop CONOPs and Tactics, Techniques and Procedures. - Conduct Integrated Ground Tests to provide BMD System readiness testing, measure integration, and support system capability assessments. 							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005
Flight Tests		1,424	63,942
RDT&E Articles (Quantity)			4

FY 2004 RDT&E Articles four (4) medium test range test vehicles for CMCM Flight Test Program. (2 Castor IVB Boosters for CMCM-1 and 2 Castor IVB Boosters for CMCM-2)

FY 2004 Planned Program:

- Conduct test planning for System Integration Flight Tests (SIFTs) to provide highest degree of realism to measure BMDS integration, support system capability assessments and provide validation data for models and simulations. SIFTs overlay BMD System test objectives onto planned element flight tests. Test Planning will consist of conducting scenario designs, creating the BMDS Block 2006 Master Plan, and establishing MDIE support for Block 2006.

FY 2005 Planned Program:

- Execute dedicated flight tests CMCM-1&2. CMCM-1&2 will be designed to support: CM/CC/CM characterization, M&S validation, Spiral development of Block 2006 BMD system architecture/algorithms/technologies/CONOPS, and to address other MDA National Team and System Engineering CM/CC/CM focus areas.
- Conduct test planning for System Integration Flight Tests (SIFTs) to provide highest degree of realism using authentic engagement sequences, measure BMDS integration, support system capability assessments and provide validation data for models and simulations. SIFTs overlay BMD System test objectives onto planned element flight tests. Test Planning will consist of conducting scenario designs, creating the BMDS Block 2006 Master Plan, and establishing ground test/wargames, MDIE, and IGT support for Block 2006.

C. Other Program Funding Summary	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.

Beginning in FY04, the MDA Deputy for Test and Assessment will execute the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.

The Deputy, TE, as the Director of the RTO, will function as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO will perform planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO will have the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO will collaborate with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.

The CTF is an embedded execution organization within the RTO. The CTF will focus on the execution of system-level tests. The CTF will also be responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets	
<p>Test and Infrastructure programs will be executed utilizing a diverse acquisition strategy to take advantage of private industry competitive forces and existing DoD agency, FFRDCs, and international coalition partner capabilities. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Tests										
MDIE	Various	Various				4,090	1Q	CONT.	4,090	
IMD Wargames	Various	JNIC, Colorado Springs, CO		933	1Q	1,038	1Q	CONT.	1,971	
Flight Tests										
System Wide Tests	Various	Various including USASMDC		1,424	1Q	2,413	1Q	CONT.	3,837	
CMCM	Various	Various				61,529	1Q	CONT.	61,529	
Subtotal Test and Evaluation										
			0	2,357		69,070		0	71427	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	2,357		69,070			71,427	
Remarks The Test & Evaluation program distributes the majority of its funding to Executing Agents (i.e. the Air Force, Army, Navy, Joint National Integration Center (JNIC), and DTRA) for further dissemination. These Executing Agents will use Military Interdepartmental Purchase Requests (MIPRs) and/or in-house vehicles to accomplish the tasks specified.										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
System Flight Tests							
GMD Integrated Flight Tests				2Q-4Q	1Q-4Q	1Q	
AEGIS Flight Missions				2Q,4Q	2Q,4Q		
THAAD Flight Tests				3Q,4Q	3Q,4Q	1Q	
Ground Tests							
MDIE 06a				2Q			
MDIE 06b				3Q			
MDIE 07a					1Q		
MDIE 07b					3Q		
Wargames							
IMD 06-1				2Q			
IMD 06-2				4Q			
IMD 07-1					1Q		
IMD 07-2					3Q		
Measurement Tests							
CMCM - 1				2Q			
CMCM - 2			4Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0904 Test & Evaluation Block 2008	0	951	72,514	144,707	120,937	84,611	86,269												
RDT&E Articles Qty	0	0	0	2	4	0	0												
<p><i>Note: Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).</i></p> <p>A. Mission Description and Budget Item Justification The BMDS Test Block 2008 program provides a cohesive program of testing to include: System Integration Flight Tests (SIFTs); Critical Measurements/Countermeasure (CM/CM) tests and associated Measurement Vehicles; Missile Defense Integrated Exercises (MDIEs), and Missile Defense Wargames. The BMDS Test Program provides characterization of BMDS performance as input to block assessments. Program objectives are accomplished through dedicated test events or through overlays on other test exercises. SIFTs are designed to: measure BMDS interoperability, assess BMDS capabilities, and provide truth data and validation data for models and simulations. MDIE utilizes the Missile Defense System Exerciser (MDSE) Hardware-in-the-loop (HWIL) to perform system capability assessments, measure interoperability, provide verification of element interfaces, and provide initial integration and test of block upgrades. The Missile Defense Wargame Analysis Resource (MDWAR - formerly Wargame 2000) is an Operator-in-the-Loop test tool which supports assessment of BMDS capability and development of BMDS operating concepts. CM/CM tests characterize current and future adversary and BMD technology possibilities for algorithm and model development prior to system testing. Therefore, these tests are developed to support future block assessments (i.e. tests executed in FY06/FY07 support Block 08 BMDS). To support the BMDS Test Program development, program objectives, and performance characterization, MDA Test and Evaluation provides resources to support the activities of the Radar Data Exploitation (RDE), Test Planning, and Corporate Data Collection groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis).</p> <p>B. Accomplishments/Planned Program</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Ground Tests</td> <td></td> <td align="center">951</td> <td align="center">1,025</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Conduct two Missile Defense Integration Exercises (MDIEs) to measure BMDS interoperability and initial integration. - Conduct BMDS Wargames to develop CONOPs and Tactics, Techniques and Procedures. - Conduct Integrated Ground Tests to provide BMD System readiness testing, measure integration, and support system capability assessments. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Conduct BMDS Wargames to develop CONOPs and Tactics, Techniques and Procedures. 									FY 2003	FY 2004	FY 2005	Ground Tests		951	1,025	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Ground Tests		951	1,025																
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603888C Ballistic Missile Defense Test and Targets	

	FY 2003	FY 2004	FY 2005
Flight Tests			71,489
RDT&E Articles (Quantity)			

FY 2005 Planned Program:

- Conduct test planning, sensor planning, range integration efforts, and design reviews in support of dedicated flight test - CMCM-3
- Complete design of 2 payload suites for CMCM-3a and 3b scheduled for 3Q/06.

C. Other Program Funding Summary	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603888C Ballistic Missile Defense Test and Targets				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.

Beginning in FY04, the MDA Deputy for Test and Assessment will execute the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.

The Deputy, TE, as the Director of the RTO, will function as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO will perform planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO will have the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO will collaborate with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.

The CTF is an embedded execution organization within the RTO. The CTF will focus on the execution of system-level tests. The CTF will also be responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.

Test and Infrastructure programs will be executed utilizing a diverse acquisition strategy to take advantage of private industry competitive forces and existing DoD agency, FFRDCs, and international coalition partner capabilities. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ground Tests										
IMD Wargames	Various	JNIC, Colorado Springs, CO		951	1Q	1,025	1Q	CONT.	1,976	
Flight Tests										
CMCM	Various	Various				71,489	1Q		71,489	
Subtotal Test and Evaluation										
			0	951		72,514		0	73465	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	951		72,514			73,465	
Remarks The Test & Evaluation program distributes the majority of its funding to Executing Agents (i.e. the Air Force, Army, Navy, Joint National Integration Center (JNIC), and DTRA) for further dissemination. These Executing Agents will use Military Interdepartmental Purchase Requests (MIPRs) and/or in-house vehicles to accomplish the tasks specified.										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
System Flight Tests							
GMD Integrated Flight Tests						2Q-4Q	1Q-4Q
AEGIS Flight Missions						2Q,3Q	2Q,3Q
THAAD Flight Tests						2Q,3Q	1Q,2Q
Measurement Tests							
CMCM-3				3Q			
CMCM-4					2Q		
CMCM-5					3Q		

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets				
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		
0004 Test & Evaluation Block 2010	0	0	0	0	61,709	139,315	141,898		
RDT&E Articles Qty	0	0	0	0	0	4	4		
<u>A. Mission Description and Budget Item Justification</u> The BMDS Test Block 2010 program includes: Critical Measurements/Countermeasure (CM/CM) tests and associated Measurement Vehicles. CM/CM tests characterize current and future adversary and BMD technology possibilities for algorithm and model development prior to system testing. Therefore, these tests are developed to support future block assessments (i.e. tests executed in FY08/FY09 support Block 2010 BMDS).									
<u>B. Accomplishments/Planned Program</u>									
	FY 2003			FY 2004			FY 2005		
Flight Tests									
RDT&E Articles (Quantity)									
Funding in this Project is not programmed until FY07.									
<u>C. Other Program Funding Summary</u>									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603888C Ballistic Missile Defense Test and Targets				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

The Deputy for Test and Assessment will acquire and execute a BMD System Level test and assessment program to support the Missile Defense Agency's layered defense concept. This layered defense concept (to defeat threats in boost, midcourse, and terminal phases) is achieved by land-based, sea-based, air-based, and space-based capabilities. The development of the BMDS includes the fielding of a BMDS Test Bed in September 2004. The Test Bed not only provides for continued development and testing of the BMDS, but also provides inherent Initial Defensive Capability (IDC) that enables Initial Defensive Operations (IDO) on 1 October 2004. The BMDS capabilities are developed in an evolutionary, capabilities-based, spiral development acquisition approach in two-year Blocks that build, verify and offer for deployment specific capabilities every two years starting in 2004.

Beginning in FY04, the MDA Deputy for Test and Assessment will execute the BMDS test and assessment program under a Responsible Test Organization (RTO) and a Combined Test Force (CTF) structure.

The Deputy, TE, as the Director of the RTO, will function as the single point of responsibility, authority, and accountability for BMD System-Level testing. The RTO will perform planning, provisioning, test execution, analysis, and reporting for all BMD System-Level and Measurements Tests. The RTO will have the responsibility to produce a fully integrated MDA test plan, as well as the responsibility to characterize the BMDS Capability based on test results and data. The RTO will collaborate with the elements to achieve a system-level focus in the testing and assessment of the BMDS, and focus the BMDS components towards demonstrating system-level, integrated, layered defense capability.

The CTF is an embedded execution organization within the RTO. The CTF will focus on the execution of system-level tests. The CTF will also be responsible for the long range planning, detailed planning, and reporting of all system-level testing that verifies BMDS capabilities and all Measurements testing. Included are exercises/wargames, Hardware-in-the-Loop (HWIL)/Integrated Ground Tests (IGT), Initial Defensive Operations (IDO) testing, Block 06 system test planning and Block 08 system test planning.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets	
<p>Test and Infrastructure programs will be executed utilizing a diverse acquisition strategy to take advantage of private industry competitive forces and existing DoD agency, FFRDCs, and international coalition partner capabilities. Examples of participants in this acquisition strategy include the U.S. Army Space and Missile Defense Command, Air Force Space and Missile Command, and the U.S. Navy Research Lab.</p>		

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

R-1 NOMENCLATURE
0603888C Ballistic Missile Defense Test and Targets

Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Measurement Tests																												
CMCM-6																												
CMCM-7																												
CMCM-8																												
CMCM-9																												

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Measurement Tests							
CMCM-6						2Q	
CMCM-7						3Q	
CMCM-8							2Q
CMCM-9							3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004																										
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets																											
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009																								
0305 Targets & Countermeasures Core	0	22,585	23,314	23,790	22,190	22,444	22,714																								
RDT&E Articles Qty	0	0	0	0	0	0	0																								
<p><i>Note: Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS) Program Element (PE 0603880C, Project 1030).</i></p> <p>A. Mission Description and Budget Item Justification Targets & Countermeasures Core Support includes primary, mission and field activity support. This includes the management of design, prototyping, development, product improvement, and qualification testing of BMDS targets in order to complete, verify, and test targets for the Initial Defensive Capability, and enhance the targets to test the BMDS capability. Since this project is comprised of entirely Program Management costs associated with Targets and Countermeasures Block development, no article quantities are reported.</p> <p>B. Accomplishments/Planned Program</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Targets Support</td> <td></td> <td align="right">15,570</td> <td align="right">15,399</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td align="right">0</td> <td align="right">0</td> </tr> </table> <p>FY 2004 Planned Accomplishments: - Supports activities for on-site Targets and Countermeasures field activity personnel, such as rent, office equipment, travel, security, and base infrastructure necessary to conduct daily operations and execute missions.</p> <p>FY 2005 Planned Accomplishments: - Continues to support activities for on-site Targets and Countermeasures field activity personnel, such as rent, office equipment, travel, security, and base infrastructure necessary to conduct daily operations and execute missions.</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Personnel Support</td> <td></td> <td align="right">7,015</td> <td align="right">7,915</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td align="right">0</td> <td align="right">0</td> </tr> </table> <p>FY 2004 Planned Accomplishments: -This effort funds government personnel salaries for program management, project support, project costs, and travel.</p> <p>FY 2005 Planned Accomplishments: -Continues to fund government personnel salaries for program management, project support, project costs, and travel.</p>									FY 2003	FY 2004	FY 2005	Targets Support		15,570	15,399	RDT&E Articles (Quantity)		0	0		FY 2003	FY 2004	FY 2005	Personnel Support		7,015	7,915	RDT&E Articles (Quantity)		0	0
	FY 2003	FY 2004	FY 2005																												
Targets Support		15,570	15,399																												
RDT&E Articles (Quantity)		0	0																												
	FY 2003	FY 2004	FY 2005																												
Personnel Support		7,015	7,915																												
RDT&E Articles (Quantity)		0	0																												

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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D. Acquisition Strategy

Because the majority of the activities funded in this Project 0305 are considered direct government costs necessary to maintain and sustain Targets and Countermeasures personnel in the field, a particular acquisition strategy is not applicable. Funds are sent directly to government Targets and Countermeasures activities receiving entities in the field and executed accordingly. A minimal amount of Firm Fixed Price and Cost Plus Award Fee contracts are in place for administrative, computer, logistics, program management, and systems engineering support activities.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Targets Support										
Field Activity Support	C/Variou	Various/ Kirtland, NM	0	7,150	1Q	7,110	1Q	CONT.	14,260	TBD
Field Activity Support	C/Variou	Various/ Huntsville, AL	0	8,420	1Q	8,289	1Q	CONT.	16,709	TBD
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Personnel Support										
Government Personnel		Wash., DC	0	2,640	1Q	2,693	1Q	CONT.	5,333	TBD
Government Travel		Wash., DC	0	160	1/4Q	200	1/4Q	CONT.	360	TBD
Government Support		Wash., DC	0	4,215	1Q	5,022	1Q	CONT.	9,237	TBD
Subtotal Management Services			0	7,015		7,915		0	14930	
Remarks										
Project Total Cost			0	22,585		23,314			45,899	
Remarks										

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0705 Targets & Countermeasures - Block 2004	0	223,671	233,027	0	0	0	0
RDT&E Articles Qty	0	14	12	0	0	0	0

Note: Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS), Program Element 0603880C, Project 1030.

A. Mission Description and Budget Item Justification

The Targets and Countermeasures program provides capability-based targets to support Block 2004 integrated and layered BMDS testing. Targets developed under this project will test and verify the Initial Defensive Capability as well as enhance the BMDS capability by providing capability-based targets of all types with an assortment of payloads and payload objects. Based on Missile Defense National Team (MDNT) assessments of possible threat scenarios, the targets and countermeasures program supports the Engagement Sequence Group (ESG) by launching targets to test the performance of the BMDS, ultimately enabling a weapon to engage a target.

Funding for this program supports the design, prototyping, development, certification, product improvement, and qualification testing of BMDS Block 2004 targets and associated payloads. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters, as well as the purchase of long lead material assets and asset management items for short and medium range target components. The following is a summary of targets and payloads that will be developed, tested and available to support Block 2004 testing:

Long Range Air Launch Target (LRALT) - Utilizing two SR-19 Minuteman boosters and a threat-like payload package, this target will be dropped from a C-17 aircraft during a risk reduction flight. The purpose is to demonstrate a mobile, medium-range target capability that allows flexibility in launch location and trajectory when tested against the integrated, layered BMDS. Due to the imposition of last minute range safety requirements, the risk reduction flight test has been rescheduled to accommodate necessary flight trajectory changes. Furthermore, during routine integration testing a cracked engine flexseal was discovered, resulting in further delays to the risk reduction flight test. To date, the technical anomalies and range issues have been resolved. The current risk reduction flight test is scheduled for 3Q/04, and is reflected in the R-4 and R-4a forms of this project.

Short Range Air Launch Target (SRALT) - Utilizing a single SR-19 Minuteman booster and a threat-like payload package, this target will be dropped from a C-17 aircraft during a risk reduction flight test. The purpose is to demonstrate a mobile, short-range target capability that allows flexibility in launch location and trajectory when tested against the integrated, layered BMDS. Due to a change in aircraft required to support this program (changed from a C-130 to a C-17), the risk reduction flight test has been rescheduled to 2Q/04. This change is reflected in the R-4 and R-4a forms of this project.

Mobile Launch Platform (MLP) Target - A target will be launched from the sea-based Mobile Launch Platform during a risk reduction flight test in 4Q/04. The purpose is to demonstrate a mobile, short-range target capability that allows flexibility in launch location and trajectory when tested against the integrated, layered BMDS.

Medium Range Target (MRT) - During the Preliminary Design Review for this effort in FY03, it was decided to proceed with the development of this target using an air launch configuration. This target will utilize Castor IVB boosters, and a threat-like payload package. The risk reduction flight is currently scheduled for 2Q/05. The purpose is to demonstrate a mobile, medium-range target capability that allows flexibility in launch mode/location and trajectory when tested against the integrated, layered BMDS.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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Short Range Liquid Fuel Target Booster (SR-LFTB) - This program will continue engine testing in the first half of 2004, culminating in a Critical Design Review (CDR) in June 2004. At that time, the contract will be cancelled and evaluated for potential future transition to the targets prime contractor. FY04 funding for this program will be re-allocated to develop Ground-Based Missile Defense targets (see description below).

Ground-Based Midcourse Defense (GMD) target - GMD Targets will be used to test the Initial Defensive Capability in GMD Integrated Flight Tests (IFT's) 13c, 14, 15, and FT-04-1 (see Program Element 0603882C, Projects 0708 and 0808 for details on BMDS Flight Test). Also, the Targets and Countermeasures Program will fund a portion of the targets for GMD IFT's FTG-04-4a, FTG-06-1, and FTG-04-4b.

Small Low Observable (SLO) - SLO is a capabilities-based payload with tunable signatures. The SLO payload will be flown and demonstrated on a long range target booster during GMD Flight Test FTG-06-1. Starting with GMD Flight Test FTG-06-1a/b, the SLO payload will be used in subsequent GMD targets with various countermeasure configurations to test the integrated and layered BMDS.

Also funded in this project is the utilization of a targets prime contractor. Lockheed Martin Space Systems Company (LMSSC), based in Denver, Colorado, was selected as the targets prime contractor. LMSSC will be central to the development and acquisition of new target systems to support integrated and layered BMDS Block testing by providing program management and systems engineering functions across the Missile Defense Agency targets portfolio. Additionally, LMSSC will develop all future target configurations, including advanced targets, design and development of target payloads (to include instrumentation, re-entry vehicles, and countermeasures), and procurement of all long lead target material components. By emphasizing the use of product lines (i.e. development of common target components and parts), it is anticipated that both cycle time and cost will be reduced (see Section D, Acquisition Strategy for more details on the targets prime contract).

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Target Support		55,026	98,550
RDT&E Articles (Quantity)		0	0

This effort comprises a significant portion of the targets and countermeasures prime contract costs, as well as funding for Federally Funded Research and Development Centers (FFRDCs) and National Lab activities that directly support the Targets and Countermeasures program. There are no quantities of articles reported under this task since the scope of work is primarily program management, systems engineering, functional requirements analysis, and target systems design work through the Critical Design Review (CDR) systems engineering process. The requested increase in FY05 funding reflects a full years worth of prime contract core costs vice the pro-rata FY04 cost that account for three quarters worth of funding and a late 1Q/04 contract award. Additionally, this effort will program and plan for award fee for the entire targets prime contract, including element target delivery orders that are funded in separate Missile Defense Agency Program Elements (PE's). The acquisition and presentation of targets used in integrated and layered BMDS testing will continue to be funded by the Missile Defense Agency Elements (e.g., THAAD, Aegis, etc.) in separate Program Elements utilizing the targets prime contract vehicle.

FY 2004 Planned Accomplishments:

- Award targets prime contract (1Q/04).
- Conduct System Requirements Reviews (SRR's).
- Conduct Preliminary Design Reviews (PDR's).
- Conduct Critical Design Reviews (CDR's).
- Conduct early concept definition analyses.
- Initiate advanced target system and sub-system prototype design work.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets	
<ul style="list-style-type: none"> - Begin target product line development. - FFRDCs and National Labs to perform unique target requirements, certification, and instrumentation analyses - Conduct initial program management reviews. <p>FY 2005 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Continue to prepare for and conduct SRR's. - Continue to prepare for and conduct PDR's. - Continue to conduct and finalize CDR's. - Continue to conduct early concept definition analyses. - Continue to develop advanced target systems and sub-systems prototype design work. - Continue the target product line development. - FFRDCs and National Labs to continue unique target requirements, certification, and instrumentation analyses. - Continue to manage and conduct program management reviews. 			
	FY 2003	FY 2004	FY 2005
Target Development		97,415	83,969
RDT&E Articles (Quantity)		10	5
<p>This effort develops, integrates, and tests short, medium, and long-range BMDS targets. The decrease in funding between FY 2004 and FY 2005 represents current contract target development efforts completing and transitioning to a prime contractor. It is anticipated the prime contractor will initiate the development and testing of targets in Block 06 (Targets and Countermeasures Project 0805).</p> <p>FY 2004 Planned Accomplishments RDT&E Test Articles: 5 SRALT's; 3 GMD Targets; 1 LRALT; 1 MLP Target;</p> <ul style="list-style-type: none"> - Complete SRALT development and conduct a risk reduction flight. - Complete GMD Targets development to support GMD IFT's 13c, 14, and 15. - Complete LRALT development and conduct a risk reduction flight. - Complete the MLP target and conduct a risk reduction flight. - Continue MRT development and complete a Critical Design Review (CDR). - Continue Short Range Liquid Fuel Target Booster development, engine testing, and a CDR Terminate program after CDR completion. <p>FY 2005 Planned Accomplishments RDT&E Test Articles: 4 GMD targets; 1 MRT;</p> <ul style="list-style-type: none"> - Complete 3 GMD targets and launch to support FTG-04-4a, FT-06-1, and FTG-04-4b. - Complete MRT development and conduct a risk reduction flight. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603888C Ballistic Missile Defense Test and Targets	
	FY 2003	FY 2004	FY 2005
Payload Development		44,408	27,905
RDT&E Articles (Quantity)		4	7
<p>This effort provides funding for program management and development of: 1) unique target payload components (re-entry vehicles (RV's), countermeasures, instrumentation, adaptor sections, and deployment mechanisms), as well as optical on-target data collection instrumentation used for algorithm development/evaluation and payload characterization; 2) development of Fly Along Sensor Package (FASP) flight units for BMDS testing; 3) development of advanced instrumentation systems/techniques to include data collection and transmission techniques/methods; 4) development of advanced countermeasures to support BMDS flight testing and special systems engineering studies, and; 5) development of advanced RV concepts to support BMDS testing. The decrease in funding between FY 2004 and FY 2005 represents Critical Measurement and Countermeasure (CMCM) funding transfer within this Program Element (PE) to Project 0304.</p> <p>FY 2004 Planned Accomplishments RDT&E Test Articles: 3 FASP flight units and 1 FASP qualification unit - Complete 3 FASP flight units and 1 qualification unit. - Begin development of advanced sensors for integration into FASPs. - Begin development of next generation FASP flight units. - Begin development of next generation countermeasures and associated preliminary design engineering packages. - Continue development of instrumentation, advanced measurements, avionics, and flight safety systems. - Continue development of countermeasures for the BMDS flight test programs. - Continue development of Small Low Observable payload to support GMD Flight Test FT-06-1.</p> <p>FY 2005 Planned Accomplishments RDT&E Test Articles: 1 SLO payload; 6 FASP flight units (each configured with a advanced sensors) - Continue development of advanced sensors for integration into FASPs. - Continue development of next generation FASP flight units. - Continue development and test of instrumentation, advanced measurements, avionics, and flight safety systems. - Continue development of countermeasures for the BMDS flight test programs. - Complete development of a Small Low Observable payload. - Complete 6 FASP demonstration units for Ground Based Midcourse Defense (GMD) and CMCM targets each configured with advanced sensors.</p> <p>Note: A payload includes components such as countermeasures, re-entry vehicles, instrumentation, adaptor sections, and deployment mechanisms.</p>			
	FY 2003	FY 2004	FY 2005
Asset Management		26,822	22,603
RDT&E Articles (Quantity)		0	0
<p>This effort provides funding for the maintenance, storage, aging surveillance, modification, documentation, material handling, delivery of assets, refurbishment, and routine testing of government furnished equipment (Minuteman II, Peacekeeper, Lance, Pershing II, Polaris A-3, Trident C-4, Caster IVB, FMA assets) related to target boosters, payloads, instrumentation, launch support equipment, and unique target hardware components. There are no article quantities reported under this task since the hardware quantities under this task are existing government furnished equipment components and not new hardware items.</p>			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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FY 2004 Planned Accomplishments
RDT&E Test Articles: N/A

- Continue refurbishment and assembly of 2 SR 19 motors and associated equipment and deliver for LRALT RRF.
- Continue refurbishment and assembly of 1 SR 19 motor and associated equipment and deliver for SRALT RRF.
- Continue the storage, maintenance and aging and surveillance program for, 84 Pershing II Reentry Vehicles and other components, 104 Lance Missiles, 19 Polaris A-3 motors, 9 Orbus Motors, Minuteman motors, 14 FMAs, and 9 Castor IVBs.
- Continue the maintenance of existing support equipment and facilities at Redstone Arsenal, White Sands Missile Range, Kodiak, and Pacific Missile Range Facility.
- Continue the procurement of assembled Castor IV motors using GFE cases to support future MRT missions.
- Begin the procurement of Trident C-4 motors for future use as targets. Quantity TBD based upon negotiations with the Navy.
- Continue refurbishment and assembly of 1 Castor IVB motor and associated support equipment for the MRT RRF.

FY 2005 Planned Accomplishments
RDT&E Test Articles: N/A

- Complete refurbishment and assembly of 1 Castor IVB motor and associated support equipment and deliver as the launch vehicle for the MRT RRF.
- Continue the storage, maintenance, and aging and surveillance program for 84 Pershing II Reentry Vehicles and other components, 99 Lance Missiles, 16 Polaris A-3 motors, 6 Orbus motors, Minuteman motors, 13 Scuds and 7 Castor IVB motors.
- Continue the maintenance of existing support equipment and facilities at Redstone Arsenal, White Sands Missile Range, Kodiak, and Pacific Missile Range Facility.
- Continue the procurement of assembled Castor IV motors using GFE cases to support future MRT missions.
- Continue the procurement of Trident motors for future use as targets. Quantity TBD based upon negotiations with the Navy.
- Begin procurement of additional FMA Assets to support future target flight tests.
- Continue refurbishment and assembly of 3 Castor IVB motors and associated support equipment for FY 2006 Aegis flight tests.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

Targets and Countermeasures Program will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. To support this strategy, the Targets and Countermeasures Program awarded a ten year prime contract (four year base plus three 2-year option periods) to Lockheed Martin Space Systems Company (LMSSC) who will provide the targets to test against the layered and integrated BMDS. The Targets prime contract will also add a new capability for Targets and Countermeasures systems engineering and provide single system management for the Targets and Countermeasures Program. Overall objectives of this procurement are to deliver reliable target system performance, to provide system level engineering and management through an integrated prime contractor, to reduce target acquisition cycle time, to control target program costs and stimulate creative cost reduction initiatives, and to focus on components and capability-based product lines through integration and launch of target systems. The contract will be a combination of Cost Plus Award Fee and Firm Fixed Price Delivery Orders under two Contract Line Items (CLIN's). This structure allows for maximum flexibility to produce either full blown up targets to test new concepts and ideas, or product lines under which common target components will be developed, integrated, and tested. By emphasizing common target components, it is anticipated that a reduction in both cycle time and cost will be achieved. As the targets prime contract begins its first four year base period, current on-going target development contracts will generally be completed under the terms of their existing contracts. This includes a variety of individual and Task Order Cost Plus Fixed Fee and Cost Plus Award Fee contracts. Some on-going target developments, however, may transition to the prime contractor depending on the status of the contract and maturity of the target system being developed. Under this Project (0705), a majority of the four year base period of the prime contract will be completed. The government will maintain system responsibility and will ensure successful management of BMDS targets execution.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Development										
SRALT	C/CPFF	Orbital Sciences Corp./ Chandler, AZ	0	4,307	1Q	0			4,307	
Short Range Liquid Fuel	C/CPFF	Orbital & Northrop Grumman/ Chandler, AZ / Huntsville, AL	0	9,900	1Q	0			9,900	
Mobile Launch Platform	C/CPFF	Lockheed Martin/ Huntsville, AL	0	569	1Q	0			569	
Medium Range Target	C/Variou s	Orbital Sciences/ Chandler, AZ	0	6,695	1Q	1,168	1Q	CONT.	7,863	TBD
Advanced Development	C/Variou s	TBD/ Various	0	10,941	1/2Q	37,883	1/2Q	CONT.	48,824	TBD
Mobile Launch Platform	C/CPFF	Coleman/ Orlando, FL	0	1,185	1Q	0			1,185	
Mobile Launch Platform	C/Variou s	TBD	0	4,772	1Q	0			4,772	
Short Range Liquid Fuel	C/Variou s	TBD	0	3,593	1Q	0			3,593	
Medium Range Target	C/Variou s	TBD	0	2,708	1Q	1,475	1Q	CONT.	4,183	TBD
SRALT	C/Variou s	TBD	0	3,662	1Q	0			3,662	
Mission Management	C/Variou s	TBD	0	3,447	1/4Q	3,443	1/2Q	CONT.	6,890	TBD
GMD Targets	C/Variou s	Sandia National Labs/ Albuquerque, NM	0	41,499	1/2Q	40,000	1/2Q	TBD	81,499	TBD
LRALT	C/CPAF	Coleman Aerospace/ Orlando, FL	0	4,137	1Q	0			4,137	
Payload Development										
Fly Along Sensor Package	C/Variou s	Various	0	9,900	1Q	6,500	1Q	CONT.	16,400	TBD
SLO Development	C/Variou s	TBD	0	8,363	1Q	6,000	1Q	CONT.	14,363	TBD
Payload Suite for CMCM-1	C/Variou s	TBD	0	21,690	1Q	0			21,690	
Various Payload Management	C/Variou s	Various	0	4,455	1Q	15,405	1Q	CONT.	19,860	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development			0	141,823		111,874		0	253697	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Support										
System Engineering	C/FFRDC	JHU/APL/ Laurel, MD	0	2,100	1Q	2,100	1Q	CONT.	4,200	TBD
Targets Prime Acq. Contract	C/Various	Lockheed Martin/ Denver, CO;	0	52,926	1Q	96,450	1Q	CONT.	149,376	TBD
Subtotal Support Costs			0	55,026		98,550		0	153576	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Asset Management										
Short/Med/Long Range Targets	C/Various	Various	0	16,222	1Q	0			16,222	
Various Booster Management	C/Various	Various	0	10,600	1Q	22,603	1Q	CONT.	33,203	TBD
Subtotal Test and Evaluation			0	26,822		22,603		0	49425	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Production Milestones																																
GMD Target Development								△																								
SLO Development	△																															
Short Range Air Launch Target	△							△																								
Long Range Air Launch Target	△																															
Mobile Launch Platform Target	△																															
Medium Range Target																																
Short Range Liquid Fuel Booster	△																															
PDR																																
Short Range Liquid Fuel Booster - Integration																																
Mobile Launch Platform Equipment- OEM CDR																																
Medium Range Target																																
SLO Development																																
CDR																																
Short Range Liquid Fuel Booster - Booster System																																
Mobile Launch Platform Equipment- OEM CDR																																

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	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	
CDR																													
Short Range Liquid Fuel Booster - Integration								Δ																					
Medium Range Target							Δ																						
SLO Development								Δ																					
Testing Milestones																													
Long Range Air Launch Target - RRF								Δ																					
Medium Range Target - RRF Air											Δ																		
Mobile Launch Platform Target - RRF												Δ																	
Short Range Air Launch Target - RRF							Δ																						
GMD Target (FTG-04-4b)											Δ	—————	Δ																
SLO (GMD FT-06-1)																Δ													
STARS (GMD IFT-13c)							Δ	—————	Δ																				
STARS (GMD IFT-14)							Δ	—————	Δ																				
STARS (GMD IFT-15)							Δ	—————	Δ																				
STARS (GMD FT-04-1)											Δ	—————	Δ																
STARS (GMD FTG-04-4a)											Δ	—————	Δ																

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Milestones							
GMD Target Development		2Q-4Q	1Q-4Q				
SLO Development	1Q-4Q	1Q-4Q	1Q-3Q				
Short Range Air Launch Target	1Q-4Q	1Q-2Q					
Long Range Air Launch Target	1Q-4Q	1Q-3Q					
Mobile Launch Platform Target	1Q-4Q	1Q-3Q					
Medium Range Target	3Q-4Q	1Q-4Q	1Q				
Short Range Liquid Fuel Booster	1Q-4Q	1Q-3Q					
PDR							
Short Range Liquid Fuel Booster - Integration	3Q						
Mobile Launch Platform Equipment- OEM CDR	4Q						
Medium Range Target	4Q						
SLO Development		1Q					
CDR							
Short Range Liquid Fuel Booster - Booster System	4Q						
Mobile Launch Platform Equipment- OEM CDR		1Q					
Short Range Liquid Fuel Booster - Integration		3Q					
Medium Range Target		2Q					
SLO Development		3Q					
Testing Milestones							
Long Range Air Launch Target - RRF		3Q					
Medium Range Target - RRF Air			2Q				
Mobile Launch Platform Target - RRF		4Q					
Short Range Air Launch Target - RRF		2Q					
GMD Target (FTG-04-4b)			1Q-4Q				
GMD Target (FT-06-1)			3Q				
SLO (GMD FT-06-1)			4Q				
GMD Target (IFT-13c)		1Q-4Q					
GMD Target (IFT-14)		1Q-4Q					
GMD Target (IFT-15)		1Q-4Q					

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RD&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
GMD Target (FT-06-1)			1Q-4Q				
GMD Target (FTG-04-4a)			1Q-4Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0805 Targets & Countermeasures - Block 2006	0	0	50,865	201,336	175,914	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS), Program Element 0603880C, Project 1030.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The Targets and Countermeasures program provides capability-based targets to support Block 2006 integrated and layered BMDS testing. Targets developed under this project will enhance the BMDS capability by providing short, medium, and long range capability-based targets with enhanced payloads. Based on Missile Defense National Team (MDNT) assessments of possible threat scenarios, the targets and countermeasures program supports the Engagement Sequence Group (ESG) by launching targets to test the performance of the BMDS, ultimately enabling a weapon to engage a target.</p> <p>Funding for this program supports the continuation of targets prime contract activities, and the design, prototyping, development, certification, product improvement, and qualification testing of BMDS Block 2006 targets and associated payloads. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters, as well as the purchase of long lead material assets and asset management items for short, medium and long-range target components. The following is a summary of targets that will be developed and available to support Block 2006 testing:</p> <p>Enhanced Target Delivery System (ETDS) - ETDS is a conceptual target still in the design phase, which emulates a long-range strategic target used to test the integrated and layered BMDS. It is anticipated that the ETDS development will be initiated by the targets prime contractor in 1Q/05, with a ground-launch risk reduction flight test in 1Q/08. These dates for beginning and completing the ETDS reflect a delay of program start. Decision to delay start of this target, which would have heavier lift and longer range capacity, was based on the pace of testing for the Ground-Based Midcourse Defense and BMDS, and the need to rebalance based on current priorities. Start and end dates for this program are notional until the systems engineering requirements cycle is completed and detailed program content and schedule has been developed.</p> <p>Long Range Foreign Material Acquisition (LR-FMA) - Under this program, long range FMA's are to be procured and tested for potential use as a long-range strategic target against the integrated and layered BMDS. It is anticipated that the Long Range FMA program will be initiated by the targets prime contractor in 1Q/05, with a ground-launch risk reduction flight test in 1Q/07. Start and end dates for this program are notional until the systems engineering requirements cycle is completed and detailed program content and schedule has been developed.</p> <p>Ground-Based Midcourse Defense (GMD) Targets - The Targets and Countermeasures Program will continue to fund a portion of GMD FTG-06-1a/b.</p> <p>The drop-off in target systems in Project 0705 (Block 04) to Project 0805 (Block 06) is due to the following reasons. First, the targets prime contractor will develop all future target configurations with an emphasis on developing product lines of common target components, rather than full-blown individual target systems. Second, the prime contractor will maximize the use of existing government furnished equipment, to include the use of Foreign Material Acquisitions (FMA's) when appropriate, while minimizing the number of new developments. Third, the prime contractor will optimize the use of existing designs, provide capability-based and common component upgrades, and pursue target portfolio commonality in booster stages, interstages, avionics, launch support equipment, counter-measures, and re-entry vehicles. It is anticipated this product line approach and target component commonality will reduce both cycle time (e.g., concept definition to launch) and cost.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Target Development		0	50,865
RDT&E Articles (Quantity)		0	0

This effort develops, integrates, and tests short, medium, and long-range BMDS targets. It is expected the prime contractor will initiate development and testing of the targets in Block 2006. There are no articles of quantity to report under this task, since the target development and delivery dates task extend beyond FY05.

FY 2004 Planned Accomplishments
- RDT&E Planned Accomplishments: N/A

FY 2005 Planned Accomplishments
RDT&E Test Articles: N/A
- Initiate task order for the prime contractor to begin ETDS development.
- Initiate task order for the prime contractor to procure Long Range FMA's.
- Conduct System Requirement Reviews (SRR's), Preliminary Design Reviews (PDR's), Critical Design Reviews (CDR's) and associated engineering trade studies.
- Purchase long-lead hardware components.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

Targets and Countermeasures will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The targets prime contractor will continue to emphasize target product lines that develop target components such as booster stages, avionics, countermeasures, etc. As target developments and existing contracts are completed under Project 0705 (Block 04), the prime contractor will optimize target designs and developments completed for Block 04 and incorporate them as necessary to support Block 06 development. The prime contractor will also continue to provide capability-based and commonality target upgrades, as well as pursue target portfolio commonality in order to reduce cycle time and cost of BMDS target systems. Under this Project (0805), the four year base period of performance will expire. The government will either exercise the first option to continue with the prime, or re-compete the effort. As with Project 0705 (Block 04), the government will continue to maintain system responsibility and will ensure successful management of targets execution.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Development										
Enhanced Target Delivery Sys	C/Variou	TBD	0	0		28,000	1Q	CONT.	28,000	TBD
Long Range FMA	C/Variou	TBD	0	0		22,865	1Q	CONT.	22,865	TBD
GMD Target (SLO Payload)	C/Variou	TBD								
Subtotal Product Development			0	0		50,865		0	50865	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		50,865			50,865	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones							
GMD Target (with SLO payload)			2Q-4Q	1Q-3Q			
Long Range FMA			1Q-4Q	1Q-4Q			
ETDS Development			1Q-4Q	1Q-4Q	1Q-4Q		
Testing Milestones							
Long Range FMA Risk Reduction Flight					1Q		
ETDS Risk Reduction Flight						1Q	
GMD Payload (FTG-06-1a/b)				1Q-4Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0905 Targets & Countermeasures - Block 2008	0	0	17,578	52,178	29,307	203,995	217,961
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS), Program Element 0603880C, Project 1030.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The Targets and Countermeasures program provides capability-based targets to support Block 2008 integrated and layered BMDS testing. Targets developed under this project will test and enhance the BMDS capability by providing short, medium, and long range capability based targets with more complex payloads. Based on Missile Defense National Team (MDNT) assessments of possible threat scenarios, the targets and countermeasures program supports the Engagement Sequence Group (ESG) by launching targets to test the performance of the BMDS, ultimately enabling a weapon to engage a target.</p> <p>Funding for this program supports the continuation of targets prime contract activities, and the design, prototyping, development, certification, product improvement, and qualification testing of BMDS Block 2008 targets and associated payloads. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters, as well as the purchase of long lead material assets and asset management items for short, medium and long-range target components. The following is a summary of targets that will be developed and available to support Block 2008 testing:</p> <p>Strategic Range Air Launch Target - The Strategic Range Air Launch Target is a conceptual target still in the design phase. The purpose is to demonstrate a mobile, long-range target capability that allows flexibility in launch location and trajectory when tested against the integrated, layered BMDS. It is expected that the Strategic Range Air Launch Target will be initiated by the targets prime contractor in 1Q/05, with an air launch risk reduction flight test in 2Q/08. Start and end dates for this program are notional until the systems engineering requirements cycle is completed and detailed program content and schedule has been developed.</p> <p>Medium and Long Range Liquid Fuel Booster - While both systems are still conceptual targets, the medium and long-range liquid targets systems are planned to be of similar technology design to the Short Range Liquid Fuel Target Booster (Project 0705, Block 2004) currently under contract - but with enhanced ranges that emulate various threats. However, this Medium and Long Range Liquid Fuel Booster program will be cancelled and will not be pursued. Requested FY05 funding for this effort will be re-allocated to support development of targets for GMD Integrated Flight Tests as previously described in project 0705, Block 2004 and project 0805, Block 2006.</p> <p>Similar to Project 0805 (Block 06), this Project (0905) will continue to rely upon the targets prime contractor to develop new target systems (as describe above), as well as develop product lines of common target components. Existing designs, government furnished equipment, and Foreign Material Acquisition (FMA's) will continue to be utilized as necessary to minimize new developments, contain costs, and reduce cycle time.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Target Development			0	17,578			
RDT&E Articles (Quantity)			0	0			
This effort develops, integrates, and tests short, medium, and long-range BMDS targets. It is expected the prime contractor will initiate, develop, and test targets developed under this task. Since these target development activities under this task extend beyond FY05, no hardware articles are reported.							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603888C Ballistic Missile Defense Test and Targets

FY 2004 Planned Accomplishments
RDT&E Test Articles: N/A

FY 2005 Planned Accomplishments
RDT&E Test Articles: N/A

- Initiate task order for the prime contractor to begin Strategic Range Air Launch Target development.
- Conduct Systems Requirements Reviews (SRR's), Preliminary Design Reviews (PDR's), and associated engineering trade studies.
- Purchase long-lead hardware components.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

Targets and Countermeasures will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The targets prime contractor will continue to develop targets for use in MDA BMDS testing, with a continued emphasis on product line development and target component commonality. It is expected that the prime contractor will continue to refine and streamline the activities for which it is under contract, and as described in Section A of this Project. Under this Project (0905), the first two year option period of performance, for the prime contractor will expire, and the government will either exercise a second two year option, or re-compete the effort. As with Project 0805 (Block 06), the government will continue to maintain system responsibility and will ensure successful management of targets execution.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Target Development										
Strategic Range Air Launch Target	C/Various	TBD	0	0		17,578	1/3Q	CONT.	17,578	TBD
Subtotal Product Development			0	0		17,578		0	17578	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		17,578			17,578	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones							
Strategic Range Air Launch Target			1Q-4Q	1Q-4Q	1Q-4Q	1Q	
Testing Milestones							
Strategic Range Air Launch RRF						2Q	

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	6,576	6,239	6,543	6,912	7,175	7,490
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: Transferred in from the Ballistic Missile Defense System Segment Program Element 0603880C.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
This project covers personnel and related support costs, statutory and fiscal requirements.							
Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.							
Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.							
Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.							
Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Civilian Salaries and Support	0		6,576		6,239		
RDT&E Articles (Quantity)							
Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.							
Management Support: Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.							
Fiscal Requirements: This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.							
IM/IT Operations:							

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603888C Ballistic Missile Defense Test and Targets				
This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts – Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters – MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD – EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition – EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research – MDA	138,791	0	0	0	0	0	0	Continuing	Continuing

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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	305,309	418,608	421,049	445,971	456,339	469,621
0701 Command and Control, Battle Management and Communications (C2BMC) Block 2004	0	116,564	154,001	0	0	0	0
0801 Command and Control, Battle Management and Communications (C2BMC) Block 2006	0	26,677	58,152	186,379	200,056	0	0
0901 Command and Control, Battle Management and Communications (C2BMC) Block 2008	0	373	10,798	33,924	40,444	242,712	246,312
0702 Hercules Block 2004	0	17,959	0	0	0	0	0
0802 Hercules Block 2006	0	19,252	38,188	37,521	37,496	0	0
0902 Hercules Block 2008	0	18,589	45,898	45,096	45,066	83,881	85,319
0703 Joint Warfighter Support Block 2004	0	23,865	12,887	0	0	0	0
0803 Joint Warfighter Support Block 2006	0	0	11,817	25,607	13,300	0	0
0903 Joint Warfighter Support Block 2008	0	0	0	0	13,299	30,648	32,759
0204 Joint National Integration Center (JNIC)	0	66,554	70,670	72,177	75,691	76,906	81,118
0602 Program-Wide Support	0	15,476	16,197	20,345	20,619	22,192	24,113

Note: Funding for this effort was previously captured under the Ballistic Missile Defense System Segment Program Element (PE 0603880C).

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The Ballistic Missile Defense (BMD) Products Program Element (PE) provides the resources to define, integrate, test, demonstrate, activate and evolve the multi-layered BMDS capable of defending the United States, deployed forces, friends, and allies. The BMD Products mission is comprised of four primary projects: C2BMC, Joint Warfighter, Joint National Integration Center and Hercules. A single, integrated layered Ballistic Missile Defense System (BMDS) will be acquired through the employment of the Missile Defense National Team for C2BMC (MDNTB) which is developing, verifying, installing, activating and supporting BMDS level C2BMC designs and products for all ground, sea, air and space based elements through the use of models and the BMDS Test Bed.

The operational C2BMC element will integrate BMD information from numerous sources and provide the SECDEF and COCOMs with an integrated picture of the BMD battlespace. Furthermore, the operational C2BMC element will provide global warning of a potential ballistic missile launch to the SECDEF, COCOMs, and BMD weapons. In response to an emerging ballistic missile threat from a potential adversary, Strategic Command (USSTRATCOM) in collaboration with the other COCOMs can employ the C2BMC to develop courses of action and associated resource allocations to negate the emerging ballistic missile threat. The C2BMC provides USSTRATCOM and the other COCOMs the deliberate planning tools and crisis action tools to evolve courses of action based upon a common view of the threat, available global BMD resources, and warning order objectives.

The success or failure of the BMDS Battle Manager will determine the success or failure of the BMDS with respect to the achievement of the selected engagement sequences. The BMDS Battle Manager must identify, track, and direct weapons towards targets whose characteristics may not be known with certainty until the moment of battle. The BMDS Battle Manager will include the following key characteristics: (1) a globally-distributed network, (2) an operational battlespace that includes land, sea, air, and space, (3) capability to address multiple targets that can threaten a

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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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specific theater of operations or region of the world, (4) management of concurrent battlespace activities, (5) some level of automated decision making regarding the release or hold of lethal weapons, and (6) stringent requirements for high levels of trustworthiness of the systems that provide BMD capabilities due to the quality of the threats.

A Missile Defense National Team for C2BMC (MDNTB) was assembled to assist MDA with this project. The MDNTB, consists of MDA government civilian and military personnel, a defense contractor team (MDNTB (I)), Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC) and Scientific Engineering and Technical Assistance (SETA) providers, and develops, integrates, installs, activates and supports the flexible integrated BMDS C2BMC.

Project Hercules contributes to the BMDS C2BMC Element by providing advanced sensor netting and Battle Manager algorithms that will be integrated into the BMDS C2BMC Element and into BMDS sensor elements. This is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture that applies advanced decision theory to future BMDS command, control, and battle management (C2BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

The Deputy for Force Structure Integration and Deployment (TR) works with the Combatant Commanders, Services and Joint Staff through workshops, seminars, tabletops, wargames, and exercises to add the operational layer onto the Initial Defensive Capability activated by the C2BMC project and evolve it into the Initial Defensive Operational (IDO) capability. Through interaction, areas of improvement in BMD capability are identified for action. This project also supports planning initial defensive operations, assessing, monitoring, and supporting the BMDS, transition, BMDS capabilities to Combatant Commanders and Service component commands, integration of USSTRATCOM/USNORTHCOM in required wargames, tabletop exercises, experiments, and System Integrated Tests and Hardware in the Loop Tests required for enhanced use of the JNIC to develop operational concepts and improve BMDS performance.

The Joint National Integration Center (JNIC) operates and maintains concurrent testing and operations centers for the C2BMC and Ground-based Midcourse Defense elements of the Ballistic Missile Defense System (BMDS). It provides technical capabilities and expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and quickly deliver the capabilities required to field a viable BMDS. The JNIC operates as the field-operating activity for MDA in Colorado Springs, CO. The JNIC consists of a highly secure research and development building and a consolidated support facility totaling almost a million square feet. It provides MDA with worldwide secure communications connectivity throughout the missile defense community. The JNIC is the premier missile defense BMC3 integration and interoperability facility, as well as a modeling & simulation center. Beginning with IDC, and extending through Blocks 04, 06, 08 and beyond, the JNIC will be a "Host Center Services provider" for both BMDS RDT&E and real-world operations. Host Center Services include:

- JNIC support to the GMD Mission Control Center Facility (MCCF) and the GMD Fire Control/Communications (GFC/C) Mission Operations Center (GMOC).
- Operational support and connectivity of the C2BMC Integration and Test Center (BITC), and the C2BMC Experimentation Laboratory (X-Lab).
- Development and support of the BMDS Operations Center (BOC) and the Backup MDA Operations Center (BMOC).
- Infrastructure support of the Satellite Tracking and Surveillance System (STSS) Operations Center, Near Field Infrared Experiment (NFIRE), JNIC Mission Operations Center (JMOC), and sensor netting Test Bed.
- Development and support of a common satellite ground station for designated BMDS elements.
- Operation of the BMD Network Operations and Security Center (NOSC) for the MDA enterprise.

Program Operations under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

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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. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	0	343,644	384,763
Current President's Budget (FY 2005 PB)	0	305,309	418,608
Total Adjustments	0	-38,335	33,845
Congressional Specific Program Adjustments	0	-35,000	0
Congressional Undistributed Adjustments	0	-3,335	0
Reprogrammings	0	0	33,845
SBIR/STTR Transfer	0	0	0

Funding for this effort was previously captured under the Ballistic Missile Defense System Segment Program Element (PE 0603880C).

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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0701 Command and Control, Battle Management and Communications (C2BMC) Block 2004	0	116,564	154,001	0	0	0	0
RDT&E Articles Qty	0	9	7	0	0	0	0
<p><i>Note: - Beginning in FY 2004, funding for this project transitioned from BMD Systems Program Element (PE) (0603880C-Project 1010) to the Ballistic Missile Defense Products PE (0603889C-Project 0701).</i></p> <p><i>- Beginning in FY 2005, all funding except for government salaries transitioned from BMD System Core PE (0603890C-Project 0201) to the BMD Products PE (0603889C-Project 0701).</i></p> <p><i>- Beginning FY 2005, FFRDC and SETA funding transition into the C2BMC Element program section description.</i></p>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The current joint operational Command and Control (C2) systems do not provide critical Ballistic Missile Defense (BMD) capabilities such as global situational awareness of the BMD battlespace, deliberate planning for global BMD, crisis action planning for global BMD, and global early warning of a ballistic missile attack to the Combatant Commanders (COCOMs), Service components, and BMD weapons. In response to these BMD gaps, the Command, Control, Battle Management, and Communications (C2BMC) element of the BMD System (BMDS) will provide global planning for BMD, global monitoring of the BMD battlespace, and execution of the BMDS.</p> <p>In FY04, the initial BMD C2 capabilities of the C2BMC will include global situation awareness of the BMD battlespace and early warning of a ballistic missile attack on the homeland. The operational C2BMC element will integrate BMD information from numerous sources and provide the SECDEF and COCOMs with an integrated picture of the BMD battlespace. Furthermore, the operational C2BMC element will provide global warning of a potential ballistic missile launch to the SECDEF, COCOMs, and BMD weapons.</p> <p>In FY05, the BMDS program will provide initial capabilities with the fielding of the C2BMC that address the BMD C2 voids for the Secretary of Defense (SECDEF) and the COCOMs. In response to an emerging ballistic missile threat from a potential adversary, US Strategic Command (USSTRATCOM) in collaboration with the other COCOMs can employ the C2BMC to develop courses of action and associated resource allocations to negate the emerging ballistic missile threat. The C2BMC provides USSTRATCOM and the other COCOMs a deliberate planning capability and crisis action planning capability to evolve courses of action based upon a common view of the threat, available global BMD resources, and warning order objectives. Additionally, USSTRATCOM can use the C2BMC to adjudicate duplicate resource allocations.</p> <p>The fulfilling of the stated BMD C2 voids requires a global communications infrastructure that provides the seamless and secure transfer of information throughout the BMD battlespace. To that end, the C2BMC element will include a fire control network that allows the developed track information in the Pacific theater to be rapidly transported to the Ground-based Midcourse Defense (GMD) element to support the engagement sequences that are critical for the defense of Hawaii and Alaska. The C2BMC element will provide the communications infrastructure required to transport track data to the SECDEF and COCOMs for situational awareness of the BMD battlespace.</p> <p>The C2BMC element will provide voice communications infrastructure that provides secure voice communications to the COCOMs, Service components, and BMD weapons. Finally, the C2BMC element will provide the communications infrastructure that supports the transport of BMD planning information among the SECDEF, COCOMs, Service components, and BMD weapons.</p> <p>The Block 2004 C2BMC Element is defined and implemented in a spiral process that consists of five spirals (Spirals 4.1 - 4.5) and the installation of C2BMC Suites, hardware and communications connectivity, at Combatant Commander sites, Theater and Regional communications gateways, and satellite nodes such as the National Capital Region. Each spiral and C2BMC Suite upgrade represents an improvement in capability and functionality over the previous spiral and installation.</p> <p>FY 2004 features the development and fielding of Spiral 4.2 and Spiral 4.3; the installation and activation of C2BMC Suites at USSTRATCOM and USNORTHCOM; the installation and activation of one Regional Communications Node and one Theater Communications node; the installation and activation of Remoted Workstations at Peterson AFB and at the MDA Operations Center (MOC); and the installation and activation of Web Browser capabilities at USPACOM (Camp Smith) and the National Capital Region (NCR). Concurrent with these efforts is the development and</p>							

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implementation of BMDS training of the Combatant Commanders (COCOMs), the development and implementation of Logistics and Maintenance for the BMDS C2BMC Element, and the development of initial Operations and Support to the COCOMs.

FY 2005 will see the development and fielding into the BMDS C2BMC Element of Spirals 4.4 and 4.5; the upgrading of the Peterson AFB Remoted Workstations to a full C2BMC Suite; the installation and activation of a full C2BMC Suite at PACOM; and the upgrading of the NCR Web Browser capability to Remoted Workstations. Training of the COCOMs will continue as the complexity of the BMDS mission increases with each new spiral release, and with each new C2BMC Suites and upgraded suite added to the BMDS C2BMC Element. Logistics and Maintenance for the C2BMC Element will continue for existing and new C2BMC Suites.

The BMDS C2BMC Element is developed with the assistance of the Missile Defense National Team for C2BMC (MDNTB) which is composed of an industry team led by Lockheed Martin Mission Systems ((MDNTB(I)); Federally Funded Research and Development Centers (FFRDC); Scientific, Engineering and Technical Assistance (SETA) partners.

MDNTB(I) is designing, building, integrating, testing, and demonstrating a Block 2004 BMDS C2BMC capability possessing military utility and operational usefulness. This C2BMC capability shall be represented in developed, reuse, and Commercial-Off-The-Shelf (COTS) / Government-Off-The-Shelf (GOTS) software executing on hardware that integrates with appropriate communications networks and Command Center environments. MDNTB(I) has organized its executable product development into seven product areas covering C2, BM, and Communications:

- C2:
 - Infrastructure: Inter-process communications, database structure and data access facilities, security services, COTS configuration and integration, data synchronization, web browser links.
 - Situational Awareness: Display of BMDS-relevant data (e.g., Element locations and status, object tracks and characteristics, system states and modes) on the Human-Machine Interface (HMI) displays
 - Planning: Deliberate and crisis action planning, including review of Rules of Engagement (ROEs), Defense Design generation, and creating and dissemination of BMD operational plans
 - Message Processing: Receipt, parsing, and storage of pertinent data elements from messages on each interface.
- BM:
 - Threat/Track Processing: Operations on tracks and related data (e.g., state vectors, track quality metrics, features, etc.) to identify or estimate characteristics of the corresponding objects in space.
 - Engagement Processing: Evaluation of the threat (e.g., threatened area, missile classification, threat priority), engagement planning to include engagement feasibility assessments, engagement coordination across Elements, and engagement status up to and after the predicted intercept event.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
C2BMC ELEMENT		52,847	76,347
RDT&E Articles (Quantity)		2	2

- RDT&E Articles
- FY 2004: BMDS C2BMC Element Spirals 4.2 and 4.3
 - FY 2005: BMDS C2BMC Element Spirals 4.4 and 4.5

This section addresses the software component of the BMDS C2BMC Element's spiral development. It explains the tasks performed by the MDNTB(I) that is engineering and design, specifications development, software coding, integrating and testing, and performing the system-level test for each software spiral, as well as the tasks performed by the Services and various Agencies in support of the BMDS C2BMC Element.

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<p>FY2003 Accomplishments:</p> <ul style="list-style-type: none">-Engineering<ul style="list-style-type: none">-- IDO Engineering, Design and Specifications development complete-- Post-IDO (Block 04) Engineering, Design and Specifications Development underway-C2BMC Suite Development<ul style="list-style-type: none">-- Spiral 4.1: Completed-- Spiral 4.2: In Element Testing at JNIC-- Spiral 4.3 (IDO load): Planning, requirements, and design quality points complete-Communications<ul style="list-style-type: none">-- IDO BMDS Communications Network design completed-- Theater and Regional Communication Gateways Established-- Communications-Electronics Annex to Operational Order/Operational Plan (Draft Annex K) completed-Site Activation<ul style="list-style-type: none">-- USSTRATCOM Site Installation Plan signed-- USNORTHCOM Site Installation Plan signed-Warfighter Integration<ul style="list-style-type: none">-- Major exercise conducted with USSTRATCOM, USNORTHCOM and PACOM operators using actual C2BMC & GMD Command and Control systems <p>FY 2004 Planned Accomplishments:</p> <p>Spiral 4.2 provides several significant improvements to BMDS Command and Control (C2):</p> <ul style="list-style-type: none">- Force Level Planning Capability that includes the following functionality:<ul style="list-style-type: none">-- Deliberate and Contingency Campaign Planning capability with Assists in Automated Processes-- Defense Design Development that provides a Prioritized Defended Asset List (PDAL) for Terminal/Midcourse Systems and BMD Rules of Engagement (ROE) and Inventory Management-- BMD Planner Enhancements with Improved GUI and improved Joint Defensive Planner / EDA Integration- Increased Situational Awareness Capability that includes the following functionality:<ul style="list-style-type: none">-- BMDS Summary Screen displayed on globe showing GMD Cluster Tracks and J Source Tracks-- Data Tables displaying Mission Summary and All Track Data information such as Track Information, GMD Engagement State, Missile Order of Battle, Homeland ROE, Current Defense Status, Weapons Control, and Attacker- Integrated Ballistic Missile Picture (IBMP) displaying missile launch and impact point prediction, detailed track data, threat priority, and assets at risk. <p>Spiral 4.3 built upon Spiral 4.2 and provides the following IDO capabilities:</p> <ul style="list-style-type: none">- Force Level Planning Capability is improved by:<ul style="list-style-type: none">-- Merging Theater/COCOM BMD Plans to a Global Plan in the Defense Design Development-- Inserting several performance improvements in the GMD Planner- Situational Awareness Capability is improved by:<ul style="list-style-type: none">-- Adding an "Only Representative Track with Associated GMD Cluster" to the BMDS Summary Screen Globe Display-- Completing Data Tables and adding "Estimated Intercept Time" and "Number of GBI Launch Per Target" data-- Adding an Internet Browser Accessibility functionality- Integrated Ballistic Missile Picture (IBMP) is improved by:<ul style="list-style-type: none">-- Displaying Threat Fan		

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<ul style="list-style-type: none"> - Adding Early Warning Alert Notification <ul style="list-style-type: none"> -- Adding BMDS Health and Status Display -- Displaying Engagement Status data - Operate and upgrade the C2BMC-Experimental (C2BMC-X) environment at the JNIC to perform/support demonstrations, experiments (including technology insertions). - Establish Global Command & Control System-Missile Defense (GCCS-MD) integration efforts with DISA, and develop and field GCCS-MD mission applications. Continue development and integration of the Joint Data Planner (JDP) into GCCS. - Improve Early Warning capability by: <ul style="list-style-type: none"> -- Strategic missile launch messages to include initial launch report, observation reports, and state vector at boost burnout with covariance -- Simultaneous broadcast over TIBS/TDDS on theater event timelines. -- Improving launch event association <p>SBIRS-DSP Interface to BMDS: MDA, through AFSPC and SMC, is providing an interface to the BMDS to supply ONIR information to GMD and C2BMC. The project is being delivered in two phases. IDC/Block 20004 (Phase 1) provides a stand alone capability at the SBIRS MCS, Buckley AFB (Back up at the IMCS-B in Boulder, CO) to provide status and alert messages as well as state vector information in BMDS required formats. The stand alone system will be manned by a contractor crew force under the direction of the SBIRS Crew Commander. Block 2006 (Phase 2) is described in Project 0801.</p> <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Stand alone capability <ul style="list-style-type: none"> -- Contract award -- Hardware and long lead items orders complete -- Assembly, test and checkout of the stand alone capability -- Communications connectivity between MCS, IMCS-B and JNIC established -- Hire and train contractor crew force -- Available for operations -- Participate in test activities with GFC and C2BMC <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Integrated Capability <ul style="list-style-type: none"> -- Generate Test and Verification Plans -- Complete Operations, sustainment, and training planning efforts -- Perform maintenance and TO Verification <p>Planned BMDS Communications accomplishments include:</p> <ul style="list-style-type: none"> - Extend communications connectivity to new BMDS elements as they are brought into the BMDS system (specifically ABL and THAAD programs) and continue connectivity to remaining BMDS elements (i.e., remaining Patriot and Aegis units). - Acquire, install, field, and test network and data management capabilities (i.e., Joint Network Management System (JNMS)) and integrate these functions across MDA elements, and with Integrated Network Management System (INMS) system used by DoD per Joint Network Concept of Operation. 		

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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	
<ul style="list-style-type: none"> - Acquire, install, and test communications equipment and provide operations and sustainment of installed BMDS equipment until system transition to support additional C2BMC fielding activities including logistic spares and leased communications connectivity between BMDS locations. - Acquire and field tactical communications packages (including USC-60A satellite terminals, JRE Gateways, and tactically configured network components) to globally support rapid BMDS deployments. - Continued development of the Joint Range Extension (JRE) capability and fielding of JRE Gateways. JRE Gateways are needed for interoperability between tactical data networks and Internet Protocol (IP) based fixed communications networks. This item includes joint certification of the JRE Gateway equipment. - Update MIL-STD-3011 based on lessons learned from operational deployments and BMDS system testing, to include interoperable test tool for interoperability certification. <p>FY 2005 Planned Program: Spirals 4.4 and 4.5 shall feature the implementation of track forwarding between communication networks serving the BMDS and the implementation of corresponding Reporting Responsibility (R2) rules. This capability will promulgate BMDS-wide situational awareness and enable precision cueing and sharing of threat track data between BMDS Elements on different networks, enhancing sensor tracking performance and ultimately providing an opportunity for improved engagement performance. This capability will present the war fighter with BMDS Planning Capabilities, BMDS Situational Awareness, provide access to Intelligence Data, provide enhanced Early Warning Capabilities, and enhanced Communications. Specifically:</p> <ul style="list-style-type: none"> - Planning capabilities: Defense Design Between COCOMs; Ability to merge defense designs into global plan; Improved planning tool performance and user interface - Situational Awareness: Display and manual updates capability of operational status for each BMD resource; Display of weapon and sensor status for each threat; Monitoring of BMD Resources SIPRNET access and web browser capability for Summary Screen - Access to intelligence data through GCCS I3 - Data synchronization of threat tracks between C2BMC Suites - Enhanced Track Display - Continue improvements to Early Warning capabilities: <ul style="list-style-type: none"> -- Strategic missile launch messages to include initial launch report, observation reports, and state vector at boost burnout with covariance -- Simultaneous broadcast over TIBS/TDDS on theater event timelines -- Improving launch event association - Continue to operate and upgrade the C2BMC-Experimental (C2BMC-X) environment at the JNIC to perform and support demonstrations, experiments (including technology insertions. - Establish Global Command & Control System-Missile Defense (GCCS-MD) integration efforts with DISA, and develop and field GCCS-MD mission applications. Continue development and integration of Joint Data Planner into GCCS. - Continue to improve Early Warning capabilities by: <ul style="list-style-type: none"> -- Improving launch event association -- Strategic missile launch messages to include initial launch report, observation reports, and state vector at boost burnout with covariance <p>Planned FY 2005 BMDS Communications Program includes:</p> <ul style="list-style-type: none"> - Extend communications connectivity to new BMDS elements as they are brought into the BMDS system (specifically ABL and HAD programs) and continue connectivity to remaining BMDS elements (i.e., remaining Patriot and Aegis units). - Acquire, install, field, and test network and data management capabilities and integrate these functions with Integrated Network Management System (INMS) system used by DoD per Joint Network Concept of Operation. 		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>- Acquire, install, and test communications equipment and provide operations and sustainment of installed BMDS equipment until system transition to support additional C2BMC fielding activities including logistic spares and leased communications connectivity between BMDS locations.</p> <p>- Update MIL-STD-3011 with additional message protocols based on lessons learned from operational deployments and BMDS system testing, to include interoperable test tool for interoperability certification.</p> <p>- Acquire and field tactical communications packages (including USC-60A satellite terminals, JRE Gateways, and tactically configured network components) to globally support rapid BMDS deployments.</p>			
	FY 2003	FY 2004	FY 2005
C2BMC SITE ACTIVATION		13,426	15,371
RDT&E Articles (Quantity)		7	5
<p>RDT&E Articles</p> <p>- FY 2004: two C2BMC Suites; two Remoted C2BMC Workstations; 1 Web Browser Workstation; one Theater Communications Gateway Node and one Regional Communications Gateway Node.</p> <p>- FY 2005: two C2BMC suites; one Remoted C2BMC Workstation; Upgrades to Theater/Regional Gateways</p> <p>Site Activation efforts address fielding of the C2BMC Suites (both full and remote configurations), fielding supporting Communications Gateways, and fielding web browser based C2BMC nodes. This activity consists of two primary tasks:</p> <p>- Planning for and installing C2BMC Components at selected fielding sites</p> <p>- Providing Activation Support such as equipment procurement, staging and inventory control</p> <p>Site Planning and Design: this task includes up to three (3) site surveys per site to determine site specific engineering, activation, installation, training, communications and information assurance issues; the development and publishing of Site Activation Plans (SIPs) and Site Installation Documents (SIDs). Site Installation: activities include appropriate prerequisites that must be completed prior to installation, such as mutual agreement on the SIP and SID, development of a Site Test Plan (STP) for each site, and technical accreditation completed and approved. C2BMC equipment shall then be installed per the SID and checked-out per the STP. This is followed by a User Verification Test and training.</p> <p>Activation Support: this task includes the procurement of hardware, software and services directly tied to the C2BMC Suites, Workstations and Communications Gateways. Prior to installation at the designated operational site, all C2BMC Suite equipment is staged and assembled at an off-site to verify configuration, perform software and systems checks and "burn-in" of the system. The C2BMC Suite, workstations or Communications Gateways equipment is then disassembled and shipped to its final operational destination. This process includes a rigorous inventory control program.</p> <p>FY 2004 Planned Accomplishments:</p> <p>- USNORTHCOM:</p> <p>-- A full C2BMC Suite installed and activated at the JNIC Operations Center.</p> <p>-- Workstations remoted from the full JNIC C2BMC Suite installed and activated at HQ USNORTHCOM (Peterson AFB) to provide IDO Planning and Collaboration Capability.</p> <p>-- Workstations remoted from the full JNIC C2BMC Suite installed and activated at the Cheyenne Mountain Operations Center (CMOC) to provide IDO Situational Awareness and C2 Capability.</p> <p>- USSTRATCOM: A full C2BMC Suite installed and activated at USSTRATCOM to provide IDO Situational Awareness, Planning, Collaboration and C2 Capability.</p> <p>- COMMUNICATIONS GATEWAYS: a Regional Gateway and a Theater Gateway installed and activated with Joint Range Extension (JRE) and communications node equipment. These Gateways provide communications links for relaying Theater and Regional BMDS data to the CONUS BMDS.</p> <p>- BMDS SUPPORT COORDINATION CENTER (BSCC): Workstations remoted from the full JNIC C2BMC Suite installed and activated at the BSCC. The BSCC provides BMDS Health and Status data to MDA HQ as well as an IDO Situational Awareness Capability.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>- PACOM: Camp Smith at PACOM configured for Collaboration Capability with web browser access. PACOM will perform functions of IDO Collaboration with USNORTHCOM, and USSTRATCOM.</p> <p>Planned FY 2005 Program</p> <ul style="list-style-type: none"> - NATIONAL CAPITAL REGION: Install and activate BMDS C2BMC display screens for Summary Status and Situational Awareness to the White House Situation Room, SecDef Executive Support Center and the National Command Center. - USNORTHCOM: Upgrade the HQ USNORTHCOM (Peterson AFB) from remoted workstations to a full C2BMC Suite - PACOM: Upgrade the PACOM Camp smith IDO web browser capability to a full C2BMC Suite. 			
	FY 2003	FY 2004	FY 2005
LOGISTICS AND MAINTENANCE SUPPORT		14,615	29,490
RDT&E Articles (Quantity)			
<p>Logistics and Maintenance services consist of On-Site Support, Help Desk activities and hardware/software maintenance.</p> <p>On-Site Support: provided to assist the System Administrator assigned by the site (e.g. COCOM) with the general operational support of the C2BMC system, integration of the C2BMC support processes into the site's support regimen, and daily operational support for the C2BMC system as part of a transition plan. MDNTB(I) personnel provide "over-the-shoulder" support to users when requested, or alternatively, contact the Help Desk for support.</p> <p>Help Desk: located in Colorado Springs, CO, the Help Desk shall provide technical support to onsite personnel and to the C2BMC end-user; review of hardware/software problems and coordination of COTS developer/vendor service calls; trouble ticket work-off; and tracking and implementing documented escalation procedures; collection of metrics; and, maintenance of the Help Desk website. This service will be delivered on a 24x7x365 basis.</p> <p>Maintenance: maintenance of the C2BMC Element covers both software and hardware maintenance and will be delivered by the MDNTB(I). The goal is to maintain the BMDS C2BMC at a pre-determined availability. Software maintenance support will be based on the use of Help Desk personnel who will field incoming trouble calls and request software engineering support as required. Scheduled (preventative and non-critical remedial) and unscheduled hardware maintenance issues will be managed by the MDNTB(I) as appropriate.</p> <p>FY 2004 Planned Accomplishments:</p> <ul style="list-style-type: none"> - Provided CLS services to the following C2BMC sites: USNORTHCOM (JNIC), USSTRATCOM, Regional Gateway, Cheyenne Mountain Ops Center (CMOC), BSCC, Peterson AFB, Theater Gateway and the NCR. - Support consisted of hardware maintenance, software maintenance, GFE maintenance for JRE units (JNIC, USSTRATCOM, both Gateways, CMOC, BSCC, Peterson AFB) - Support was provided by MDNTB(I) personnel on-site 24x7 - Help Desk: the BMDS C2BMC Element Help Desk was developed, installed, activated and manned by MDNTB(I) personnel at the JNIC. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Continue providing CLS services to existing C2BMC sites: USNORTHCOM (JNIC), USSTRATCOM, Regional Gateway, Cheyenne Mountain Ops Center (CMOC), BSCC, Peterson AFB, Theater Gateway and the NCR. - Provide O&S services to new and/or upgraded C2BMC Sites: Peterson AFB, PACOM, and NCR. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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 consisted of hardware maintenance, software maintenance, GFE maintenance for JRE units (JNIC, USSTRATCOM, both Gateways, CMOC, BSCC, Peterson AFB) - Support is provided by MDNTB(I) personnel on-site 24x7 - Help Desk: the BMDS C2BMC Element Help Desk was developed and established at the JNIC 			
	FY 2003	FY 2004	FY 2005
C2BMC INTEGRATION, TEST, EXPERIMENTATION AND OPERATION		20,939	32,793
RDT&E Articles (Quantity)			
<p>The Joint National Integration Center (JNIC) is host to three C2BMC Spiral Integration & Testing Laboratories (BITCs), and the C2BMC-Experimental Laboratory (C2BMC-X). The following capabilities and functions located at the JNIC support the MDNTB(I)'s development of the BMDS C2BMC Element:</p> <ul style="list-style-type: none"> - Integration and test of C2BMC software Spiraling delivered from the MDNTB(I) Development Team to the MDNTB(I) I&T Team. - C2BMC experimentation supported by Broad Area Announcements for independently developed software which may have applications in the BMDS - Operational Support to the USNORTHCOM C2BMC Suite located at the JNIC - C2BMC Operations & Maintenance, Licenses and Upgrades for the BITC and C2BMC-X laboratories. <p>FY 2004 Planned Accomplishments include:</p> <ul style="list-style-type: none"> - Providing BMDSS ICRDC DO support to the BITC labs - Development of the Test Environment and the C2BMC Test Article Simulation Environment - Development of BMDS C2BMC Concept of Operations by the Operational Concept Team - Build-out of the BITC-3 Laboratory for Spiral 4.3 - Run full schedule of C2BMC-X Events and Experimentation - Full development and Activation of the JNIC Ops Center <ul style="list-style-type: none"> -- Build-out of OPS Center with Spiral 4.3 Suite -- USNORTHCOM Remote workstations -- Ops and maintenance support - HW and SW maintenance and upgrades for BITC labs <p>FY 2005 Planned Program include:</p> <ul style="list-style-type: none"> - Continue BMDSS ICRDC DO support to the BITC labs - Upgrade Test Environment and the C2BMC Test Article Simulation Environment - Continue Operational Concept Team project - Upgrade CNE for BITC Lab Spiral 4.3 - Continue full schedule of C2BMC-X Events and Experimentation - Continue ops and maintenance of JNIC Ops Center - Add new Communications and Connectivity, C4I Tools 			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
	FY 2003		FY 2004		FY 2005				
FEDERALLY FUNDED RESEARCH DEVELOPMENT CENTERS (FFRDC)					6,336				
RDT&E Articles (Quantity)									
Starting FY 2005, this support is captured in the C2BMC Element Project.									
Federally Funded Research Development Centers (FFRDC) personnel provide highly technical support across nearly every discipline necessary to develop, integrate and test, and activate the BMDS C2BMC Element. Specifically, FFRDC personnel assist in the specialized engineering of Temporal Logic forming the foundation of the BMDS Battle Manager, provide expertise in Consequence Management, assist with Technical Performance Measures (TPMs) and the MDA Statement of Goals (SOG), assist the MDNTB(I) with other BMDS Elements' interface specifications to the C2BMC Element, and provide critical BMDS Communications expertise.									
	FY 2003		FY 2004		FY 2005				
Scientific, Engineering and Technical Assistance (SETA)					8,401				
RDT&E Articles (Quantity)									
Starting FY 2005, this support is captured in the C2BMC Element Project.									
SETA personnel provide essential technical and programmatic support for the development of the C2BMC Element. Specifically:									
- BMDS Communications support with special emphasis on ongoing JRE development and deployment, communications interoperability across BMDS Elements, BMDS IA/CND efforts, and development of Theater & Regional Communications Sites.									
- C2BMC System Engineering support activities, such as ICWG/CCB support, XML Registry, Spectrum Management, NATO C2BMC Interoperability.									
- Programmatic Support such as PPBE, IMP, IMS, Site Activation, Acquisition Strategy and Documentation, Common Cost Modeling, C2BMC CARD, Cost Research & Analysis.									
- C2BMC Prototype Development such as Early Warning Support, GCCS Support, and BMDS Benchmark support.									
- C2BMC Element Test Support such as participation in BMD System Level Testing events.									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

D. Acquisition Strategy

C2BMC will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial C2BMC Element of the BMDS Test Bed NLT 4th Quarter FY 2004 as an early BMDS Test Bed and Initial Defensive Capability and deliver capability block upgrades as early as practical. An integrated team named the Missile Defense National Team for C2BMC (MDNTB) was formed to accomplish the design and specifications development; spiral software development, integration and testing; installation and activation; and logistics and maintenance of the C2BMC Element for the BMD System. The MDNTB is composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. An Other Transactions Agreement was awarded to Lockheed Martin Mission Systems as the prime contractor for the industry team (MDNTB(I)).

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC ELEMENT										
C2BMC HW/SW Development, I&T	SS/CPAF	MDNTB/ Col. Springs, Co		16,252	1Q	24,428	1Q		40,680	
C2BMC HW/SW Development, I&T	SS/CPAF	MDNTB/ Huntsville, Ala		6,600	1Q	7,130	1Q		13,730	
C2BMC Element Engineering & Specifications Development	SS/CPAF	MDNTB/ Washington, DC		13,550	1Q	12,319	1Q		25,869	
C2BMC Element Communications Network Development	SS/CPAF	MDNTB/ Washington, DC		2,351	1Q	3,575	1Q		5,926	
C2BMC Element Modeling & Simulation	SS/CPAF	MDNTB/ Washington, DC		3,960	1Q	4,125	1Q		8,085	
EW/CEW; GCCS; JDP; JRE; ISC2; SBIRS-DSP; PATRIOT-JTAGS		Services, DISA, Agencies/ Various		10,134	1Q	24,770	1Q		34,904	
C2BMC SITE ACTIVATION										
C2BMC Suites and Comms Gateways	SS/CPAF	MDNTB(I)/ Various COCOMs		13,426	1Q	15,371	1Q		28,797	
LOGISTICS AND MAINTENANCE SUPPORT										
CLS, Operations Support, COCOM Training	SS/CPAF	MDNTB(I)/ Various COCOMS		14,615	1Q	29,490	1Q		44,105	
C2BMC INTEGRATION, TEST, EXPERIMENTATION AND OPERATION										
BCD Personnel	C/FFP	IDA, SRS Technologies/ Colorado Springs, CO		1,928	1Q	2,595	1Q		4,523	
C2BMC Integration & Test	C/FFP	Northrup Grumman Mission Sys/ Colorado Springs, CO		16,560	1Q	17,787	1Q		34,347	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC Experimentation	C/FFP	Northrup Grumman Mission Sys/ Colorado Springs, CO		774	1Q	7,740	1Q		8,514	
C2BMC Ops & Maintenance	C/FFP	Northrup Grumman Mission Sys/ Colorado Springs, CO		1,677	1Q	2,861	1Q		4,538	
C2BMC Operational Support	C/FFP	Northrup Grumman Mission Sys/ Colorado Springs, CO				1,810	1Q		1,810	
FEDERALLY FUNDED RESEARCH DEVELOPMENT CENTERS (FFRDC)										
C2BMC Element	SS/CPAF	MITRE, IDA, ORL/ Washington, DC		6,336	1Q				6,336	
Scientific, Engineering and Technical Assistance (SETA)										
C2BMC Element	SS/CPFF	Sparta/CSC/ MDA HQ, Arlington, VA		8,401	1Q				8,401	
Subtotal Product Development			0	116,564		154,001		0	270565	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	116,564		154,001			270,565	
Remarks										

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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 4.1 Development	▲		▲																									
Spiral 4.1 Comm Development	▲		▲																									
Spiral 4.1 Integration & Testing			▲		▲																							
Spiral 4.1BMD System Level testing				▲																								
Spiral 4.2 Development	▲				▲																							
Spiral 4.2 Comm Development	▲				▲																							
Spiral 4.2 Integration & Testing				▲																								
Spiral 4.2 BMD System Level Testing				▼																								
Spiral 4.3 Engineering	▲		▲																									
Spiral 4.3 Development				▲	▲			▲																				
Spiral 4.3 C2BMC Type Accreditation							▲																					
Spiral 4.3 Comm Development	▲				▲																							
Spiral 4.3 Integration & Testing				▲	▲			▲																				
Spiral 4.3 BMD System Level Testing							▼	▼																				
Spiral 4.4 System Engineering			▲		▲																							

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009								
	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 C2BMC Development					△	→	△																										
Spiral 4.4 Integration & Testing							△	→	△																								
Spiral 4.4 BMD System Level Testing											▽																						
Spiral 4.5 System Engineering			△	→	△																												
Spiral 4.5 C2BMC Development									△	→	△																						
Spiral 4.5 Integration & Testing											△	→	△																				
Spiral 4.5 BMD System Level Testing												▽																					
Site Activation																																	
BMDS C2BMC Comm Network			△	→	△																												
C2BMC Comms Gateways						△																											
USSTRATCOM C2BMC Comms							△																										
Aegis C2BMC Comms											△																						
JNIC			△	→	△																												
JNIC Suite & Comm HW			▲																														
Operator & Maintainer Training			△	→	△																												

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MDA Exhibit R-4 Schedule Profile

Date
February 2004

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

R-1 NOMENCLATURE
0603889C Ballistic Missile Defense Products

Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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																												
IA Certification/Accreditation								Δ																				
JNIC Site Operational								Δ																				
US STRATEGIC COMMAND			Δ	—————	—————	—————	Δ																					
USSTRATCOM Site Design			Δ	—————	—————	—————	Δ																					
USSTRATCOM Suite & Comm HW				▲																								
USSTRATCOM Site Installation				Δ	—————	—————	Δ																					
Operator and Maintainer Trng				Δ	—————	—————	Δ																					
IA Certification & Accreditation								Δ																				
USSTRATCOM Operational								Δ																				
US NORTHERN COMMAND			Δ	—————	—————	—————	Δ																					
USNORTHCOM Site Design			Δ	—————	—————	—————	Δ																					
USNORTHCOM Suite & Comm HW							Δ																					
Installation, Checkout & Testing				Δ	—————	—————	Δ																					
Trng development & Delivery				Δ	—————	—————	Δ																					
USNORTHCOM Site Operational								Δ																				

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009				
	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																													
IA Accreditation / Certification								Δ																					
NATIONAL CAPITAL REGION (NCR)					Δ	—	Δ																						
NCR HW & Comm							Δ																						
NCR Operational								Δ																					
MDA Operations Center (MOC)					Δ	—	Δ																						
MOC SIP					Δ																								
MOC SID							Δ																						
MOC Suite & Comm HW							Δ	—	Δ																				
MOC Installation & Checkout								Δ																					
MOC Operational								Δ																					
Regional/Theater Gateways Activation					Δ	—	Δ																						
Gateways Design							Δ	—	Δ																				
Gateways HW Procurement							Δ																						
GWs Installation & Checkout					Δ	—	Δ																						
GWs IA Accreditation & Certification								Δ																					

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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	2003				2004				2005				2006				2007				2008				2009			
	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																												
USNORTHCOM Site Upgrade									△	→	△																	
USNORTHCOM Upgrade SIP									△																			
USNORTHCOM Upgrade SID									△																			
USNORTHCOM Upgrade HW Procurement											△																	
USNORTHCOM Upgrade HW Installation											△																	
USNORTHCOM Upgrade BMD System Level Testing											▽																	
PACOM Site Upgrade									△	→	△																	
PACOM Upgrade SIP									△																			
PACOM Upgrade SID									△																			
PACOM Upgrade HW Procurement									△																			
PACOM Upgrade Installation											△																	
PACOM Upgrade BMD System Level Testing											▽																	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Composite Materials and Structures							
Order Circuits for Long Haul Comm	4Q						
C2BMC Element							
Spiral 4.1 Development	1Q-2Q						
Spiral 4.1 Comm Development	1Q-2Q						
Spiral 4.1 Integration & Testing	3Q-4Q						
Spiral 4.1BMD System Level testing	4Q						
Spiral 4.2 Development	1Q-4Q	1Q					
Spiral 4.2 Comm Development	1Q-4Q						
Spiral 4.2 Integration & Testing		1Q					
Spiral 4.2 BMD System Level Testing		1Q					
Spiral 4.3 Engineering	2Q-3Q						
Spiral 4.3 Development	4Q	1Q-2Q					
Spiral 4.3 C2BMC Type Accreditation		2Q					
Spiral 4.3 Comm Development	2Q-4Q	1Q-2Q					
Spiral 4.3 Integration & Testing		1Q-4Q					
Spiral 4.3 BMD System Level Testing		3Q,4Q					
Spiral 4.4 System Engineering	3Q-4Q	1Q					
Spiral 4.4 C2BMC Development		2Q-3Q					
Spiral 4.4 Integration & Testing		3Q-4Q	1Q				
Spiral 4.4 BMD System Level Testing			2Q				
Spiral 4.5 System Engineering	3Q-4Q	1Q-3Q					
Spiral 4.5 C2BMC Development		4Q	1Q				
Spiral 4.5 Integration & Testing			2Q-3Q				
Spiral 4.5 BMD System Level Testing			3Q				
Site Activation							
BMDS C2BMC Comm Network	3Q-4Q	1Q-4Q					
C2BMC Comms Gateways		2Q					
USSTRATCOM C2BMC Comms		3Q					
Aegis C2BMC Comms		4Q					
JNIC	3Q-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			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
JNIC Suite & Comm HW	4Q						
Operator & Maintainer Training	4Q	1Q-4Q					
IA Certification/Accreditation		4Q					
JNIC Site Operational		4Q					
US STRATEGIC COMMAND	3Q-4Q	1Q-4Q					
USSTRATCOM Site Design	3Q-4Q	1Q-2Q					
USSTRATCOM Suite & Comm HW	4Q						
USSTRATCOM Site Installation	4Q	1Q-4Q					
Operator and Maintainer Trng	4Q	1Q-4Q					
IA Certification & Accreditation		4Q					
USSTRATCOM Operational		4Q					
US NORTHERN COMMAND	3Q-4Q	1Q-4Q					
USNORTHCOM Site Design	3Q-4Q	1Q-2Q					
USNORTHCOM Suite & Comm HW		1Q					
Installation, Checkout & Testing	4Q	1Q-4Q					
Trng development & Delivery	4Q	1Q-4Q					
USNORTHCOM Site Operational		4Q					
IA Accreditation / Certification		4Q					
NATIONAL CAPITAL REGION (NCR)		1Q-3Q					
NCR HW & Comm		2Q					
NCR Operational		3Q					
MDA Operations Center (MOC)		1Q-3Q					
MOC SIP		1Q					
MOC SID		2Q					
MOC Suite & Comm HW		2Q-3Q					
MOC Installation & Checkout		3Q					
MOC Operational		3Q					
Regional/Theater Gateways Activation	3Q-4Q	1Q-4Q					
Gateways Design	4Q	1Q					
Gateways HW Procurement		1Q					
GWs Installation & Checkout		1Q-4Q					

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
GWs IA Accreditation & Certification		4Q					
USNORTHCOM Site Upgrade			1Q-3Q				
USNORTHCOM Upgrade SIP			2Q				
USNORTHCOM Upgrade SID			2Q				
USNORTHCOM Upgrade HW Procurement			3Q				
USNORTHCOM Upgrade HW Installation			3Q				
USNORTHCOM Upgrade BMD System Level Testing			3Q				
PACOM Site Upgrade			2Q-3Q				
PACOM Upgrade SIP			2Q				
PACOM Upgrade SID			2Q				
PACOM Upgrade HW Procurement			2Q				
PACOM Upgrade Installation			3Q				
PACOM Upgrade BMD System Level Testing			3Q				

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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0801 Command and Control, Battle Management and Communications (C2BMC) Block 2006	0	26,677	58,152	186,379	200,056	0	0
RDT&E Articles Qty	0	0	1	0	0	0	0

*Note: - Beginning in FY 2004, funding for this project transitioned from BMD Systems Program Element (PE) (0603880C-Project 1010) to the Ballistic Missile Defense Products PE (0603889C-Project 0701).
 - Beginning in FY 2005, all funding except for government salaries transitioned from BMD System Core PE (0603890C-Project 0201) to the BMD Products PE (0603889C-Project 0701).
 - Beginning FY 2005, FFRDC and SETA funding transition into the C2BMC Element program section description.*

A. Mission Description and Budget Item Justification

The current vision for C2BMC evolution calls for a shift from a BMDS Command and Control (C2) emphasis in Block 2004 to a BMDS Battle Management (BM) and sensor netting emphasis for Block 2006.

Battle Management comprises the decisions and actions executed in direct response to the activities of enemy forces in support of the Joint Chiefs of Staff's concept of precision engagement. Battle managers must make decisions in a rapid manner to counter both enemy actions and force movements. Battle managers must correctly cope with the fog-of-war conditions that are ever-present during the prosecution of the war. Currently, the COCOMs and Service components do not have a Battle Management system that addresses the BMD missions and functions for theater, regional, and global battle management.

The success or failure of the BMDS battle-management functions will determine the success or failure of BMD with respect to the achievement of the assigned objectives. The BMDS Battle Manager must identify, track, and direct weapons towards targets whose characteristics may not be known with certainty until the moment of battle. The BMDS Battle Manager must discriminate the threat objects from decoys and debris. The BMDS Battle Manager will have absolute real-time deadlines for the computation that will consist of periodic processes to include detecting and identifying potential threat missiles, assigning a weapon to engage the threat missile, and providing an assessment of the interceptor-threat missile engagement.

MDA will develop a globally distributed, real-time software-intensive Battle Management component to the C2BMC that exhibits highly predictable system behavior in which the C2BMC element receives sensor information from land, sea, air, and space, and commits land-, sea-, air-, and space-based weapons to direct fire at identified targets. To achieve the highly predictive system behavior, the BMDS Battle Manager developers will employ linear temporal logic and model checking techniques to a globally distributed, real-time battle-management software development to aid in the realization of desired system behavior to include the weapons-commit logic. The Battle Management computing will be accomplished through a network of computers that are connected to sensors and weapons as well as BMD element Battle Management computers.

NASA successfully piloted this innovative, non-traditional approach to software system design in their satellite software programs and in the current Mars Lander program. ASD(NII) endorsed this approach as a pathfinder for global real-time battle management integration and implementation.

The BMDS will include a large variety of individual sensors, weapons, and Battle Management components. The suite of weapons and sensors will increase in number as the program progresses in future blocks. The characteristics of these future weapons and sensors are not well defined and will likely remain fluid for many years. Additionally, all weapons and sensors will be subject to change independently of each other. As such, the Battle Management software must integrate numerous dynamic software systems to the extent that has never before been achieved.

The BMDS Battle Manager will include the following key characteristics: (1) a globally-distributed network, (2) an operational battlespace that includes land, sea, air, and space, (3) capability to address multiple targets that can threaten a specific theater of operations or region of the world, (4) management of concurrent battlespace activities, (5) some level of automated decision making regarding the release or hold of lethal weapons, and (6) stringent requirements for high levels of trustworthiness of the systems that provide BMD capabilities due to the quality of the threats.

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Specifically, the BMDS Battle Manager will feature the following functionalities:

- Rapidly verify the potential threat detection by early warning sensors. This capability requires the correlation of non-homogeneous track data from BMDS and non-BMDS sensors.
- Maintain track files of threat objects through all phases of missile flight. This capability requires a network of BMDS and non-BMDS sensors that provide overlapping sensor coverage for complete BMD battlespace tracking coverage.
- Concurrently process track information on thousands of objects to include detected threat ballistic missiles and debris objects from previous engagements, and adversary counter-measures.
- Interface with space-based, airborne, and surface IR sensors to receive detection information of a launched threat ballistic missile.
- Correlate the track data so that each threat ballistic missile in flight results in a single, accurate reported track in the battle management system.
- Cue sensors employed for all engagement sequences from battle management track files.
- Produce sensor-tasking requests for the purpose of adjusting radar field-of-regard towards detected track.
- Engage identified ballistic missile threats to enable BMD engagement sequences.
- Request BMDS weapons to hold fire on selected ballistic missile threats.
- Receive and provide rapid hit/kill assessments of threat objects. This capability also requires a network that includes BMDS and non-BMDS sensors that provide overlapping sensor coverage for complete BMD battlespace coverage.
- Behavior of the battle management function must be highly predictable with respect to state transitions, event triggers, element and component taskings, and outcomes.
- Fuse data from multiple, autonomous sensors with the intent of forming a more accurate estimation of the environment than is available from any single sensor. The data fusion capability is time critical, covers a large geographical area, and requires accurate, reliable information at completion.

These BMDS C2BMC Element Block 2006 Battle Management capabilities will be developed and implemented in four six-month Spirals - Spirals 6.1, 6.2, 6.3, and 6.4. While not all functions can be included in all spirals, all functions will be included in the C2BMC Element by the delivery and integration into the BMDS of Spiral 6.4.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
C2BMC ELEMENT		22,562	58,152
RDT&E Articles (Quantity)			1

FY 2005 RDT&E Articles: Spiral 6.1

FY 2004 Planned Accomplishments:

FY 2004 will see BMDS Block 2006 C2BMC system design and Spiral 6.1 specifications development. A select group of MDNTB(I) design engineers, aided by FFRDC personnel, will perform long-lead engineering efforts necessary to deliver the Block 2006 functionalities detailed above using the spiral development process.

FFRDC personnel provide specialized expertise in: Temporal Logic systems (which forms the foundation of the BMDS Battle Manager); Consequence Management; Technical Performance Measures (TPMs) and the MDA Statement of Goals (SOG); BMDS Elements' interface specifications to the C2BMC Element and; critical BMDS Communications network design.

Block 2006 efforts include:

- High priority fixes to C2 capabilities implemented in Block 2004 spirals and selected for improvements in Block 2006 based on War Fighter feedback. These enhancements to existing fielded capabilities include:
 - Acquire and field tactical communications packages (including initial transition to wideband and protected satellite connectivity using SHF and EHF for battle management and command and control functions, additional JRE Gateways, and tactically configured network components) to globally support rapid BMDS deployments.

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<p>-- Extend communications connectivity to new BMDS elements as they are brought into the BMDS system (specifically FBX-T and SBX sensors) and initial planning for the C2BMC Interface Network Processor (CINP).</p> <p>-- Acquire, install, and test communications equipment to support additional C2BMC fielding activities including logistic spares and leased communications connectivity between fixed BMDS locations.</p> <p>-- Continue effort to integrate communications infrastructure in support of sensor netting activities to improve battle space awareness and ability to track and engage targets.</p> <p>-- Continue acquisition of survivable satellite communications assets for assured connectivity between BMDS elements.</p> <p>-- Expanded Concurrent Test and Operations (CTO). Add redundant hardware strings at one or more sites, improving system availability.</p> <p>-- Planner enhancements such as new or expanded Element capabilities including corresponding performance models, and performance response time improvements.</p> <p>-- Expanded offense/defense integration. Expand beyond data sharing in Block 2004 to incorporate Battle Damage Assessment (BDA) from Attack Operations in updates to the Defense Design.</p> <p>-- Automated system states and modes determination and reporting. Automatically parse BMDS Element status messages (USMTF, J-Series, and K-Series) with standardized status reporting across the BMDS. Automatically generate and transmit BMDS status messages.</p> <p>-- Automatically display BMDS Element and communications network status changes and update the BMDS OPSCAP/SYSCAP status, enabling automated CTO transitions.</p> <p>-- Automatic data synchronization including handling of Suites entering and exiting the BMDS network.</p> <p>- Planned new C2 Capabilities include:</p> <p>-- Expanded National Capital Region (NCR)</p> <p>-- Enable reconfiguration to adjust to a variety of Host command structures.</p> <p>-- Graceful system degradation. Maintain prioritized data delivery during network Quality of Service (QoS) degradation and support automatic data re-synchronization between C2BMC Suites.</p> <p>-- Failover automation to enhance the availability and survivability of the composite C2BMC element. Respond to BMDS Element health and status.</p> <p>-- Message-based Weapons Control Orders (WCOs). Automate generation of WCOs for specific BMDS weapons systems based on Operator commands.</p> <p>-- Initial Consequence Management displays. Display weapon and debris tracks along with their projected impact points to support manual coordination regarding affected collateral assets.</p> <p>-- Integration with air and ground picture. Augment the Block 2004 end-state integration of J-Series air and ground track messages by integrating with other C2 situational awareness pictures, such as GCCS.</p> <p>- BMDS Battle Management capabilities include: BMDS Track Correlation; Automated BMDS weapons engagement control; BMDS network management; Regional sensor netting; BMDS element readiness reporting; Automated BMDS sensor tasking request; Aegis BMD launch-on-remote; Automated sensor registration; High priority fixes to capabilities implemented in previous spirals.</p> <p>- Continue NATO International Projects which address interoperability concepts, requirements and interfaces for US BMDS and NATO missile defense operations. Initiate development of prototype NATO missile defense C2BMC requirements and implementation.</p> <p>Communications efforts include:</p> <p>- Acquire and field additional tactical communications packages (including USC-60A satellite terminals, JRE Gateways, and tactically configured network components) to globally support rapid BMDS deployments. This activity includes initial effort to add survivable communications connectivity between BMDS elements and to increase redundant communications to increase operational availability of BMDS. Begin acquisition of survivable satellite communications assets for assured connectivity between BMDS elements.</p> <p>- Begin effort to integrate communications infrastructure in support of sensor netting activities to improve battle space awareness and ability to track and engage targets.</p> <p>SETA personnel will support the delivery of the Block 2006 C2BMC Element by providing essential technical and programmatic support, including: BMDS Communications support with special emphasis on development Block 2006 BMDS Communications Network, JRE logistics support, communications interoperability across BMDS Elements, and BMDS IA/CND efforts; Block 2006 C2BMC System Engineering support activities, such as Interface Control Working Group/Configuration Control Board support, XML Registry, Spectrum Management, NATO C2BMC Interoperability; Programmatic Support such as developing Block 2006 POM estimates, Block 2006 IMP & IMS, and Block 2006 C2BMC Cost Analysis Requirement Document; C2BMC Prototype support including C2BMC-X BAA preparations and management; and C2BMC Element Test Support such as planning for Block 2006 BMD System Level Testing events.</p>		

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<p>FY 2005 Planned Program: The culmination of the engineering effort and specifications development for each software spiral is the Spiral Content Agreement (SCA) review. The SCA signals the completion of the specifications development phase performed during FY 2004 and the start of the software coding phase for that spiral. FY 2005 will see: software coding and development, software integration and testing, and delivery of Spirals 6.1 for BMD system level testing; and software coding and development for Spiral 6.2. Current planning has Spirals 6.1 and 6.2 notionally containing the following functionalities:</p> <p>Spiral 6.1:</p> <ul style="list-style-type: none">- Verification of potential threat detections by early warning sensors.- Maintaining track files of threat objects through all phases of missile flight.- Concurrent processing of track information of thousands of objects, including detected threat ballistic missiles and debris objects from previous engagements, and adversary counter-measures.- Interfacing with space-based, airborne, and surface IR sensors to receive detection information of a launched threat ballistic missile.- Correlation of multiple source track data so that each threat ballistic missile in flight results in a single, accurate reported track in the battle management system.- Tasking of BMDS weapons to engage identified ballistic missile threats to enable BMD engagement sequences.- Requesting BMDS weapons to hold fire on selected ballistic missile threats. <p>Spiral 6.2:</p> <ul style="list-style-type: none">- Cueing sensors employed for all engagement sequences from battle management track files.- Receiving and providing rapid hit/kill assessments of threat objects. This capability also requires a network that includes BMDS and non-BMDS sensors that provide overlapping sensor coverage for complete BMD battlespace coverage. <p>SBIRS-DSP Interface to BMDS: MDA, through AFSPC and SMC, is providing an interface to the BMDS to supply ONIR information to GMD and C2BMC. The project is being delivered in two phases. The IDC/Block 04 capability (Phase 1) was completed in FY04 and is described in Project 0701. Block 2006 (Phase 2) integrates the IDC/Block 2004 capability at the MCS and IMCS-B into the SBIRS mission processor allowing the normal crew force to operate the missile defense mission as they do the missile warning, technical intelligence and battle space characterization missions. This will provide for better situational awareness among the crew as they perform the missions and to take advantage of the inherently high reliability of the SBIRS ground station. Phase 2 also allows MDA to take advantage of additional sensors, not available to the stand alone configuration, for improved state vector performance.</p> <ul style="list-style-type: none">- FY04 Planned Accomplishments:<ul style="list-style-type: none">-- Plan and design Integrated Capability-- Contract award-- Complete development efforts to integrate missile defense messages, state vector algorithm and VMF format into the operational SBIRS mission software-- Finalize interface control documents- Planned FY05 Program:<ul style="list-style-type: none">-- Complete Integrated Capability-- Generate test and verification plans-- Complete operations, sustainment, and training planning efforts-- Perform Maintenance and TO verification		

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- Planned FY 2005 Communications Program:
 - Acquire and field tactical communications packages (including USC-60A satellite terminals, JRE Gateways, and tactically configured network components) to globally support rapid BMDS deployments.
 - Extend communications connectivity to new BMDS elements as they are brought into the BMDS system (specifically ABL and THAAD programs).
 - Acquire, install, and test communications equipment to support additional C2BMC fielding activities including logistic spares and leased communications connectivity between fixed BMDS locations.
 - Acquire, install, field, and test network and data management capabilities and integrate these functions with Integrated Network Management System (INMS) system used by DoD per Joint Network Concept of Operations.
 - Begin acquisition of survivable satellite communications assets for assured connectivity between BMDS elements.

SETA personnel will continue to provide critical technical and programmatic support for the Block 2006 C2BMC Element. Tasks are similar to those listed in FY 2004.

	FY 2003	FY 2004	FY 2005
Federally Funded Research and Development Centers (FFRDC)		2,350	
RDT&E Articles (Quantity)			

Starting FY 2005, this support is captured in the C2BMC Element program description.

Federally Funded Research Development Centers (FFRDC) personnel provide highly technical support across nearly every discipline necessary to develop, integrate and test, and activate the BMDS C2BMC Element. Specifically, FFRDC personnel assist in the specialized engineering of Temporal Logic forming the foundation of the BMDS Battle Manager, provide expertise in Consequence Management, assist with Technical Performance Measures (TPMs) and the MDA Statement of Goals (SOG), assist the MDNTB(I) with other BMDS Elements' interface specifications to the C2BMC Element, and provide critical BMDS Communications expertise.

	FY 2003	FY 2004	FY 2005
Scientific, Engineering and Technical Assistance (SETA)		1,765	
RDT&E Articles (Quantity)			

Starting FY 2005, this support is captured in the C2BMC Element program description.

- SETA personnel provide essential technical and programmatic support for the development of the C2BMC Element:
- BMDS Communications support with special emphasis on development Block 2006 BMDS Communications Network, JRE logistics support, communications interoperability across BMDS Elements, and BMDS IA/CND efforts.
 - Block 2006 C2BMC System Engineering support activities, such as ICWG/CCB support, XML Registry, Spectrum Management, NATO C2BMC Interoperability.
 - Programmatic Support such as developing Block 2006 POM estimates, Block 2006 IMP & IMS, and Block 2006 C2BMC CARD.
 - C2BMC Prototype support including C2BMC-X BAA preparations and management.
 - C2BMC Element Test Support such as planning for Block 2006 BMD System Level Testing events.

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C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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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	

D. Acquisition Strategy

C2BMC will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial C2BMC Element of the BMDS Test Bed NLT 4th Quarter FY 2004 as an early BMDS Test Bed and deliver capability block upgrades as early as practical. This process will (1) allow early implementation of a capability while supporting an evolving requirement/threat definition process, (2) minimize the risks of obsolescence posed by the rapid pace of technology development, (3) provide opportunities to update to a changing set of standards, and (4) allow informed trades between cost, schedule, and performance while exploring operational possibilities.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC ELEMENT										
MDNTB(I)	SS/CPAF	LLMC/ Arl, VA		22,562	1Q	58,152	1Q		80,714	
Federally Funded Research and Development Centers (FFRDC)										
C2BMC Element	SS/CPFF	MITRE, IDA, Aerospace, ORL/ MDA HQ, Arlington VA		2,350	1Q				2,350	
Scientific, Engineering and Technical Assistance (SETA)										
C2BMC Element	SS/CPFF	Sparta, CSC/ MDA HQ, Arlington VA		1,765	1Q				1,765	
Subtotal Product Development			0	26,677		58,152		0	84829	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	26,677		58,152			84,829	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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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	2003				2004				2005				2006				2007				2008				2009			
	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 C2BMC Element																												
Block 2006 Block Design Review 1							Δ																					
Block 2006 Block Design Review 2											Δ																	
Block 2006 Block Design Review 3												Δ																
Block 2006 Block Design Review 4															Δ													
BMDS C2BMC Modeling & Simulation							Δ																					
Spiral 6.1 Eng. & Specs Development							Δ				Δ																	
Spiral 6.1 Content Agreement											☆																	
Spiral 6.1 Development											Δ				Δ													
Spiral 6.1 Integration & Testing												Δ				Δ												
Spiral 6.1 BMD System Level Testing																▽												
Spiral 6.2 Eng. & Specs Development											Δ				Δ													
Spiral 6.2 Content Agreement															☆													
Spiral 6.2 Development												Δ				Δ												
Spiral 6.2 Integration & Testing															Δ					Δ								
Spiral 6.2 BMD System Level Testing																												▽

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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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	2003				2004				2005				2006				2007				2008				2009							
	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 C2BMC Element																																
Spiral 6.3 Eng. & Specs Development													△	△																		
Spiral 6.3 Content Agreement															☆																	
Spiral 6.3 Development													△	△																		
Spiral 6.3 Integration & Testing															△	△																
Spiral 6.3 BMD System Level Testing																				▽												
Spiral 6.4 Eng. & Specs Development													△	△																		
Spiral 6.4 Content Agreement																☆																
Spiral 6.4 Development															△	△																
Spiral 6.4 Integration & Testing																	△	△														
Spiral 6.4 BMD System Level Testing																				▽												

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2006 C2BMC Element							
Block 2006 Block Design Review 1		3Q					
Block 2006 Block Design Review 2			1Q				
Block 2006 Block Design Review 3			3Q				
Block 2006 Block Design Review 4				1Q			
BMDS C2BMC Modeling & Simulation		3Q-4Q	1Q-4Q	1Q-4Q			
Spiral 6.1 Eng. & Specs Development		3Q-4Q	1Q				
Spiral 6.1 Content Agreement			2Q				
Spiral 6.1 Development			2Q-3Q				
Spiral 6.1 Integration & Testing			3Q-4Q	1Q-2Q			
Spiral 6.1 BMD System Level Testing				2Q			
Spiral 6.2 Eng. & Specs Development			1Q-3Q				
Spiral 6.2 Content Agreement			4Q				
Spiral 6.2 Development			3Q-4Q	1Q			
Spiral 6.2 Integration & Testing				1Q-4Q			
Spiral 6.2 BMD System Level Testing				4Q			
Spiral 6.3 Eng. & Specs Development			3Q-4Q	1Q			
Spiral 6.3 Content Agreement				2Q			
Spiral 6.3 Development				2Q-3Q			
Spiral 6.3 Integration & Testing				3Q-4Q	1Q		
Spiral 6.3 BMD System Level Testing					1Q		
Spiral 6.4 Eng. & Specs Development				2Q-3Q			
Spiral 6.4 Content Agreement				4Q			
Spiral 6.4 Development				4Q	1Q		
Spiral 6.4 Integration & Testing					2Q-4Q		
Spiral 6.4 BMD System Level Testing					4Q		

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0901 Command and Control, Battle Management and Communications (C2BMC) Block 2008	0	373	10,798	33,924	40,444	242,712	246,312
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: - Beginning in FY 2004, funding for this project transitioned from BMD Systems Program Element (PE) (0603880C-Project 1010) to the Ballistic Missile Defense Products PE (0603889C-Project 0701).</i></p> <p><i>- Beginning in FY 2005, all funding except for government salaries transitioned from BMD System Core PE (0603890C-Project 0201) to the BMD Products PE (0603889C-Project 0701).</i></p> <p><i>- Beginning FY 2005, FFRDC and SETA funding transition into the C2BMC Element program section description.</i></p>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The BMDS C2BMC Element Block 2008 capabilities is planned to be developed and implemented in four six-month Spirals - Spirals 8.1, 8.2, 8.3, and 8.4. The current vision for C2BMC evolution calls for a continuation and refinement of the BMDS Battle Management (BM) and sensor netting emphasis begun for Block 2006.</p> <p>The goal remains to develop a globally distributed, real-time software-intensive BM system that exhibits highly predictable system-software behavior, in which the system receives sensor information from land, sea, air, and space, and commits land-, sea-, air-, and space-based weapons to fire at identified targets. Furthermore, we plan to employ temporal logic and model checking to a globally distributed, real-time battle-management system to aid in the realization of desired system behavior to include the weapons-commit logic. This approach will provide the following:</p> <ul style="list-style-type: none"> - Predictable battle management behavior for all possible inputs - Software that meets all the hard real-time deadlines - Automated test oracles that facilitate specification testing, software coding, element integration, and fielding <p>Current desired Block 2008 capabilities are as follows:</p> <ul style="list-style-type: none"> - C2: Simultaneous Current and Future Planning; Automated Dynamic BMDS Replanning in Seconds; and Automated Logistics, Communications and Intelligence feeds for planning. - BM: Multi-spectral Data Fusion; Engage On Remote; Kill Assessment. - Comms: Global Reach BMDS with Broadband SATCOM; End-to-End Quality-of-Service (QoS) requirements met; RT Network Management & Control; and Dynamic QoS Negotiations. 							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
C2BMC ELEMENT				10,798			
RDT&E Articles (Quantity)							
<p>Block 2008 efforts during this period will be limited as we concentrate on IDO, Block 2004 and long-lead efforts for Block 2006.</p> <p>Planned FY 2005 Program: Expand long-lead engineering design efforts for Block 2008. Includes early design work for Dynamic Replanning C2 capability, Engage On Remote BM capability, and a Global Reach BMDS with Broadband SATCOM communications capability.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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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 2003	FY 2004	FY 2005
Federally Funded Research and Development Centers (FFRDC)		373	
RDT&E Articles (Quantity)			

Starting FY 2005, this support is captured in the C2BMC Element Program description.

Federally Funded Research Development Centers (FFRDC) personnel provide highly technical support across nearly every discipline necessary to develop, integrate and test, and activate the BMDS C2BMC Element. Specifically, FFRDC personnel assist in the specialized engineering of Temporal Logic forming the foundation of the BMDS Battle Manager, provide expertise in Consequence Management, assist with Technical Performance Measures (TPMs) and the MDA Statement of Goals (SOG), assist the MDNTB(I) with other BMDS Elements' interface specifications to the C2BMC Element, and provide critical BMDS Communications expertise.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

D. Acquisition Strategy

C2BMC will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial C2BMC Element of the BMDS Test Bed NLT 4th Quarter FY 2004 as an early BMDS Test Bed and deliver capability block upgrades as early as practical. An integrated team named the Missile Defense National Team for C2BMC (MDNTB) was formed to accomplish the design and specifications development; software development, integration and testing; installation and activation; and logistics and maintenance of the C2BMC Element for the BMD System. The MDNTB is composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. An Other Transactions Agreement was awarded to Lockheed Martin Mission Systems as the prime contractor for the industry team (MDNTB(I)).

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
C2BMC ELEMENT										
C2BMC Element	SS/CPAF	LMMS/ Crystal City, VA				10,798	1Q		10,798	
Federally Funded Research and Development Centers (FFRDC)										
C2BMC Element	SS/CPFF	MITRE/ MDA HQ, Arlington VA		373	1Q				373	
Subtotal Product Development			0	373		10,798		0	11171	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	373		10,798			11,171	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Manufacturing Processes and Advanced Materials							
Spiral 8.1 Software						1Q	
Spiral 8.2 Software						3Q	
Spiral 8.3 Software							1Q
Studies & Analyses							
Block 2008 BMDS C2BMC		4Q	1Q-4Q	1Q-4Q	1Q-2Q		
Block 2004 C2BMC Operations & Support							
Spiral 8.1 Development, Testing & Integration					3Q-4Q	1Q	
Spiral 8.2 Development, Testing & Integration						1Q-3Q	
Spiral 8.3 Development, Testing & Integration						3Q-4Q	1Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0702 Hercules Block 2004	0	17,959	0	0	0	0	0
RDT&E Articles Qty	0	4	0	0	0	0	0
<p><i>Note: This Project covers the Block 2004 product elements of Project Hercules. The Hercules Block 2006 and Block 2008 products are described in this same PE (0603889C) under projects 0802 and 0902 respectively. The Hercules core elements are described in PE 0603890C, BMD Core, Project 0202. In FY 2005, Project 0702, Hercules Block 2004 Products, is moved to Project 0802, Hercules Block 2006.</i></p>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>Project Hercules is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture, that applies advanced decision theory to future BMDS command, control, and battle management (C2/BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Algorithm Productization and Test				8,337			
RDT&E Articles (Quantity)							
<p>Hercules successfully tested the initial prototype elements of the Decision Architecture, an approach to applying advanced decision theory concepts to C2BMC. Elements of the Decision Architecture underwent performance characterization testing and completed real time testing on several system level tests in the BMD Test Bed. The Decision Architecture prototype will continue to be upgraded, adding components that accommodate new and updated elements of the BMDS. Successful real time and digital tests for discrimination and fusion algorithms were also completed and will be ongoing as part of the BMDS spiral upgrades.</p>							
	FY 2003		FY 2004		FY 2005		
Project Hercules				9,622			
RDT&E Articles (Quantity)				4			
<p>Delivered three algorithms to the forward based sensor team for integration into the TPS-X BMD Test Bed radar and their BMD Radar. Completed testing on a discrimination algorithm being integrated into the SBX radar.</p>							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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<p>MDA Exhibit R-2A RDT&E Project Justification</p>		<p>Date February 2004</p>
<p>APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)</p>	<p>R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products</p>	
<p><u>D. Acquisition Strategy</u></p> <p>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.</p> <p>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.</p> <p>Capabilities can be transitioned into future operational force structure by integrating the Hercules concepts into MDA elements. MDA element managers then coordinate with the Services and their acquisition community so they can plan, budget, and procure necessary hardware and software for operational deployed and sustained forces.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
MIT/LL	CPFF	Hanscomb AFB		1,588	1Q			CONT.	1,588	CONT.
SPARTA	CPFF	Arlington, VA		1,150	1Q			CONT.	1,150	CONT.
SMDC Hercules	Various	Various		908	1Q			CONT.	908	CONT.
MDA Hercules	Various	Various		1,278	1Q			CONT.	1,278	CONT.
Algorithm Productization and Test										
Boeing	CPAF	Arlington, VA		2,200	1Q			CONT.	2,200	CONT.
SPARTA	CPFF	Arlington, VA		1,542	1Q			CONT.	1,542	CONT.
SMDC Hercules	Various	Various		306	1Q			CONT.	306	CONT.
Subtotal Support Costs										
			0	8,972		0		0	8972	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Algorithm Productization and Test										
MIT/LL	CPFF	Hanscomb AFB		4,039	1Q			CONT.	4,039	CONT.
JNIC	Various	Colorado Springs, CO		250	1Q			CONT.	250	CONT.
Project Hercules										
MIT/LL	CPFF	Hanscomb AFB		1,230	1Q			CONT.	1,230	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Northrop Grumman XonTech	CPFF	Van Nuys, CA		1,139	1Q			CONT.	1,139	CONT.
SMDC	Various	Various		1,345	1Q			CONT.	1,345	CONT.
MDA Hercules	Various	Various		984	1Q			CONT.	984	CONT.
Subtotal Test and Evaluation			0	8,987		0		0	8987	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	17,959		0			17,959	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Hercules							
Hercules Program Review		1Q					
Algorithms to test		1Q,2Q,3Q,4Q					
Post Flight Test Data Analysis		1Q-4Q					

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0802 Hercules Block 2006	0	19,252	38,188	37,521	37,496	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: This Project covers the Block 2006 project elements of Project Hercules. The Hercules Block 2004 and Block 2008 projects are described in this same PE (0603889C) under projects 0702 and 0902 respectively. The Hercules core elements are described in PE 0603890C, BMD Core, Project 0202. In FY 2005, all of Project 0702, Hercules Block 2004 Products, is moved here to Project 0802, Hercules Block 2006. Also in FY 2005, a portion of PE 060890C, BMDS Core, Project 0202, Hercules Core, is moved here to Project 0802, Hercules Block 06.

A. Mission Description and Budget Item Justification

Project Hercules is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture that applies advanced decision theory to future BMDS command, control, and battle management (C2/BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

Algorithm development and testing for Block 06 is focused on spiral capability enhancements for midcourse and forward based sensors and battle management systems. These algorithms improve the functionality of the Block 06 radar and electro-optical sensors, enabling them to better perform their Engagement Sequence Group roles. Fusion and decision theory software is also under development and being provided to the C2BMC element developers for their evaluation and inclusion in Block 06 or Block 08.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Project Hercules		19,252	38,188
RDT&E Articles (Quantity)			

In FY 2004 and FY 2005, Project Hercules will continue the development of detection, tracking, and discrimination algorithms for use in all phases of flight by multiple radar and electro-optical sensors and the Decision Architecture.

Specific Block 06 goals for these developments include:

- 1) Providing algorithm concepts and test results to support the evaluation and subsequent integration of enhancements to radar and elector-optical systems included in Block 06.
- 2) Delivery of a prototype Decision Architecture, a real time battle management tool that provides information supporting weapons and sensor resource allocation based upon information being received from multiple sensors throughout the layered BMDS. This prototype will be evaluated by the C2BMC acquisition team for inclusion in the C2BMC element.

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p><u>D. Acquisition Strategy</u></p> <p>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.</p> <p>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.</p> <p>Capabilities can be transitioned into future operational force structure by integrating the Hercules concepts into MDA elements. MDA element managers then coordinate with the Services and their acquisition community so they can plan, budget, and procure necessary hardware and software for operational deployed and sustained forces.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
Boeing	CPAF	Arlington, VA		0		1,944	1Q	CONT.	1,944	CONT.
Lockheed Martin	CPFF	Sunnyvale, CA		1,375	1Q	1,111	1Q	CONT.	2,486	CONT.
Raytheon	CPFF	Boston, MA		1,125	1Q	1,111	1Q	CONT.	2,236	CONT.
SPARTA	CPFF	Arlington, VA		3,905	1Q	7,419	1Q	CONT.	11,324	CONT.
MDA Hercules	Various	Various		188	1Q	1,646	1Q	CONT.	1,834	CONT.
ONR	Various	Various		250	1Q	278	1Q	CONT.	528	CONT.
MIT/LL	CPFF	Hanscomb AFB		3,391	1Q	5,167	1Q	CONT.	8,558	CONT.
Northrup Grumman XonTech	CPFF	Van Nuys, CA		1,553	1Q	1,047	1Q	CONT.	2,600	CONT.
SMDC Hercules	Various	Various		600	1Q	2,313	1Q	CONT.	2,913	CONT.
PRA	CPFF	Arlington, VA		1,001	1Q			CONT.	1,001	CONT.
Subtotal Support Costs			0	13,388		22,036		0	35424	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
SMDC Hercules	Various	Various		519	1Q	778	1Q	CONT.	1,297	CONT.
AFRL-Eglin AFB	Various	Various		519	1Q	471	1Q	CONT.	990	CONT.
MIT/LL	CPFF	Hanscomb AFB		1,849	1Q	7,170	1Q	CONT.	9,019	CONT.
Northrup Grumman XonTech	CPFF	Van Nuys, CA		1,966	1Q	4,021	1Q	CONT.	5,987	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MDA Hercules	Various	Various				687	1Q	CONT.	687	CONT.
JNIC	Various	Colorado Springs, CO				278	1Q	CONT.	278	CONT.
Subtotal Test and Evaluation			0	4,853		13,405		0	18258	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
MDA Hercules	Various	Various		1,011	1Q	2,256	1Q	CONT.	3,267	CONT.
SMDC Hercules	Various	Various				491	1Q	CONT.	491	CONT.
Subtotal Management Services			0	1,011		2,747		0	3758	
Remarks										
Project Total Cost			0	19,252		38,188			57,440	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Hercules							
Hercules Program Review		1Q	1Q	1Q	1Q		
Algorithms and DA Prototype ATT		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q		
Post-Flight Test Data Analysis		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0902 Hercules Block 2008	0	18,589	45,898	45,096	45,066	83,881	85,319
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: This Project covers the Block 2008 project elements of Project Hercules. The Hercules Block 2004 and Block 2006 projects are described in this same PE (0603889C) under projects 0702 and 0802 respectively. The Hercules core elements are described in PE 0603890C, BMD Core, Project 0202. In FY 2005, a portion of PE 060890C, BMDS Core, Project 0202, Hercules Core, is moved here to PE 060889C, BMD Products, Project 0902, Hercules Block 08.</i></p>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>Project Hercules is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture that applies advanced decision theory to future BMDS command, control, and battle management (C2/BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.</p> <p>Algorithm development and testing for Block 08 is focused on spiral capability enhancements for battle management systems and sensors functioning in all phases of flight. These algorithms improve the functionality of the Block 08 radar and electro-optical sensors, enabling them to better perform their Engagement Sequence Group roles. Fusion and decision theory software is also under development and being provided to the C2BMC element developers for their evaluation and inclusion in Block 06 or Block 08.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003		FY 2004		FY 2005		
Project Hercules			18,589		45,898		
RDT&E Articles (Quantity)							
<p>In FY 2004 and FY 2005, Project Hercules will continue the development of detection, tracking, and discrimination algorithms for use in all phases of flight by multiple radar and electro-optical sensors and the Decision Architecture.</p> <p>Specific Block 08 goals for these developments include:</p> <ol style="list-style-type: none"> 1) Providing algorithm concepts and test results to support the evaluation and subsequent integration of enhancements to radar and elector-optical systems included in Block 08 2) Introducing advanced algorithms or algorithm suites for clutter mitigation 3) Delivery of a an enhanced prototype Decision Architecture, a real time battle management tool that provides information supporting weapons and sensor resource allocation based upon information being received from multiple sensors throughout the layered BMDS. This prototype will be evaluated by the C2BMC acquisition team for inclusion in the C2BMC element. 							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<u>D. Acquisition Strategy</u> <p>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.</p> <p>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.</p> <p>Capabilities can be transitioned into future operational force structure by integrating the Hercules concepts into MDA elements. MDA element managers then coordinate with the Services and their acquisition community so they can plan, budget, and procure necessary hardware and software for operational deployed and sustained forces.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
Lockheed Martin	CPFF	Sunnyvale, CA		1,250	1Q	2,212	1Q	CONT.	3,462	CONT.
Raytheon	CPFF	Boston, MA		2,163	1Q	2,993	1Q	CONT.	5,156	CONT.
SPARTA	CPFF	Arlington, VA		2,885	1Q	4,364	1Q	CONT.	7,249	CONT.
MDA Hercules	Various	Various		1,593	1Q	4,066	1Q	CONT.	5,659	CONT.
ONR	Various	Various		500	1Q	590	1Q	CONT.	1,090	CONT.
AFRL-Eglin AFB	Various	Various		700	1Q	1,800	1Q	CONT.	2,500	CONT.
PRA	CPFF	Arlington, VA				2,209	1Q	CONT.	2,209	CONT.
MIT/LL	CPFF	Hanscomb AFB		4,101	1Q	7,680	1Q	CONT.	11,781	CONT.
Northrup Grumman XonTech	CPFF	Van Nuys, CA		3,684	1Q	7,948	1Q	CONT.	11,632	CONT.
SMDC	Various	Various		1,369	1Q	1,474	1Q	CONT.	2,843	CONT.
Subtotal Support Costs			0	18,245		35,336		0	53581	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
AFRL-Eglin AFB	Various	Various		344	1Q	1,398	1Q	CONT.	1,742	CONT.
CSC	CPFF	Fairfax, VA				1,019	1Q	CONT.	1,019	CONT.
MIT/LL	CPFF	Hanscomb AFB				2,153	1Q	CONT.	2,153	CONT.
MDA Hercules	Various	Various				851	1Q	CONT.	851	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation			0	344		5,421		0	5765	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
CSC-SETA	FFP	Fairfax, VA				1,334	1Q	CONT.	1,334	CONT.
SPARTA-SETA	FFP	Arlington, VA				1,221	1Q	CONT.	1,221	CONT.
MDA Hercules	Various	Various				1,732	1Q	CONT.	1,732	CONT.
SMDC Hercules	Various	Various				854	1Q	CONT.	854	CONT.
Subtotal Management Services			0	0		5,141		0	5141	
Remarks										
Project Total Cost			0	18,589		45,898			64,487	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Hercules							
Hercules Program Review		1Q	1Q	1Q	1Q	1Q	1Q
Algorithms and DA Prototype ATT		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Post-Flight Test Data Analysis		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0703 Joint Warfighter Support Block 2004	0	23,865	12,887	0	0	0	0												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: Beginning in FY 2004, funding for this effort transitioned from BMD Systems Program Element (PE) 0603880C (Project 1055) to the new Ballistic Missile Defense Products PE 0603889C (Project 0703). Starting in FY 2005, funding for this effort has been allocated across Ballistic Missile Defense Products PE 0603889C (Project 0703 and 0803).</i></p>																			
<p><u>A. Mission Description and Budget Item Justification</u></p> <p>The missile defense program focuses on the development of a single, integrated, layered Ballistic Missile Defense System (BMD System). The Joint Warfighter Support program ensures that warfighter operational perspectives and concerns are reflected in the development of Ballistic Missile Defense (BMD) capabilities. The Deputy for Force Structure Integration and Deployment (TRW) works with the Combatant Commanders, the Services and Joint Staff through seminars, wargames, and exercises to achieve this goal. Through interaction, areas of improvement in BMD capability are identified for action. This program supports planning for emergency deployments, and integration of CoComs in required wargames, tabletops, experiments, System Integrated Tests and Hardware in the Loop Tests required for enhanced use of the Joint National Integration Center (JNIC) in support of operational concept development.</p> <p>The combatant commanders must establish a sequence of essential activities that must be completed to deliver missile defensive capabilities. To employ the BMDS, receiving combatant commanders and cognizant component commanders must develop the procedures and rules under which the element will be operated. The combatant and subordinate component commanders need to establish how the capability will be employed in autonomous operations as well as a part of the integrated BMDS. The hardware, software must be made available for initial operational checkout, familiarization, and training. The equipment will be operated in training and test modes only, pending operator certification for tactical employment of the capability. An integrated BMDS Level Training qualification and certification must be completed to provide the baseline level of training for the unit to effectively participate in BMDS integrated training. The combatant commander tactical teams and unit watch teams are trained in integrated tactical operations, exercising advanced skills and tasks needed to effectively employ the BMDS. The combatant commander and MDA shall establish in an MOA, the procedures and rules for conducting Test Bed RDT&E activities with BMDS assets that form the fielded BMDS capability. The MOA would address readiness needs, national security posture, test duration and recovery time, required BMDS Mode/State, restoration capability training and support, and steps to return to full operation. At the completion of these accomplishments, the Combatant Commander declares the Element or component operational and capable of being placed on alert.</p> <p>TRW will work with the Services and the Combatant Commanders to develop a BMD Support Structure to provide support for fielded capabilities. For initial defense operations (IDO), TRW is coordinating the building of the manning documents, the above element training plans, Integrated Logistics Plan, the progression to alert plan, and the Missile Defense Agency Operation Center (MOC). The program ensures the combatant commands are provided with a BMDS that is supported logistically, by establishing overarching logistics policies and practices. The Joint Warfighter Support Program will facilitate transition and transfer of BMD capabilities to the Services, as directed. The program will develop an above-element training program that will educate and train staffs and senior decision makers about BMDS capabilities.</p>																			
<p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Regional Combatant Commanders Exercises</td> <td></td> <td align="center">11,665</td> <td align="center">9,446</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>In Block 2004 Regional Combatant Commanders Exercises will explore emerging BMDS Concepts using tabletops, seminars, SWARFs, wargames and exercises; incorporate BMDS capabilities into combatant commanders, wargames, demonstrations, experiments and exercises; develop BMDS curriculum to build knowledge base with Senior Warfighters; incorporate BMDS capabilities and MOEs in wargames. Major system exercises and tests include BMDS IMD Wargame 04 and 05 to develop CONOPS and Tactics, Techniques and Procedures.</p>									FY 2003	FY 2004	FY 2005	Regional Combatant Commanders Exercises		11,665	9,446	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Regional Combatant Commanders Exercises		11,665	9,446																
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
FY 2003 ACCOMPLISHMENTS (funded in PE 0603880C):		
<ul style="list-style-type: none">- Used experiments, technology demonstrations, and theater-level exercises to help ensure the joint interoperability and successful fielding of Ballistic Missile Defense System (BMDS) to the warfighting customers.- Provided simulation planning, preparation and management for exercises associated with the Joint Warfighter Support Program. Exercises for which planning, execution, or both was required during FY03 included: Juniper Cobra-03 and Joint Task Force (JTF) Cobra (Operation Iraqi Freedom) (USEUCOM), Joint Project Optic Windmill (JPOW)VIII (USEUCOM), Ulchi Focus Lens (UFL)03 and Terminal Fury 04 (USPACOM and USFK), Reception Staging and Onward Integration (RSOI)/Foil Eagle(RSOI/FE), Roving Sands 03 (USJFCOM), and Integrated Missile Defense (IMD) 2 and IMD 3-01.- Supported the development of joint interoperability BMD doctrine, CONOPS, and Tactics, Techniques and Procedures (TTPs);and provided Joint Coalition Allied BMD interoperability data.		
FY 2004 PLANNED PROGRAM:		
<ul style="list-style-type: none">- Develop Tactics, Techniques & Procedures (TTP) and Rules of Engagement (ROE) to integrate BMDS elements into Operational Community for Block 04 BMDS.- Refine BMDS and C2BMC concepts/options through studies, seminars, Senior Warfighters Forums (SWARFS), workshops, tabletops, wargames and exercises. These activities provide the basis for the assessment, development and improvement of BMD capabilities.- Develop and coordinate deployment of BMDS emergency capabilities with the Joint Staff, the Services and the Combatant Commanders.- Provide CAMDEN Maintenance and exercise support as required.- Provide IMD Wargame support as required.- Participate in exercise meetings as directed/required.- Support development of exercise objectives and develop technical/programmatic briefings as required.- Support exercise execution as required.- Provide personnel to operate the MARS terminal and D2T unit simulating one SMD equipped AEGIS ship.- Support JWS exercises by providing the following subject matter experts in Joint Range Extension (JRE), Joint Tactical Information Distribution System (JTIDS) Radios, Network Design, Satellite TADIL J, AN/PSC-5 operations, Joint Information Control Officer (JICO) functions; Commanders Tactical Terminal/Tactical Data Display System (CTT/TDDS); Three Data Collector/Analyst with expertise in MIL STD 6016, data collection, data analysis, Patriot BMC3I software, JADE, and Link Monitoring System-16 (LMS-16) operations.- Provide the resources to support exercise execution as required.- Support MDA with an ABL OITL representation of Block 04 ABL capabilities, which also supports USAF concept of operations investigations and interoperability issues.- Provide exercise specific model software modification and confirmation testing.- Integration and Warfighter refinement of element CONOPs.- Familiarization of BMDS Capabilities and limitations.- Integration of IDO and Block-04 elements into existing CoCom Plans, tactics, techniques and procedures.- Develop and coordinate the Block 04 activation plan.		
FY 2005 PLANNED PROGRAM:		
<ul style="list-style-type: none">- Continue to refine TTP and ROE to integrate BMDS Elements into Operational Community for Block 04 BMDS.- Continue refining BMDS and C2BMC concepts/options through studies, seminars, SWARFS, workshops, tabletops, wargames and exercises using the JNIC as the hub. These activities provide the basis for the assessment, development and improvement of BMD capabilities.- Continue to develop and coordinate deployment of BMDS emergency capabilities with the Joint Staff, the Services and the Combatant Commander.- Continue to provide CAMDEM Maintenance and exercise support as required.		

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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"> - Continue to provide IMD Wargame support as required. - Continue to participate in exercise meetings as directed/required. - Continue to support development of exercise objectives and develop technical/programmatic briefings as required. - Continue to support exercise execution as required. - Continue to provide personnel to operate the MARS terminal and D2T unit simulating one SMD equipped AEGIS ship. - Continue to Support JWS exercises by providing the following subject matter experts in Joint Range Extension (JRE), Joint Tactical Information Distribution System (JTIDS) Radios, Network Design, Satellite TADIL J, AN/PSC-5 operations, Joint Information Central Officer (JICO) functions; Commanders Tactical Terminal/Tactical Data Display System (CTT/TDDS); Three Data Collector/Analyst with expertise in MIL STD 6016, data collection, data analysis, Patriot BMC3I software, JADE, and Link Monitoring System-16 (LMS-16) operations. - Continue to provide the resources to support exercise execution as required. - Continue to support MDA with an ABL OITL representation of Block 04 ABL capabilities, which also supports USAF concept of operations investigations and interoperability issues. - Continue to provide exercise specific model software modification and confirmation testing. - Continue to integrate and refine Warfighter elements into the CONOPS. - Continue to refine BMDS Capabilities and limitations. - Continue to integrate IDO and Block-04 elements into existing CoCom Plans, tactics, techniques and procedures. - Continue to develop and coordinate the Block 04 activation plan. 			
	FY 2003	FY 2004	FY 2005
Combatant Commanders Support		400	199
RDT&E Articles (Quantity)			
<p>In Block 2004 Combatant Commanders Support will bring joint combined coalition lessons learned to the developer; participate in Joint Combined Coalition Doctrine, Operational Concepts, CONOPS, CONPLANS, OPLANS, TTP and ROE Development; coordinate block deployment plan; engage in C2 development; develop Operational Concepts and Operational Architectures through the Operational Concept Team (OCT); facilitate intra/inter Theater CONOPS Development; facilitate program transition to the services; maintain interactions with transitioned programs; conduct planning for fielding BMDS capabilities; execute warfighter interface process.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop preliminary Integrated Missile Defense (IMD) Concept of Operations (CONOPS) for the Block 04 BMDS. - Interface and coordinate BMDS issues with Services, Joint Staff and Allied Forces to develop understanding of each other's doctrine and common CONOPS, and to determine equipment compatibility and interoperability. - Recipients of funding were: USSTRATCOM, PACOM, EUCOM, CENTCOM, USNORTHCOM and USFK. <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue developing preliminary Integrated Missile Defense (IMD) Concept of Operations (CONOPS) for the Block 04 BMDS. - Continue to interface and coordinate BMDS issues with Services, Joint Staff and Allied Forces to develop understanding of each other's doctrine and common CONOPS, and to determine equipment compatibility and interoperability. - Recipients of funding will be: USSTRATCOM, PACOM, EUCOM, CENTCOM, USNORTHCOM and USFK. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
	FY 2003	FY 2004	FY 2005
SETA Support		7,300	3,142
RDT&E Articles (Quantity)			
Scientific, Engineering, Technical and Assistance support provided to MDA HQ in support of Block 2004 efforts.			
	FY 2003	FY 2004	FY 2005
BMDS Support		4,500	100
RDT&E Articles (Quantity)			
In Block 2004 BMDS Support coordinates MDA support with the Services, other Agencies of the BMDS and its elements and components for the Combatant Commanders. The coordination includes activation of the Test Bed & Operational Environment of the BMDS; operational support and logistics support of the BMDS.			
FY 2003 ACCOMPLISHMENTS (funded in PE 0603880C):			
<ul style="list-style-type: none"> - Initiated Integrated Logistics Team (ILST), involving USSTRATCOM, USNORTHCOM, SE, DB, BC, GMD, Aegis, Patriot, THAAD, SBS, and logistics organizations from the Army, Navy, and Air Force, to solve system-wide logistics issues. - Conducted analysis of requirements for BMDS above-element training. Operations Center, to provide support of the BMDS to the Combatant Commands (USSTRATCOM, USNORTHCOM, and others), beginning in FY04. - Examined processes, timing, stakeholders, and issues associated with future transitions and transfers. - Developed initial set of functions and interfaces for the MDA Operations Center, to provide support of the BMDS to the Combat Commands (USSTRATCOM, USNORTHCOM, and others, beginning in FY04. 			
FY 2004 PLANNED PROGRAM:			
<ul style="list-style-type: none"> - Develop and operate the Missile Defense Agency Operation Center (MOC), as an enabler for support to the Combatant Commands. - Plan for transition and transfer of BMDS capabilities, as directed. - Facilitate Transition and transfer of BMDS capabilities, as directed. - Develop Sustainment concepts of operation (CONOPS)/doctrine, policy and plans for supporting BMDS Elements and components (included: personnel, materiel, logistical support, facility support, funding support [O&S], security/force protection). - Provide overarching Logistics policies and guidance to ensure the BMDS, to include sea based programs, GMD, Patriot, and C2BMC, are supportable in Block 04 and subsequent Blocks. - Provide overarching Logistics policies and guidance to ensure the BMDS, to include future programs such as THAAD and ABL are supportable in future Blocks. - Develop and operate an MDA Operations Center, with the objective of facilitating timely, efficient, and effective support for the activated BMDS, selected elements and components, to the Combatant Commands. Primary interfaces for Block 04 will include: USSTRATCOM, USNORTHCOM, USPACOM, JNIC, GMD GOC, GMD LOGCC, Aegis Logistic Center, and PEO AMD Logistics Center. - Develop, conduct, and update above-element BMDS training, education, and familiarization to enhance decision maker and supporting staff awareness of BMDS capabilities, limitations, and employment and support considerations. Targeted student audiences for Block 04 will include: USSTRATCOM, USNORTHCOM, USPACOM, MDA staff, selected Joint and Service schools, and others from within the DoD, other Departments, Agencies, and organizations. - Monitor Element level training for consistency with BMDS Above Element Training. 			

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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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- Develop overarching policies and procedures to transition BMDS capabilities to the Combatant Commands as they mature and transfer program management to the Military Departments, as directed.
- Develop policy/planning for Force Integration of Transferred Elements.
- Manage Services Boards of Directors' (BoD) curriculum to build knowledge base with CoComs senior warfighters. These BoDs involve the senior leadership of MDA and the Army, Navy, and Air Force and are coordinated/supported through the Service Liaison teams (Army, Navy and Air Force).

FY 2005 PLANNED PROGRAM:

- Refine and implement overarching logistics policies and plans to ensure the BMDS and its elements are supported in Block 04 and planned for in subsequent Blocks.
- Operate the MOC, as an enabler for supporting the BMDS for the Combatant Commanders.
- Plan for transfer of BMDS capabilities, as directed.
- Facilitate transition and planning for transition of BMDS capabilities, including GMD, C2BMC and others, as directed.
- Refine and conduct above-element BMD education and training for Block 04 BMDS, and plan for training of subsequent Blocks.
- Continue to manage Services Board of Directors'(BoD)curriculum to build knowledge base with CoComs senior warfighters. These BoDs involve the senior leadership of MDA and the Army, Navy and Air Force and are coordinated/supported through the Service Liaison teams (Army, Navy and Air Force).

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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. TRW will accomplish this through development and vetting of Operational Concepts through JTAMDO, 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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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
BMDS Support										
MOC	CPAF	JNIC/Denver, CO		1,000	2Q	50	2Q	CONT.	1,050	CONT.
Logistics	CPAF	JNIC/Denver, CO		1,000	2Q	25	2Q	CONT.	1,025	CONT.
Training	CPAF	JNIC/Denver, CO		2,500	2Q	25	2Q	CONT.	2,525	CONT.
Subtotal Product Development			0	4,500		100		0	4600	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SETA Support										
SETA	CPIF	SPARTA/ Arlington,VA		7,300	1Q	3,142	1Q	CONT.	10,442	CONT.
Subtotal Support Costs			0	7,300		3,142		0	10442	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Regional Combatant Commanders Exercises										
JPOW 8	CPAF	THAAD/ Huntsville, AL		3,000	1/4Q			CONT.	3,000	CONT.
IMD 4.1	CPAF	USPACOM/ Camp H M Smith,HI		3,400	1/4Q			CONT.	3,400	CONT.
IMD 5.1	CPAF	USPACOM/ Camp H M Smith,HI		3,300	1/4Q	5,711	1/4Q	CONT.	9,011	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JSW	CPAF	JNIC/ Denver, CO		1,965	1/4Q			CONT.	1,965	CONT.
IMD 5.2	CPAF	USPACOM/ Camp H M Smith, HI				3,735	1/4Q	CONT.	3,735	CONT.
Subtotal Test and Evaluation			0	11,665		9,446		0	21111	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Combatant Commanders Support										
USSTRATCOM	CPAF	USSTRATCOM/ San Diego, CA		150	1/4Q	74	1/4Q	CONT.	224	CONT.
EUCOM	CPAF	THAAD/ Huntsville, AL		50	1/4Q	25	1/4Q	CONT.	75	CONT.
PACOM	CPAF	USNORTHCOM/USS TRATCOM/ San Diego, CA		50	1/4Q	25	1/4Q	CONT.	75	CONT.
CENTCOM	CPAF			50	1/4Q	25	1/4Q	CONT.	75	CONT.
USNORTHCOM	CPAF	Colorado Springs, CO		50	1/4Q	25	1/4Q	CONT.	75	CONT.
USFK	CPAF			50	1/4Q	25	1/4Q	CONT.	75	CONT.
Subtotal Management Services			0	400		199		0	599	
Remarks										
Project Total Cost			0	23,865		12,887			36,752	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2004							
IMD 3-02		1Q					
IMD 4-01		4Q					
IDO and Fielding of Block 04		2Q					
JPOW 8		3Q					
Military Utility Assessment (MUA) VI		3Q					
Military Utility Assessment (MUA) V2		4Q					
IDO & Fielding of Block 04	2Q	1Q,2Q,2Q	1Q,1Q,2Q,3Q,4Q	2Q	2Q	2Q	2Q
MDA Operation Center (MOC)		4Q					
Terminal Fury (TF) 04		1Q					
RSOI 04		2Q					
Eagle Resolve (ER) 04		3Q					
Ulchi Focus Lens (UFL) 04		4Q					
Terminal Fury (TF) 05			1Q				
Juniper Cobra (JC) 05			2Q				
RSOI 05			3Q				
Roving Sands (RS) 05			3Q				
UFL 05			4Q				
GMD Training Phase II Begins		2Q					
IDO & Fielding of Block 2004		1Q,3Q,4Q	2Q				

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0803 Joint Warfighter Support Block 2006	0	0	11,817	25,607	13,300	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: This project was funded under PE 0603880C (BMD System), Project 1055 for FY 2002 and FY 2003.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>The missile defense program focuses on the development of a single, integrated, layered Ballistic Missile Defense System (BMD System). The Joint Warfighter Support program ensures that warfighter operational perspectives and concerns are reflected in the development of Ballistic Missile Defense (BMD) capabilities. The Deputy for Force Structure Integration and Deployment (TR) works with the Combatant Commanders, Services and Joint Staff through seminars, wargames, and exercises to achieve this goal. Through interaction, areas of improvement in BMD capability are identified for action. This program supports planning for emergency deployments, and integration of USSTRATCOM/USNORTHCOM in required wargames, tabletops, experiments, System Integrated Tests and Hardware in the Loop Tests required for enhanced use of the Joint National Integration Center (JNIC) in support of operational concept development. Additionally, the program ensures the combatant commands are provided with a BMDS that continues to be supported logistically, by administering overarching logistics policies and practices. The Joint Warfighter Support Program will facilitate transition and transfer of BMD capabilities to the Services, as directed. The program will conduct and update an above-element training program that will educate and train staffs and senior decision makers about evolving BMDS capabilities.</p> <p>The combatant commanders must establish a sequence of essential activities that must be completed to deliver missile defensive capabilities. To employ the BMDS, receiving combatant commanders and cognizant component commanders must develop the procedures and rules under which the element will be operated. The combatant and subordinate component commanders need to establish how the capability will be employed in autonomous operations as well as a part of the integrated BMDS. The hardware, software must be made available for initial operational checkout, familiarization, and training. The equipment will be operated in training and test modes only, pending operator certification for tactical employment of the capability. An integrated BMDS Level Training qualification and certification must be completed to provide the baseline level of training for the unit to effectively participate in BMDS integrated training. The combatant commander tactical teams and unit watch teams are trained in integrated tactical operations, exercising advanced skills and tasks needed to effectively employ the BMDS. The combatant commander and MDA shall establish in an MOA, the procedures and rules for conducting Test Bed RDT&E activities with BMDS assets that form the fielded BMDS capability. The MOA would address readiness needs, national security posture, test duration and recovery time, required BMDS Mode/State, restoration capability training and support, and steps to return to full operation. At the completion of these accomplishments, the Combatant Commander declares the Element or component operational and capable of being placed on alert.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Regional Combatant Commander Exercises							7,841
RDT&E Articles (Quantity)							
<p>In Block 2006 Regional Combatant Commanders Exercises will continue to explore emerging BMDS Concepts using tabletops, seminars, SWARFs, wargames and exercises; incorporate BMDS capabilities into combatant commanders, wargames, demonstrations, experiments and exercises; develop BMDS curriculum to build knowledge base with Senior Warfighters; incorporate BMDS capabilities and MOEs in wargames. Major system exercises and tests include BMDS IMD Wargame 06 to develop CONOPS and Tactics, Techniques and Procedures.</p> <p>FY 2005 PLANNED PROGRAM:</p> <p>- Develop preliminary CONOPS, TTP and ROE and integrate broad offense/defense with the Operational Community for Block 06 BMDS.</p>							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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"> - Construct BMDS experiments, wargames and seminars with the Joint Staff, Services and Combatant Commanders. These activities provide the basis for the assessment, development and improvement of BMD capabilities. - Build emergency operational deployment plans to protect against ballistic missile threats to the U.S., U.S. deployed forces and our allies and friends. - Coordinate BMDS element transition planning to include Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF). - Provide Service context to the BMDS Technical Objectives and Goals (TOG) and associated analysis. - Coordinate/Support the Service Liaison teams (Army, Navy, and Air Force). - Develop and coordinate deployment of BMDS emergency capabilities with the Joint Staff, the Services and the Combatant Commanders. - Recipients of funding will be: the JNIC, Sea Based Program/PD 452, Army PEO Air Missile Defense, the SMDC-BL, and Det 4 AFC2TIG (ABL). 			
	FY 2003	FY 2004	FY 2005
Combatant Commanders Support			199
RDT&E Articles (Quantity)			
<p>In Block 2006 Combatant Commanders Support will continue to bring joint combined coalition lessons learned to the developer; participate in Joint Combined Coalition Doctrine, Operational Concepts, CONOPS, CONPLANS, OPLANS, TTP and ROE Development; coordinate block deployment plan; engage in C2 development; develop Operational Concepts and Operational Architectures through the Operational Concept Team (OCT); facilitate intra/inter Theater CONOPS Development; facilitate program transition to the services; maintain interactions with transitioned programs; conduct planning for fielding BMDS capabilities; execute warfighter interface process.</p> <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop BMD operational concepts and associated operational architecture that will enable rapid integration of the BMDS elements into the Combatant Commanders Warfighting capability. - Recipients of funding will be: USSTRATCOM, PACOM, EUCOM, CENTCOM, USNORTHCOM and USFK. 			
	FY 2003	FY 2004	FY 2005
SETA			3,677
RDT&E Articles (Quantity)			
Represents Scientific, Engineering, Technical and Assistance support provided to MDA HQ in support of Block 2006 efforts.			

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005
BMDS Support			100
RDT&E Articles (Quantity)			

In Block 2006 BMDS Support will continue to coordinate MDA support with the Services, other Agencies of the BMDS and its elements and components for the Combatant Commanders. The coordination includes activation of the Test Bed & Operational Environment of the BMDS; operational support and logistics support of the BMDS.

FY 2005 PLANNED PROGRAM:

- Refine and implement overarching logistics policies and plans to ensure the BMDS and its' elements are supported in Block 04 and planned for in subsequent Blocks.
- Operate a Missile Defense Agency Operation Center (MOC), as an enabler for support to the Combatant Commands.
- Facilitate planning for transition and transfer of BMDS capabilities to the Services, as directed.
- Refine and conduct above-element BMD education and training for Block 04 BMDS, and plan for training of subsequent Blocks.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing

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. TR will accomplish this through development and vetting of Operational Concepts through JTAMDO, the Combatant Commanders and the Services utilizing seminars, workshops, table tops, wargames and exercises, which also support Military Utility Assessment.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
BMDS Support										
JNIC	CPFF	JNIC/ Denver, CO				100	1/2Q	CONT.	100	CONT.
Subtotal Product Development			0	0		100		0	100	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SETA										
SETA	CPIF	SPARTA/ Arlington, VA				3,677	1Q	CONT.	3,677	CONT.
Subtotal Support Costs			0	0		3,677		0	3677	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Regional Combatant Commander Exercises										
IMD 5.1	CPAF	JNIC/PACOM/NORT HCOM/USSTRATCO M/ CO/Camp Smith, HI/NE				5,711	1/4Q	CONT.	5,711	CONT.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
IMD 5.2	CPAF	JNIC/PACOM/NORT HCOM/USSTRATCO M/ CO/Camp Smith, HI/NE				2,130	1/4Q	CONT.	2,130	CONT.
Subtotal Test and Evaluation			0	0		7,841		0	7841	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Combatant Commanders Support										
USSTRATCOM	SS/CPAF	USSTRATCOM/ Omaha, NE				49	1/4Q	CONT.	49	CONT.
EUCOM	SS/CPAF	THAAD/ Huntsville, AL				30	1/4Q	CONT.	30	CONT.
PACOM	SS/CPAF	PACOM/ Camp Smith, HI				30	1/4Q	CONT.	30	CONT.
CENTCOM	SS/CPAF	CENTCOM				30	1/4Q	CONT.	30	CONT.
USNORTHCOM	SS/CPAF	USNORTHCOM/ Colorado Springs, CO				30	1/4Q	CONT.	30	CONT.
USFK	SS/CPAF					30	1/4Q	CONT.	30	CONT.
Subtotal Management Services			0	0		199		0	199	
Remarks										
Project Total Cost			0	0		11,817			11,817	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2006							
Blue Flag (BF)				3Q			
CENTCOM IL				1Q			
DP				4Q			
IDO & Fielding of Block 06				1Q			
IMD 6-01				2Q			
IMD 6-02				4Q			
Joint Project Optic Windmil (JPOW) 8				3Q			
Juniper Cobra (JC)				2Q			
RSOI				2Q			
Terminal Fury (TF)				1Q			
Ulchi Focus Lens (UFL)				4Q			
Unified Defense (UD)				2Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0903 Joint Warfighter Support Block 2008	0	0	0	0	13,299	30,648	32,759
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The missile defense program focuses on the development of a single, integrated, layered Ballistic Missile Defense System (BMD System). The Joint Warfighter Support program ensures that warfighter operational perspectives and concerns are reflected in the development of Ballistic Missile Defense (BMD) capabilities. The Deputy for Force Structure Integration and Deployment (TR) works with the Combatant Commanders, Services, Joint Staff, OSD and others through workshops, seminars, tabletops, wargames, and exercises to achieve this goal. Through interaction, areas of improvement in BMD capability are identified for action. This program supports planning for emergency deployments, tabletops, and integration of USSTRATCOM/USNORTHCOM and other Combatant Commanders in required wargames, tabletops, experiments, System Integrated Tests and Hardware in the Loop Tests required for enhanced use of JNIC in support of operational concept development. Additionally, the program ensures that combatant commanders are provided with a BMDS that continues to be supported logistically, by administering and evolving overarching logistics policies and practices. The Joint Warfighter Support Program will facilitate transition and transfer of BMD capabilities to the Services, as directed. The program will conduct and update an above-element training program that will educate and train staffs and senior decision makers about evolving BMDS capabilities.

The combatant commanders must establish a sequence of essential activities that must be completed to deliver missile defensive capabilities. To employ the BMDS, receiving combatant commanders and cognizant component commanders must develop the procedures and rules under which the element will be operated. The combatant and subordinate component commanders need to establish how the capability will be employed in autonomous operations as well as a part of the integrated BMDS. The hardware, software must be made available for initial operational checkout, familiarization, and training. The equipment will be operated in training and test modes only, pending operator certification for tactical employment of the capability. An integrated BMDS Level Training qualification and certification must be completed to provide the baseline level of training for the unit to effectively participate in BMDS integrated training. The combatant commander tactical teams and unit watch teams are trained in integrated tactical operations, exercising advanced skills and tasks needed to effectively employ the BMDS. The combatant commander and MDA shall establish in an MOA, the procedures and rules for conducting Test Bed RDT&E activities with BMDS assets that form the fielded BMDS capability. The MOA would address readiness needs, national security posture, test duration and recovery time, required BMDS Mode/State, restoration capability training and support, and steps to return to full operation. At the completion of these accomplishments, the Combatant Commander declares the Element or component operational and capable of being placed on alert.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Funding in this project will be programmed in FY 2007.			
RDT&E Articles (Quantity)			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<u>D. Acquisition Strategy</u> 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. TR will accomplish this through development and vetting of Operational Concepts through JTAMDO, the Combatant Commanders and the Services utilizing seminars, workshops, table tops, wargames and exercises, which also support the Military Utility Assessment.		

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2008							
Regional Combatant Commanders Exercises						1Q-4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0204 Joint National Integration Center (JNIC)	0	66,554	70,670	72,177	75,691	76,906	81,118
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Beginning in FY 2004, funding for this effort will transition from Ballistic Missile Defense System (BMDS) Program Element (PE) (0603880C-Project 1056) to the new Ballistic Missile Defense Products PE (0603889C-Project 0204).

A. Mission Description and Budget Item Justification

The mission of the JNIC is to develop and operate those portions of the BMDS Test Bed that comprise a robust suite of rapid prototyping and missile defense test and evaluation capabilities, which ensures BMDS elements are acquired and integrated into an interoperable, layered system, while simultaneously supporting real-world operations of designated BMDS elements.

As the key-operating element of the BMDS Test Bed, the JNIC is a critical component of BMDS Block 04/06 development that:

- Supports the development of the overarching Command and Control, Battle Management, and Communications (C2BMC) element of the Ballistic Missile Defense System (BMDS.)
- Is a "host center services provider" for BMDS elements; and supports a concurrent test and operations architecture as directed.
- Provides assured connectivity support to designated Combatant Commands (COCOM).
- Supports the operations of fielded BMDS elements.
- Plans, conducts, and supports BMDS testing and analysis.
- Establishes a core capability for exercising, evaluating, analyzing and refining advanced missile defense concepts critical to effective integrated missile defense operations in an emerging, complex threat environment.
- Provides the full spectrum of activities (senior leader seminars, workshops, demonstrations, wargames, and exercises) involved in developing integrated missile defense concepts of operation (CONOPS) and tactics, techniques and procedures (TTPs).
- Develops, conducts, and supports missile defense modeling and simulation for the overall BMDS, its segments and program elements.
- Facilitates international cooperation and support for the BMDS through the development and execution of missile defense seminars, workshops, wargames, and other multinational activities.
- Provides dedicated engineering and test support for emerging MDA capabilities, projects, experiments, and new-start programs.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
JNIC Development & Ops		62,351	66,293
RDT&E Articles (Quantity)			

Beginning in FY 2004, funding for this effort will reside in the BMD Products Program Element (0603889C).

The FY04 and FY05 budget provides the foundation for the operation and staffing of the JNIC. The funding 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. These efforts directly support the MDA objectives to complete, verify and test the Initial Defensive Capability; put the BMDS on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p>Additional required Test Bed baselines within the JNIC, and their need for assured connectivity to external BMDS element development labs and centers, will require continued support and limited expansion. The JNIC houses and sustains a robust, scaleable, and flexible integration and test environment that has the capability to support both acquisition and warfighter communities as part of an IDO capability for both the GFC/C and BMDS C2BMC. Funding for information technology (IT) directly supports communication interfaces and services upon which C2BMC and GFC/C element components rely. JNIC IT services support the BMDS Test Bed and facilitate the execution of concurrent testing and operations by directed BMDS elements operating from the JNIC.</p> <p>The budget also continues to provide a core capability to support the integration of the overarching BMDS. The funds build and retain a corporate knowledge base comprised of leading technical experts with the capability to respond quickly to customer requirements and perform technical MDA missions. Funds support the management, key subject matter experts, unique hardware, software, and licenses for the execution and technical support of operator-in-the-loop Wargames, Joint Warfighter Exercises and Experiments, the Multi-Mission Integration Cell (MMIC), Ballistic Missile Defense Interoperability (BMDI), and Integrated Missile Defense Analyses (IMDA).</p> <p>The funding increase starting in FY04, will allow the JNIC to transition into a Host Center Services provider with an infrastructure operational availability exceeding 99% for activated BMDS elements, and an ability to support concurrent test and operations. The JNIC will:</p> <ul style="list-style-type: none"> - Design, implement, verify, operate and maintain Host Center Service interfaces and services. - Coordinate, design, and implement external communication circuit connectivity. - Manage delivery of Host Center Services products via common access points/JNIC service delivery points to provide, as directed, 24/7/365 operations support while concurrently testing and improving the functional capabilities and service levels - Identify targeted information content specifications to assist in migration toward network-centric warfare consistent information management tenets. <p>In previous years, required modernization was deferred to support growing missions, resulting in a gradual aging and degradation of infrastructure and information management systems support. Beginning in FY05 the JNIC will upgrade and enhance obsolete technology and correct electrical, mechanical, communications, and architectural code compliance deficiencies. The JNIC infrastructure will then be sustained to ensure uninterrupted Host Center Services for concurrent testing and operations that will allow MDA to assess and integrate emerging technologies and maturing components quickly into the BMDS.</p>			
	FY 2003	FY 2004	FY 2005
Gov. Project & Support		4,203	4,377
RDT&E Articles (Quantity)			
These funds provide for salaries and support to government personnel.			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
C. Other Program Funding Summary									
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PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
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PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products	
<p><u>D. Acquisition Strategy</u></p> <p>The JNIC is essential to execution of the MDA's capability-based acquisition strategy. This emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks. As a Host Center Services provider, the JNIC will host some BMDS element components and provide assured connectivity to designated COCOM in an operational environment while concurrently providing RDT&E support for BMDS element and component program managers in the acquisition community. The JNIC will conduct interoperability testing, modeling and simulation development, wargaming, BMD exercise support, system-level engineering support, and related BMDS analyses to ensure the successful integrated deployment of BMDS element capabilities.</p> <p>The JNIC is operated by missile defense subject matter experts composed of Government military and civilian personnel, Federally Funded Research and Development Center (FFRDC), JNIC Technical Advisory and Assistance Services (JTAAS), and major defense contractors.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JNIC Development & Ops										
JNIC	MIPR	50 Space Wing/ Schriever AFB, CO		1,037	1Q	1,062	1Q	CONT.	2,099	CONT.
Subtotal Support Costs			0	1,037		1,062		0	2099	
Remarks										
These funds are for utilities and base communications as specified in the Interservice 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 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JNIC Development & Ops										
JNIC	C/CPAF	Northrop Grumman Mission Sys./ CO		54,698	2Q	58,492	2Q	CONT.	113,190	CONT.
Subtotal Test and Evaluation			0	54,698		58,492		0	113190	
Remarks										
These funds are executed by the Integration Center Research and Development Contractor.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JNIC Development & Ops										
JNIC	C/FFP	SRS/ Colorado Springs, CO		4,792	4Q	4,881	4Q	CONT.	9,673	CONT.
JNIC	C/FFRDC	Mitre Corp/ Colorado Springs, CO		1,824	1Q	1,858	1Q	CONT.	3,682	CONT.
Gov. Project & Support										
JNIC		JNIC/ Colorado Springs, CO		3,235	1/4Q	3,375	1/4Q	CONT.	6,610	CONT.
USN		Naval Research Laboratory/ Colorado Springs, CO		968	1/4Q	1,002	1/4Q	CONT.	1,970	CONT.
Subtotal Management Services				0	10,819		11,116		0	21935
Remarks These funds provide government military and civilian personnel, as well as FFRDC and Technical Advisory and Assistance Services employees, for JNIC operations and oversight of the Integration Center Research and Development Contractor.										
Project Total Cost				0	66,554		70,670		137,224	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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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	2003				2004				2005				2006				2007				2008				2009							
	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																																
Airborne Laser System Integrated Flight Test Spt																																
Nimble Titan Wargame																																
Integrated Missile Defense (IMD) Wargames																																
IMD 04-1 Battle Planning Exercise																																
IMD 04-1 Command & Control Simulations																																
IMD 04-1 Wargame																																
IMD 05-1 Battle Planning Exercise																																
IMD 05-1 Command & Control Simulations																																
IMD 05-1 Wargame																																
IMD 05-2 Battle Planning Exercise																																
IMD 05-2 Command & Control Simulations																																
IMD 05-2 Wargame																																
IMD 06 Battle Planning Exercise																																
IMD 06 Command & Control Simulations																																
IMD 06 Wargame																																

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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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	2003				2004				2005				2006				2007				2008				2009							
	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																																
IMD 07 Battle Planning Exercise																			Δ													
IMD 07 Command & Control Simulations																				Δ												
IMD 07 Wargame																								Δ								
IMD 08 Battle Planning Exercise																								Δ								
IMD 08 Command & Control Simulations																												Δ				
IMD 08 Wargame																												Δ				
IMD 09 Battle Planning Exercise																															Δ	
IMD 09 Command & Control Simulations																																Δ
IMD 09 Wargame																																Δ
Missile Defense Integrated Exercises (MDIE)																																Δ
MDIE 4a																																
MDIE 4b																																
MDIE 5a																																
MDIE 5b																																
MDIE 6a																																

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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																																
MDIE 6b															Δ																	
MDIE 7a																			Δ													
MDIE 7b																				Δ												
MDIE 8a																							Δ									
MDIE 8b																								Δ								
MDIE 9a																												Δ				
MDIE 9b																															Δ	
Multinational Wargame															Δ																Δ	
Multinational Wargame 06 Battle Planning Exercise															Δ																	
Multinational Wargame 06 Cmd & Control Simulations																Δ																
Multinational Wargame 06																Δ																
Multinational Wargame 07 Battle Planning Exercise																				Δ												
Multinational Wargame 07 Cmd & Control Simulations																								Δ								
Multinational Wargame 07																								Δ								
Multinational Wargame 08 Battle Planning Exercise																												Δ				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
JNIC							
Aegis Ballistic Msl Defense Fleet Msl Tests		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Aegis BMD FMT #6		1Q					
Aegis BMD FMT #7			2Q				
Aegis BMD FMT #8			4Q				
Aegis BMD FMT #9				2Q			
Aegis BMD FMT #10				4Q			
Aegis BMD FMT #11					2Q		
Aegis BMD FMT #12					4Q		
Aegis BMD FMT #13						2Q	
Aegis BMD FMT #14						4Q	
Aegis BMD FMT #15							2Q
Aegis BMD FMT #16							4Q
Aegis Critical Measurement Program Tests		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
Arrow Caravan Test		3Q-4Q					
Arrow System Test		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
Airborne Laser System Integrated Flight Test Spt			4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q
Nimble Titan Wargame		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q
Integrated Missile Defense (IMD) Wargames		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
IMD 04-1 Battle Planning Exercise		2Q					
IMD 04-1 Command & Control Simulations		2Q,3Q					
IMD 04-1 Wargame		4Q					
IMD 05-1 Battle Planning Exercise		4Q					
IMD 05-1 Command & Control Simulations			1Q				
IMD 05-1 Wargame			2Q				
IMD 05-2 Battle Planning Exercise			2Q				
IMD 05-2 Command & Control Simulations			3Q				
IMD 05-2 Wargame			3Q				
IMD 06 Battle Planning Exercise				2Q			
IMD 06 Command & Control Simulations				3Q			
IMD 06 Wargame				4Q			

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
IMD 07 Battle Planning Exercise					2Q		
IMD 07 Command & Control Simulations					3Q		
IMD 07 Wargame					4Q		
IMD 08 Battle Planning Exercise						2Q	
IMD 08 Command & Control Simulations						3Q	
IMD 08 Wargame						4Q	
IMD 09 Battle Planning Exercise							2Q
IMD 09 Command & Control Simulations							3Q
IMD 09 Wargame							4Q
Missile Defense Integrated Exercises (MDIE)		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
MDIE 4a		2Q					
MDIE 4b		3Q					
MDIE 5a			2Q				
MDIE 5b			3Q				
MDIE 6a				2Q			
MDIE 6b				3Q			
MDIE 7a					2Q		
MDIE 7b					3Q		
MDIE 8a						2Q	
MDIE 8b						3Q	
MDIE 9a							2Q
MDIE 9b							3Q
Multinational Wargame				2Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
Multinational Wargame 06 Battle Planning Exercise				2Q			
Multinational Wargame 06 Cmd & Control Simulations				3Q			
Multinational Wargame 06				3Q			
Multinational Wargame 07 Battle Planning Exercise					2Q		
Multinational Wargame 07 Cmd & Control Simulations					3Q		
Multinational Wargame 07					3Q		
Multinational Wargame 08 Battle Planning Exercise						2Q	

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Multinational Wargame 08 Cmd & Control Simulations						3Q	
Multinational Wargame 08						3Q	
Multinational Wargame 09 Battle Planning Exercise							2Q
Multinational Wargame 09 Cmd & Control Simulations							3Q
Multinational Wargame 09							3Q
BMDS System Integrated Flight Tests Tech Suppt		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Execute & Support Core Exercise Capability		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	15,476	16,197	20,345	20,619	22,192	24,113
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: Transferred in from the Ballistic Missile Defense System Segment Program Element 0603880C.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
This project covers personnel and related support costs, statutory and fiscal requirements.							
Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.							
Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.							
Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.							
Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Civilian Salaries and Support	0	15,476	16,197				
RDT&E Articles (Quantity)							
Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.							
Management Support: Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.							

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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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 Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603889C Ballistic Missile Defense Products				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	445,356	479,764	492,988	527,541	539,210	568,365
0101 Systems Engineering & Integration	0	280,538	321,045	339,180	349,498	347,909	359,237
0201 Command and Control, Battle Management and Communications Core	0	15,379	1,696	1,695	1,796	1,899	6,781
0102 Intelligence	0	19,141	21,123	21,881	23,299	26,724	28,275
0203 Joint Warfighter Support	0	242	0	0	0	0	0
0103 Producibility & Manufacturing Technology	0	38,821	33,219	29,658	37,676	41,037	43,952
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	0	25,553	30,900	31,800	32,800	33,800	34,800
0202 Hercules Core	0	26,276	0	0	0	0	0
0104 BMD Information Management Systems	0	31,006	62,835	58,592	72,336	77,070	84,108
0602 Program-Wide Support	0	8,400	8,946	10,182	10,136	10,771	11,212

Note: In FY 2002 and FY 2003, all of the Projects in this Program Element were located in PE 0603880C, BMD System, or PE 0603882C, Midcourse Defense Segment.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

In order to develop and deliver that integrated BMD System, MDA is employing a system-centric, capability-based approach that employs a common Ballistic Missile Defense Core. The Ballistic Missile Defense Core is comprised of a set of critical, inter-related, mutually supporting activities that span the development of the BMD System, reducing duplication and promoting employment of common, strong engineering practices. The Ballistic Missile Defense Core provides the cross-cutting BMD System level engineering necessary to develop and deliver the integrated BMD System. This engineering includes: the overarching design and specification of the BMD System Command, Control, Battle Management and Communications (C2BMC); cross-cutting efforts to improve the essential functions of detection, tracking, and discrimination in the presence of potential countermeasures; risk reduction efforts in design, development, producibility, and manufacturing; and the overall System Engineering and Integration (SE&I) to design, develop, verify, and assess the integrated BMD System. The Ballistic Missile Defense Core also includes: warfighter support to ensure consideration of military operations in the engineering design process, the intelligence and modeling and simulation support essential for BMD System engineering and assessment, and the information management necessary for the collaborative environment.

The engineering organizing principle for discussing BMDS capability is the Engagement Sequence Group (ESG). In a complex system such as the BMDS, the functions necessary to engage a target are performed by many components. ESGs were formulated as an engineering method to organize, synchronize, and maximize the system performance of the functions executed by each component and all the components combined. Using ESGs as a tool enhances functional and engineering analysis, creates manageable combinations for IDO and Block configurations, simplifies allocation of BMDS capabilities, provides a structure to assess BMDS performance, and assists the warfighter in operating the BMDS. More specifically, SE&I provides the collaborative, layered, and detailed systems engineering and integration required across the entire spectrum of BMD elements to create a war fighting capability. The SE&I scope spans the development of individual components (e.g. boosters), elements (e.g. Block 2006 Theater High Altitude Area Defense (THAAD)), BMD System segments (e.g. midcourse), and the fully integrated BMD System. SE&I provides the engineering core competency, modeling and simulation facilities, engineering development, and verification efforts needed to technically manage and field the capability-based BMD System. Based on

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RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603890C Ballistic Missile Defense System Core	
<p>specifications and plans developed by the SE&I, the C2BMC integrates the Command, Control, Battle Management, and Communications portion of the BMD System into the C2 structure of the Combatant Commanders and into that of allies and friends. As the BMD System evolves toward the overall goal of providing an integrated, layered system capable of engaging all classes and ranges of missiles in all phases of flight, the C2BMC will evolve from today's limited autonomous point defense BMD System capability into a global integrated BMD System capability. The BMD System C2BMC functionality will mature into Collaborative-Distributed Planning and increased Situational Awareness C2 capabilities that support Engagement Coordination and Integrated Fire Control BM capabilities. Throughout this evolution, The Joint Warfighter Support program ensures that warfighter operational perspectives and concerns are reflected in the development of Ballistic Missile Defense (BMD) capabilities. The Deputy for Force Structure Integration and Deployment works with the Combatant Commanders, Services and Joint Staff through seminars, wargames, and exercises to achieve this goal. Through interaction, areas of improvement in BMD capability are identified for action. This project also supports planning for emergency deployments, integration of USSTRATCOM/COMBATANT Commanders in required wargames, tabletops, experiments, and System Integrated Tests and Hardware in the Loop Tests required for enhanced use of JNIC in support of operational concept development.</p> <p>Central to the overall BMD System engineering, development, and evolution is the reduction of risks and performance improvement. The Ballistic Missile Defense System Core includes BMD System-wide producibility and manufacturing risk analysis/assessments, mitigation planning and application of common producibility enhancements. Producibility and manufacturing programs are organized into the following key investment areas: Power Systems, Radiation Hardening, Manufacturing Processes and Advanced Materials, Electro-Optics/Infrared (EO/IR), Lasers, Radar and RF, Propulsion, Signal Processing and Adaptive Computing, Composite Materials & Structures, and Software. Assessment tools such as Engineering Manufacturing Readiness Levels (EMRLs), strong Systems Engineering practices and widespread interaction with the BMD System industrial base allows MDA to analyze the maturity of manufacturing processes for application to the BMD System elements. Mitigation planning consists of identifying and cooperatively funding common producibility and technology programs that benefit multiple BMD System elements. In FY05 there is a significant increase in resources applied to the Radiation Hardening Program. This increase is a result of the BMD System near-term capability improvements needed for the Block 06 BMD System, and is a part of the overall funding profile for the Radiation Hardening of electronics program. Included in risk reduction and performance improvements are those activities directly related to the potential/evolving threat environment. SE&I defines the overall capabilities-based threat environment to ensure that BMD System performance is not limited to a few specific threats, but covers a wide range of potential threats. Intelligence activities manage, maintain, analyze, assess, and share intelligence data and information related to various missile threats (traditional and non-traditional) to support risk and capability assessments and situational awareness. Countermeasures/Counter-Countermeasures (CM/CCM) activities identify, develop, and demonstrate engineering changes to improve the performance of the layered BMD System against countermeasure suites. This activity identifies and prioritizes solutions to credible countermeasures for integration into the BMD System elements. Test and Evaluation results will guide development of additional algorithms to mitigate credible threats. Engineering changes that improve capabilities against countermeasures will be incorporated through Block upgrades into the Midcourse segment (both ground and sea). Project Hercules is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture that applies advanced decision theory to future BMD System command, control, and battle management (C2BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMD System element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMD System elements for insertion into their respective programs.</p> <p>Cross-cutting tools are critical to support BMD System level engineering and development across the enterprise. Models and Simulations include a comprehensive core modeling and simulation program that characterizes the BMD capability and supports credible and executable acquisition decisions with respect to the BMD System. The specific functional responsibilities are to develop and maintain the core models and simulations (i.e. phenomenology, lethality, system performance and system behavior); provide requirements management, configuration management, verification and validation (V&V) for core M&S; supports accreditation decisions for all critical BMD System and element models and simulation applications; develop and promulgate M&S policy, guidance, and best practices; ensure availability of critical BMD System program data; and develop, sustain, and modernize M&S infrastructure to include the BMD System Virtual Model, the Joint National Integration Center, the Advance Research Center, Simulation Center and other requisite computational facilities. BMD Information Management efforts improve the management of and access to data, information and knowledge throughout the MD Enterprise. The effort will assist the acquisition of Missile Defense systems by a) providing Information Management/Information Technology (IM/IT) policies, processes, and infrastructure through the MD Enterprise that allows for daily operations to be performed in an efficient, secure and affordable manner; b) creating an Enterprise Information Management System and processes using web-based technologies and establishing electronic business practices that help achieve more effective, efficient, and secure business and mission activities throughout the MD Enterprise; c) improving IT infrastructure that supports design, development, and testing of MD systems; and d) development of information architectures that identify information needs for interoperability among MD systems.</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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The Ballistic Missile Defense System Core also includes Program-Wide Support which covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost, and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

This program element consists of ten projects: System Engineering and Integration (SE&I) Core, C2BMC Core, Intelligence, Joint Warfighter Support, Producibility & Manufacturing Technology, Countermeasures/Counter-Countermeasures (CM/CCM), Hercules Core, Modeling and Simulation, BMD Information Technology, and Program-Wide Support.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	0	483,996	522,458
Current President's Budget (FY 2005 PB)	0	445,356	479,764
Total Adjustments	0	-38,640	-42,694
Congressional Specific Program Adjustments	0	-33,600	0
Congressional Undistributed Adjustments	0	-5,040	0
Reprogrammings	0	0	-42,694
SBIR/STTR Transfer	0	0	0

FY 2005 decrease of \$37,694 has been realigned to PE 0603889C, BMD Products.

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0101 Systems Engineering & Integration	0	280,538	321,045	339,180	349,498	347,909	359,237
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: This Project was funded under Program Element 0603880C (BMD System), Project 1050 in FY 2002 and FY 2003.

A. Mission Description and Budget Item Justification

The missile defense program focuses on the development of a single, integrated, layered Ballistic Missile Defense System (BMD System). This requires an engineering program that integrates the development of individual components and elements across all phases of a threat ballistic missile's flight to provide a capability for multiple engagements along the entire flight path. The MDA System Engineering and Integration (SE&I) mission is to define, manage, and integrate all engineering development for the BMD System. SE&I activities provide the technical expertise, tools, and facilities to develop the BMD System. The SE&I objective is to provide guidance to all MDA to develop an integrated, layered ballistic missile defense system encompassing all regions, all ranges, and all phases of flight. SE&I is the core technical effort to define, design, and verify the capability of the BMD System, and to enhance these capabilities over time through block upgrades. SE&I develops a set of time-phased technical goals and objectives to guide the design and development of evolutionary capabilities for the BMD System. This requires an engineering program that integrates the development of individual components and Elements across all phases of a threat ballistic missile's flight to provide a capability for multiple engagements along the entire flight path. To bring about the transition to a BMD System, MDA has created a Missile Defense National Team (MDNT) to create a collaborative enterprise comprised of the best and brightest minds from all engineering communities. The MDNT paradigm applies industrial structures to missile defense while complying with governmental acquisition regulations. The combination of resources of the government, industry, SETAs, FFRDCs and UARCs forms an integrated team to accomplish necessary engineering for the BMD System. In addition, because of the dynamic and complex system engineering tasks, the structure must accommodate acquisition of unique skills and experience from participating organizations and rapid deployment of task teams to solve specific problems. The defined structure allows flexibility and depth to accomplish both.

The System Engineering process is conceived in terms of multi-spiral model. The major elements (architecture engineering, integration engineering, and verification & assessment cycles) are used to identify support processes and products. They are supported by the support functions. The MDA/SE is the MDA Chief Engineer supported by functional working groups (FWG) and a system engineering advisory group (SEAG) overseeing specific, cross cutting functions. The functional working groups represent the major system engineering spirals subdivided into Design & Specification and Integration. Threat Engineering, System Analysis, Risk Engineering, and Modeling and Simulation provide matrixed support to the major spirals. Program Control and Cost & Investment Engineering provide administrative, program management and financial services to FWGs and interfaces to other MDA organizations.

The Missile Defense National Team provides an integrated and layered BMD System architecture, develops block technical definitions, develops element requirements, schedules, verification strategies and other products required to execute the BMD System program. Integration of the BMD System elements into an integrated and layered BMD System architecture is based on designs from both inside and outside of the MDNTS. Block technical definitions, analysis and assessments of BMD System Block performance and the integration of each of the BMD System blocks are developed based on Government provided capability goals (Technical Objectives & Goals Document (TOG) and Adversary Capability Document (ACD)). MDNTS products are ultimately used to guide and enhance operational BMD System capabilities in the Elements including: Ground based Midcourse Defense (GMD), Aegis Ballistic Missile Defense (Aegis BMD), Theatre High Altitude Airborne Defense (THAAD), Kinetic Intercept (KI), Airborne Laser (ABL), Space Tracking and Surveillance System (STSS), Sensors and Command and Control, Battle Management & Communications (C2BMC). The MDNTS is responsible for developing programs and concepts that will be reviewed by MDA executive management plus independent "peer review" teams through a structured review process. Review assessments evaluate whether to accelerate, modify or truncate individual elements based on technology progress, resulting block capabilities, and national and military needs. Assessment factors include changes in block capability, schedule, risk, and life cycle cost that will in turn be incorporated into future concepts, designs, and implementations. The Government provides both the overall management of the BMD System program and also participates within the MDNTS itself. The Government retains Total System Performance Responsibility (TSPR) for the BMD System. The MDNTS will operate as an integrated high performance team drawing resources from the range of community contracts available to the MDNTS. The "Alpha Engineering" process will be used to leverage the Missile Defense National Team participant capabilities. Alpha Engineering is a collaborative effort among all participants in developing Missile Defense National Team products. It includes developing contracts to support timely selection of the best product or personnel resources regardless of affiliation.

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B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Concept Engineering		22,007	25,039
RDT&E Articles (Quantity)			
<p>Concept Engineering manages the future blocks providing the context for BMD System architectures, and related Technical Objectives and Goals (TOG), that supports BMD System program execution and evolution planning. Directs BMD System architecture analyses in iterative cycles (e.g. monthly), to examine new concepts such as Element P3I and particular focus areas such as sensors, weapons, C2BMC, discrimination, Counter-Countermeasures (CCM), and Space Operations. Identifies and evaluates new BMD System concepts in terms of alternative future architectures and documents the analyses and assessments in the System Evolution Plan (SEP). Manages studies to support the POM process, including the annual missile defense planning process. Incorporates emerging technologies that would enhance BMD System capabilities into the BMD System architecture. In coordination with MDA/AS, identifies new system concepts for inclusion in architecture analyses. Manages block concept development including Advance Study Notices (ASN) and Block Toolboxes, architectures and enabled engagement sequences. Conducts predictive performance assessments in coordination with organizational elements responsible for BMDS design, specification, and verification. Develops the BMDS Block data packages consisting of the architecture, toolbox, subsystem performance, operational concepts & engagement sequence groups (ESG), predictive performance & threat basis of predictions, and alternatives for future blocks. In coordination with MDA/SR and MDA/CF, initiates and conducts studies to evaluate concepts and architectures for international BMD Systems and develops strategies for cooperative research and integrating international participation and elements into the BMDS.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Define the BMDS Technical Objectives and Goals (TOG) and update as necessary to reflect changes in BMD System architecture and long term BMDS evolution objectives - Define the BMD System Evolution Plan (SEP) and update as necessary to reflect acquisition decisions or new alternative architectures - Manage the MDA program of studies and architectural analyses of international BMD Systems, elements and cooperative research and conduct appropriate information interchange with other nations - Develop Technical Descriptions of Block Definition for Blocks 06 and 08 - Develop Technical Objectives for Block 10 - Refine Operational Concepts (Modes and States, Engagement Sequences) - Refine Block definition and plan based on results from verification and assessment activities - Support NATO BMD Study <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Expand and update the definition of the BMD System Technical Objectives and Goals to reflect impacts of alternative future architecture studies that may require amendments to TOG definitions - Expand and update the System Evolution Plan to reflect results of alternative futures architecture analyses - Refine Operational Concepts (Modes and States, Engagement Sequences) to capture user/operator impacts on future blocks - Incorporate findings of the BMD System Countermeasures / Counter-Countermeasures (CM/CCM) Program Rainbow Teams for alternative future architecture considerations and refined operational concepts - Conduct U.S. & Japan bi-lateral system study 			

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	FY 2003	FY 2004	FY 2005
Design & Specification Engineering		23,012	27,827
RDT&E Articles (Quantity)			
<p>Design and Specification performs detailed BMD System engineering incorporating the identification and documentation of detailed engineering sequences that are required to support the top-level system architecture. This includes the identification of BMD System and subsystems capabilities and interface exchange requirements for both the baseline and proposed new capabilities. To support communication of the system design, the Design and Specification group develops and maintains the architectural views to support communication of the system design including information, functional, and physical architecture. The group identifies and documents the subsystem behaviors that support multiple sequences. It provides the assessment of sequences and behavior performance to include timing, communication viability, and Technical Objective and Goal metrics. Assessment and feedback is provided to Concept Engineering with respect to Block Architecture viability. Design and Specification performs the identification and initiation of modifications required to the BMD subsystems' baseline capabilities.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Update and evolve the System Capability Specification (SCS) - Update Interface Control Specification (ICS) - Develop and update Advance Change Notices (ACN) - Refine BMD Core Technical Standards <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Update and evolve the System Capability Specification (SCS) - Update Interface Control Specification (ICS) - Develop and update Advance Change Notices (ACN) - Refine BMD Core Technical Standards 			
	FY 2003	FY 2004	FY 2005
Implementation & Software Engineering		15,799	19,266
RDT&E Articles (Quantity)			
<p>Implementation & Software focuses on executing all system engineering activities necessary to implement the operational system. The Group has the primary responsibility for Software Engineering and BMD System Configuration Management. The Group will monitor progress of the elements toward achieving operational capability, with particular emphasis on successful implementation of element-to-element interfaces and items with cross element implications. The Group performs system level engineering activities to implement the Block SCS and design. Supports system design analysis that will ensure the integrated system satisfies the system objectives per BMD System Block. Provides system-level input and issue resolution support to the Operations Concept Team (OCT), including assessing operational concept options and employing technical capabilities in operational environments. Supports the capability definition and development of Block-level System Capability Specification (SCS) and Interface Control Specifications (ICSs) to ensure the design can be implemented and verified. Works with the Elements to ensure interface design implementation is consistent with interface requirements. Tracks the Elements' hardware and software development and implementation into the BMD System and identifies changes required of the elements due to new system-level requirements. Executes the MDA Software Acquisition Process Improvement Program to determine the need for and draft MDA software policy, directives, and standards; to establish metrics and means by which the performance of BMDS software products and processes can be measured, analyzed, and improved; and to track software architectures, Element and Component interfaces, software production and deployment planning, and Block integration.</p> <p>The group provides support for planning/execution of Joint Service Exercises, Wargames, MDIEs, IGTs, SIFTs; and assists the BMD Analysis Teams in developing analysis/data collection plans.</p>			

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FY 2004 PLANNED PROGRAM:

- Develop the BMD System Integration Strategy (SIS) and System Implementation Plan (SIP), which integrate BMD System Elements by BMD System Block Integration Phases
- Define and evolve IDO Technical and System Integration documentation
- Update BMD System Change Process Guide (CPG)
- BMD System Configuration Management Plan (CMP)
- Define MDA Software Acquisition Plan (SWAP) and Best Practices Guidelines
- Define MDA Software Readiness Levels (SWRLs)

FY 2005 PLANNED PROGRAM:

- Evolve System Implementation Plan (SIP) Notebook
- Block 04 Technical and System Integration documentation
- Update BMD System Change Process Guide (CPG)
- Update Block 04 Software Acquisition Plan (SWAP)

	FY 2003	FY 2004	FY 2005
Verification & Assessment Engineering		15,650	22,244
RDT&E Articles (Quantity)			

Performs verification against the System Capability Specification requirements to determine the achieved performance. Performs assessments against the Technical Objectives and Goals. Reports results by iterations of the Blocks. Defines Verification Requirements in the Block System Capability Specifications (SCS) and Interface Control Specifications (ICS). Assigns verification methods to BMD System level capabilities for the Verification Cross Reference Matrix (VCRM), ensuring synchronization of the conditions for verification. Defines and executes Block Verification and Assessment Plans. Based on the VCRM, implement Block Verification requirements. Provides BMDS test objectives and target requirements that influence MDA/TE test planning and MDA/TC's long and short-range target planning processes, respectively, to ensure the collection of sufficient data for verification and assessment. Defines and implements verification analysis efforts to include definition of M&S requirements and intended uses as well as verification analysis outputs. Define and map Verification Capability Groups and Technical Performance Measures (TPMs) to verify data relevant to evolving Block capability; analyze data and report on TPM status integral to BMD Verification and Assessment. Report progress of the Verification and Assessment program.

FY 2004 PLANNED PROGRAM:

- Block SCS - Verification Cross Reference Matrix
- BMD System Test Objectives, including overlays on Element Test Objectives
- Maintain Target Capability Specifications (Part 1 and Part 2)
- Block Verification and Assessment Plan
- Capability Verification and Assessment Reports
- TPM and Metric Status Reports
- Verification Program Metrics and Status.

FY 2005 PLANNED PROGRAM:

- Block SCS - Verification Cross Reference Matrix
- BMD System Test Objectives, including overlays on Element Test Objectives
- Target Capability Specifications (Part 1 and Part 2)

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<ul style="list-style-type: none"> - Block Verification and Assessment Plan - Capability Verification and Assessment Reports - TPM and Metric Status Reports - Verification Program Metrics and Status 			
	FY 2003	FY 2004	FY 2005
Threat Systems Engineering		19,914	25,608
RDT&E Articles (Quantity)			
<p>Threat Systems Engineering develops, maintains, and provides configuration control of the detailed engineering offensive missile descriptions, behaviors, and presentations necessary to support BMD design, development, and testing. Conducts engineering analyses to define technologically feasible threat variations, adversary capabilities, missile characteristics, and countermeasure options. Identifies key threat parameters, establishes maximum and minimum parameters values, determines and exploits parameter relationships, assesses the impact of non-parametric factors. This includes the investigation of failure modes to examine unintended consequences of off-nominal performance of offensive missile systems. Provides MDA's adversary capability assessments and products, and lethality program information to support missile defense activities including planning, analysis, design, test, and assessment. Interfaces with other MDA elements, the MDNT, element activities and United Kingdom and Germany Missile Defense lethality programs. Provides analysis and products defining adversary space for BMD System and assures continuity with accepted and developing intelligence community threat information through coordination with MDA/SI.</p> <p>The Corporate Lethality Program provides lethality information and predictions for BMD System employment and consequences management with focus on the following objectives: obtain and share data regarding the implications, including adverse effects, of employing the BMD System; assess the capability of the BMD System to negate threats across all engagement regimes and payload types by calculating weapons of mass destruction intercept effects and consequences within a consistent set of uncertainty bounds, and establish a methodology allowing warhead typing based on impact response. The Corporate Lethality Program coordinates and integrates BMD lethality policies and efforts across the BMD System elements and technology communities. This program also leverages the ongoing BMD System element lethality efforts and BMD System element/system flight test and evaluation opportunities.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Provide adversary capability definition to BMD System organizations and activities - Prepare the Adversary Capability Document (ACD), including technical preparation, production and distribution - Perform adversary capability engineering assessments to inform robust system design across spectrum of potential adversary capabilities. - Provide data and analysis of various chemical agents and their simulants, including fourth-generation agents, to gather critical lethality data. Conduct experiments to investigate in-situ negation, aerodynamic breakup, and aerothermal demise of chemical payloads resulting from BMD System terminal phase intercepts. - Initiate lethality data and analysis on chemical/biological agents at higher altitude regimes to support high-endoatmospheric and exoatmospheric BMD System elements such as THAAD, AEGIS, and GMD. Conduct simulant and live agent testing at the High Altitude Simulation Facility in Porton Down, UK. Investigate the feasibility of utilizing sounding rockets for the ejection of simulants at high altitudes. - Initiate major efforts for obtaining actual post-engagement lethality information through "piggy-back" data collection and analysis on BMD System element and system flight test opportunities. Requires prior-year CLP coordination for the inclusion of internally threat representative targets. Instrumentation includes multi-wavelength sensors for tracking and characterization of resulting intercept debris cloud to ground. - Provide analysis on the potential effect to ballistic missile payloads of rocket engine explosions/high-energy combustions that may result from boost phase intercepts in MUDPACK II experiments. - Provide assessment on feasibility of methodology for kill assessment/warhead typing based on high-speed spectroscopy of hypervelocity impact flash phenomenology. - Provide analysis and report on viscoelastic fluid morphology for simulants of persistent nerve agents. - Provide analysis and report on submunition (both high explosive and chemical payloads) survivability to impact and aerothermal heating damage mechanisms resulting from a missile engagement. 			

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<p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Update adversary capability definition to BMD System organizations and activities - Continue to perform adversary capability engineering assessments. - Provide data and analysis of actual post-engagement lethality information through "piggy-back" efforts on BMD System element and system flight test opportunities. Provide data for improvements or refinements of existing MDA Core Lethality Models. Continue coordination for the inclusion of internally threat representative targets on subsequent tests. - Provide lethality data and analysis on chemical/biological agents at higher altitude regimes to support high-endoatmospheric and exoatmospheric BMD System elements such as THAAD, SMD, and GMD. Complete simulant and live agent testing at the High Altitude Simulation Facility in Porton Down, UK. Conduct experiments utilizing sounding rockets for the ejection of simulants at high altitudes. - Provide data and analysis of various chemical agents and their simulants, including fourth-generation agents, to gather critical lethality data. Conduct experiments to investigate in-situ negation, aerodynamic breakup, and aerothermal demise of chemical payloads resulting from BMD System terminal phase intercepts. - Provide lethality data and analysis reporting on intercept effects and consequences for various chemical and biological agents 			
	FY 2003	FY 2004	FY 2005
System Analysis		39,609	40,151
RDT&E Articles (Quantity)			
<p>Provides a common source of analysis for all Functional Working Group (NTC, NTD, NTL, NTV, NTT and NTQ) efforts and forms subgroups specializing in recurring analysis tasks. This commonality ensures consistency of quality across all National Team analysis tasks and allows wide employment of the existing knowledge and tools to enhance reuse of concepts and data. Provides mission area analysis to assess the effectiveness of alternative missile defense architectures. Assesses the long-term capability and effectiveness of alternative missile defense concepts and architectures as candidates for inclusion in the System Evolution Plan. Identifies gaps between candidate architectures and BMD System Technical Objectives and Goals. Evaluates experiment results and incorporates appropriate results in Model-Test-Model process analysis. Assesses specific BMDS program plan (roadmap) options using externally provided rough-order-of-magnitude (ROM) cost and schedule estimates. Conducts trade and system engineering studies to evaluate candidate technologies, improvements and concepts for inclusion in the toolbox. Performs analysis and capability assessments supporting SCS development. Develops and evaluates metrics relative to technical, operational, and architectural drivers, effectiveness, system and programmatic viability. Identifies and compares alternative options to mitigate or eliminate gaps. Analyzes functional and data flows within the BMDS options. Performs assessments of BMDS elements and non-BMDS assets. Calibrates the analytic tools with qualified test results prior to assessments. Performs pre-test analysis in support of test objectives definition including flight tests, ground tests, simulation, and hardware-in-the-loop experiments. Provides Quick response, high visibility assessment and system analysis support. Performs recurring Analysis/Technical Reviews and maintains a master schedule of activity and task status. Develops and maintains the Element/Component Characterization Analysis (E/CCA). Archives analysis output/reports for future use. Supports the development and maintenance of the Adversary Vignette Document.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop and maintain the Element/Component Characterization Analysis - Analysis support for the System Evolution Plan - Analysis support for System Capability Specification document - Analysis support for Capabilities Based Verification Report/Plan - Determine methodologies for representing metrics identified in the TOG <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop and maintain the Element/Component Characterization Analysis - Analysis support for the System Evolution Plan 			

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<ul style="list-style-type: none"> - Analysis support for System Capability Specification document - Analysis support for Capabilities Based Verification Report/Plan - Determine methodologies for representing metrics identified in the TOG 			
	FY 2003	FY 2004	FY 2005
Risk Engineering		6,224	8,700
RDT&E Articles (Quantity)			
<p>Execute the MDA risk management program. Comprehensively manage BMDS system technical performance risks including identification of handling options and mitigation tracking. Working with NTC, provides gap analysis support to the Systems Engineering process. Performs risk assessments to support the development of system level requirements necessary to transition concepts into capabilities that will meet Block objectives. Identifies and assesses gaps in capabilities between the Technical Objective and Goals and appropriate Blocks. Identifies system level technical performance risks associated with proposed advanced concepts, new technologies, counter-countermeasure concepts, and risk reduction activities; and make recommendations for Block definition, System Evolution Plan (SEP) insertion, and CCB consideration. Provide matrix support to other Functional Working Groups (FWGs) and support the development of BMD System level test objectives and technical performance measures. Facilitates BMD system level technical performance risk management and related presentations at appropriate forums and supports the development of BMD System-level technical performance risk handling options. Provide a yearly BMDS Block Technical Performance Risk Summary.</p> <p>FY 2004 PLANNED PROGRAM: - Develop and maintain the BMD System Risk Management Plan (March 2004)</p> <p>FY 2005 PLANNED PROGRAM: - Maintain the BMD SYSTEM Risk Management Plan (March 2005 and yearly thereafter in March) - Provide a yearly BMDS Block Technical Performance Risk Summary (Starting December 2004)</p>			
	FY 2003	FY 2004	FY 2005
Modeling & Simulation Engineering		95,653	107,123
RDT&E Articles (Quantity)			
<p>Broadly stated, the functional responsibilities are to develop and maintain, and to provide verification and validation (V&V) support for, Modeling and Simulation (M&S) tools used by MDA and designated international countries for analysis, software-in-the-loop (SWIL) testing, hardware-in-the-loop (HWIL) testing, and wargaming of the Ballistic Missile Defense System (BMDS). In greater detail, the responsibilities are to prepare, maintain, and promulgate the MDA M&S Strategy, which stipulates policy, guidance, and best practices for M&S; identify the MDA Core M&S, which are those M&S essential to the development, testing, or assessment of the BMDS; collect requirements for the Core M&S and assists in prioritizing those requirements; allocate resources for the development, maintenance, enhancement, and V&V of the Core M&S; chair the Modeling and Simulation Working Group (MSWG), a collaborative body that provides advice and guidance to users, stakeholders, and developers of BMDS M&S; plan, design, enhance, test, and conduct V&V of the Virtual Model, a simulation that supports development, testing, and assessment of the overall BMDS system; support BMDS wargames and exercises regarding the use of M&S and the collection and reuse of data; assist in identifying and implementing an architecture for hardware-in-the-loop (HWIL) testing; and develop, sustain, and modernize the MDA M&S infrastructure, including the Advanced Research Center/Simulation Center.</p>			

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<p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Core M&S and Virtual Model releases - Accreditation reports of selected models, simulations, and federations - Technical reports <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Core M&S and Virtual Model releases - Accreditation reports of selected models, simulations, and federations - Technical reports 			
	FY 2003	FY 2004	FY 2005
Program Cost & Investment Analysis		3,000	6,019
RDT&E Articles (Quantity)			
<p>The Program Cost & Investment Analysis (NTQ) functional working group (FWG) provides program cost and investment analysis support for the primary BMD System engineering FWGs (NTC, NTD, NTI) and other FWGs as required. Services include POM, budget, and costing support, as well as investment analysis for the BMDS.</p> <p>Specific functional responsibilities are as follows (ties to other FWGs in parentheses):</p> <ul style="list-style-type: none"> - Perform costing analysis, as requested by MDNTS FWGs, to support efforts such as alternative missile defense architectures (NTC), alternative defense concepts and architecture candidates in the MDA System Evolution Plan (NTC and NTD), and Advanced Study Notifications/Advanced Change Notification studies (NTI). - Support the identification and comparison of alternatives to mitigate risks or eliminate gaps (NTC). - Provide rough-order-of-magnitude (ROM) costs to support the assessment of specific BMDS program plan (roadmap) options (NTC and NTD). - Provide affordability analysis in the various trade and architecture studies (NTC, NTD, and NTI). - Perform investment analysis for the BMDS to include architecture candidates and advanced system concepts for the SEP process (NTC). Investment analyses will consist of cost benefit studies, alternative long-term investment strategies, and return-on-investment analysis. 			
	FY 2003	FY 2004	FY 2005
Program Management & Control		39,670	39,068
RDT&E Articles (Quantity)			
<p>Program Management and Control (NTP), provides overall program operations support to the Deputy for System Engineering and Integration in the management and control of the design, integration and verification of the BMD System. Provides support for all contract management requirements to ensure all communities of the Missile Defense National Team are enabled to perform the System Engineering and Integration processes for the BMDS. It establishes and maintains the MDNTS library to ensure all MDNTS members have instant access to accurate, timely data necessary to engineer the BMDS. NTP leads or supports all task groups responding to official inquiries about the BMDS from organizations outside the National Team-Systems. Ensures established BMD System engineering processes are updated and disseminated regularly. Establishes, and monitors information sharing processes for the NTS and coordinates with other MDA organizations to enable those processes. Provides support for budget planning, preparation and execution. Prepares and manages the POM and Budget for MDNTS. Maintains master MDNTS schedule. Manages the Task Management process to perform MDNTS work including personnel and performance reporting. Provides administrative support and all SE internal task tracking. Provide security functions required for multi-facility infrastructure, communications and daily operations.</p>			

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C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<u>D. Acquisition Strategy</u> SE&I will implement the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, & evolutionary acquisition through the use of two-year capability blocks. The transition to a BMD System is performed by the Missile Defense National Team System (MDNTS) and the Missile Defense National Team Battle Management/Command and Control (MDNTB). The MDNTS is composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. This combination of resources forms an integrated team to accomplish necessary engineering for the BMD System. The MDA/SE is the MDA Chief Engineer supported by functional working groups and an advisory group overseeing specific cross cutting functions. Program Control and Cost & Investment Engineering provide administrative, program management and financial services to Functional Groups and interfaces to other MDA organizations. The strategy is for the MDNTS to ensure successful development of the BMD System through system definition & analyses, capability allocation, block integration, and verification. The MDNT is a new paradigm, applying industrial structures to missile defense while complying with governmental acquisition regulations.		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Concept Engineering										
ISEG		Vanguard/ VA		1,000	3Q	1,100		CONT.	2,100	TBD
SEC-Industry	CPAF	Boeing/ VA		12,230	2Q	14,048		CONT.	26,278	TBD
SEC-SETA	CPFF	Sparta/ VA		605	1Q			CONT.	605	TBD
SEC-SETA	CPAF	Sparta/ VA		2,452	2Q	2,805	3Q	CONT.	5,257	TBD
SEC-SETA	CPFF	CSC/ VA		617	1Q			CONT.	617	TBD
SEC-SETA	CPAF	CSC/ VA		2,703	2Q	3,018	3Q	CONT.	5,721	TBD
SEC	Various	Various				1,500		CONT.	1,500	TBD
Design & Specification Engineering										
SED-Industry	CPAF	Boeing/ VA		17,820	2Q	19,300		CONT.	37,120	TBD
SED-SETA	CPFF	Sparta/ VA		385	1Q			CONT.	385	TBD
SED-SETA	CPAF	Sparta/ VA		1,560	2Q	1,935	3Q	CONT.	3,495	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SED-SETA	CPFF	CSC/ VA		353	1Q			CONT.	353	TBD
SED-SETA	CPAF	CSC/ VA		1,544	2Q	1,847	3Q	CONT.	3,391	TBD
SED	Various	Various				3,000		CONT.	3,000	TBD
Implementation & Software Engineering										
SEI-Industry	CPAF	Boeing/ VA		9,436	2Q	10,635		CONT.	20,071	TBD
SEI-SETA	CPFF	Sparta/ VA		330	1Q			CONT.	330	TBD
SEI-SETA	CPAF	Sparta/ VA		1,572	2Q	1,600	3Q	CONT.	3,172	TBD
SEI-SETA	CPFF	CSC/ VA		441	1Q			CONT.	441	TBD
SEI-SETA	CPAF	CSC/ VA		2,166	2Q	2,689	3Q	CONT.	4,855	TBD
SEI	MIPR	Spawar/ CA		300	1/3Q	700	1/3Q	CONT.	1,000	TBD
SEI		SMDC/ AL		450		800		CONT.	1,250	TBD
SEI	Various	Various		204	2/3Q	1,300	2/3Q	CONT.	1,504	TBD
Verification & Assessment Engineering										
SEV-Industry	CPAF	Boeing/ VA		4,891	2Q	6,717		CONT.	11,608	TBD
SEV-SETA	CPFF	Sparta/ VA		330	1Q			CONT.	330	TBD
SEV-SETA	CPAF	Sparta/ VA		1,337	2Q	2,560	3Q	CONT.	3,897	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SEV-SETA	CPFF	CSC/ VA		705	1Q			CONT.	705	TBD
SEV-SETA	CPAF	CSC/ VA		3,087	2Q	4,350	3Q	CONT.	7,437	TBD
SEV-SETA	MIPR	NSWC/Crane/ IN		1,000	1Q	1,100		CONT.	2,100	TBD
SEV		JNIC/ CO		1,000	1Q	1,100		CONT.	2,100	TBD
SEV	Various	Various		2,700	2/3Q	5,175		CONT.	7,875	TBD
Threat Systems Engineering										
SET-Industry	CPAF	Boeing/ AL		1,049	2Q	1,049		CONT.	2,098	TBD
SET-SETA	CPAF	Sparta/ VA		150	2Q	3,789	3Q	CONT.	3,939	TBD
SET-SETA	CPAF	CSC/ VA		300	2Q	1,802	3Q	CONT.	2,102	TBD
SET	MIPR	Battelle/ OH		3,050	1/3Q	3,100	1/3Q	CONT.	6,150	TBD
SET	MIPR	NSWC/DD/ VA		2,665	1/3Q	2,700	1/3Q	CONT.	5,365	TBD
SET	MIPR	SBCOM/ MD		75	1Q	100	1Q	CONT.	175	TBD
SET		UKMOD/ UK		3,550	2/3Q	3,800	1/3Q	CONT.	7,350	TBD
SET		SMDC/ AL		4,975	1/3Q	5,000	1/3Q	CONT.	9,975	TBD
SET		Air Force/ Various		1,700	1/3Q	1,700	1/3Q	CONT.	3,400	TBD
System Analysis										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SEZ-Industry	CPAF	Boeing/ VA		16,424	2Q	18,325		CONT.	34,749	TBD
SEZ-SETA	CPFF	Sparta/ VA		3,355	1Q			CONT.	3,355	TBD
SEZ-SETA	CPAF	Sparta/ VA		13,560	2Q	14,900	3Q	CONT.	28,460	TBD
SEZ-SETA	CPFF	CSC/ VA		881	1Q			CONT.	881	TBD
SEZ-SETA	CPAF	CSC/ VA		3,589	2Q	5,000	3Q	CONT.	8,589	TBD
Risk Engineering										
SEY-Industry	CPAF	Boeing/ VA		4,192	2Q	4,709		CONT.	8,901	TBD
SEY-SETA	CPFF	Sparta/ VA		165	1Q			CONT.	165	TBD
SEY-SETA	CPAF	Sparta/ VA		669	2Q	919	3Q	CONT.	1,588	TBD
SEY-SETA	CPFF	CSC/ VA		118	1Q			CONT.	118	TBD
SEY-SETA	CPAF	CSC/ VA		480	2Q	730	3Q	CONT.	1,210	TBD
SEY	Various	Various				1,700		CONT.	1,700	TBD
Modeling & Simulation Engineering										
SEJ-Industry	CPAF	Boeing/ VA		7,800	2Q	8,260		CONT.	16,060	TBD
SEJ-SETA	CPFF	Sparta/ VA		400	1Q			CONT.	400	TBD
SEJ-SETA	CPAF	Sparta/ VA		1,960	2Q	2,200	3Q	CONT.	4,160	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SEJ-SETA	FFP	Sparta/ VA		875	1/3Q			CONT.	875	TBD
SEJ-SETA	FFP	Booz Allen & Hamilton/ Va		6,827	1/3Q	6,950		CONT.	13,777	TBD
SEJ-SETA	CPAF	Photon Research Associates/ VA		3,650	1/3Q			CONT.	3,650	TBD
SEJ		SMDC/ AL		9,538	1/3Q	12,000		CONT.	21,538	TBD
SEJ-Advanced Research Center		SMDC/ AL		12,500	1/3Q	15,000		CONT.	27,500	TBD
SEJ-Simulation Center		SMDC/ AL		3,000	1/3Q	3,000		CONT.	6,000	TBD
SEJ		JNIC/ CO		20,773	1/3Q	23,600		CONT.	44,373	TBD
SEJ		Air Force		3,183	1/3Q	3,985		CONT.	7,168	TBD
SEJ		Navy/ VA		1,454	1/3Q	2,375		CONT.	3,829	TBD
SEJ		Navy (B)/ VA		2,995	1/3Q	3,500		CONT.	6,495	TBD
SEJ		PEOAMD/ AL		14,961	1/3Q	15,200		CONT.	30,161	TBD
SEJ	Various	Various		4,837	1/3Q	9,500		CONT.	14,337	TBD
Program Cost & Investment Analysis										
SEQ-Industry	CPAF	Boeing/ VA		1,966	2Q	2,435		CONT.	4,401	TBD
SEQ-SETA	CPFF	Sparta/ VA		83	1Q			CONT.	83	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SEQ-SETA	CPAF	Sparta/VA		334	2Q	656	3Q	CONT.	990	TBD
SEQ-SETA	CPFF	CSC/VA		59	1Q			CONT.	59	TBD
SEQ-SETA	CPAF	CSC/VA		258	2Q	507	3Q	CONT.	765	TBD
SEQ	Various	Various				1,500		CONT.	1,500	TBD
Program Management & Control										
Subtotal Support Costs			0	229,618		267,270		0	496888	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Concept Engineering										
SEC-FFRDC/UARC/DoE Labs	FFRDC	Various		2,400	1/3Q	2,568	1/3Q	CONT.	4,968	TBD
Design & Specification Engineering										
SED-FFRDC/UARC/DoE Labs	FFRDC	Various		1,350	1/3Q	1,745	1/3Q	CONT.	3,095	TBD
Implementation & Software Engineering										
SEI-FFRDC/UARC/DoE Labs	FFRDC	Various		900	1/3Q	1,542	1/3Q	CONT.	2,442	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Verification & Assessment Engineering										
SEV-FFRDC/UARC/DoE Labs	FFRDC	Various		600	1/3Q	1,242	1/3Q	CONT.	1,842	TBD
Threat Systems Engineering										
SET-FFRDC/UARC/DoE Labs	FFRDC	Various		2,400	1/3Q	2,568	1/3Q	CONT.	4,968	TBD
System Analysis										
SEZ-FFRDC/UARC/DoE Labs	FFRDC	Various		1,800	1/3Q	1,926	1/3Q	CONT.	3,726	TBD
Risk Engineering										
SEY-FFRDC/UARC/DoE Labs	FFRDC	Various		600	1/3Q	642	1/3Q	CONT.	1,242	TBD
Modeling & Simulation Engineering										
SEJ-FFRDC/UARC/DoE Labs	FFRDC	Various		900	1/3Q	1,553	1/3Q	CONT.	2,453	TBD
Program Cost & Investment Analysis										
SEQ-FFRDC/UARC/DoE Labs	FFRDC	Various		300	1/3Q	921	1/3Q	CONT.	1,221	TBD
Program Management & Control										
SEP-Industry	CPAF	Boeing/ VA		25,922		21,700	1/3Q	CONT.	47,622	TBD
SEP-SETA	CPAF	Sparta/ VA		2,086	2Q	5,366	3Q	CONT.	7,452	TBD
SEP-SETA	CPAF	CSC/ VA		1,935	2Q	3,139	3Q	CONT.	5,074	TBD
SEP-FFRDC/UARC/DoE Labs	FFRDC	Various		1,950	1/3Q	2,550	3Q	CONT.	4,500	TBD
Gov't Personnel				7,177	2Q	5,715	2Q	CONT.	12,892	TBD
Travel				600	2Q	598	2Q	CONT.	1,198	TBD
Subtotal Management Services			0	50,920		53,775		0	104695	
Remarks										
Project Total Cost			0	280,538		321,045			601,583	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Milestones																																
IDO Design Review						Δ																										
IDO Readiness Review								Δ																								
IDC/Block 04 Interface Control Specifications						▲																										
System Evolution Plan/Updates						Δ				Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ					
Technical Objectives & Goals / Updates							Δ				Δ				Δ				Δ				Δ				Δ					
Capability Verification and Assessment Report										Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ	
Adversary Capability Document/updates						Δ				Δ																						
Capability Verification and Assessment Plan										Δ				Δ		Δ				Δ				Δ								Δ
Capability Verification and Assessment Report							Δ																									
IDO Capability & Assessment Report								Δ																								
BLOCK 2004																																
Block 04 Design Review								Δ																								
Block 04 System Integration Plan								Δ																								
BLOCK 2006																																
Block 06 System Capability Specifications/updates						▲		Δ																								
Target Requirements Block 06 - Part 1							Δ																									

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)																	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core											
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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																												
Target Requirements Block 06 - Part 2								Δ		Δ																		
Block 06 Design Review								Δ																				
Block 06 Readiness Review												Δ																
Block 06 System Integration Plan								Δ																				
BLOCK 2008																												
Block 08 Design Review											Δ																	
Block 08 Integration Review Board								Δ																				
Block 08 Interface Control Specifications												Δ																
Block 08 System Capability Specification/updates								Δ			Δ																	
Block 08 Capability Review															Δ													
Target Requirements Block 08 - Part 1										Δ																		
Block 2010																												
Block 10 SCS/updates															Δ													
Software																												
Block 04 Software Acquisition Program								Δ																				
Virtual Model/updates								Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ			Δ	Δ			Δ

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones							
IDO Design Review		2Q					
IDO Readiness Review		4Q					
System Evolution Plan Outlines		2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
IDC/Block 04 Interface Control Specifications		1Q					
System Evolution Plan/Updates		2Q	1Q,2Q	1Q,2Q	1Q,2Q	1Q,2Q	1Q,2Q
Assess operational risks				2Q	2Q	2Q	2Q
Capability Verification & Assessment Plan		4Q	4Q	4Q	4Q	4Q	4Q
IDO Adversary Data Package/updates		1Q,2Q					
Technical Objectives & Goals / Updates		3Q	3Q	3Q	3Q	3Q	3Q
Block Definition & Architecture Tech. Descriptions		2Q		2Q		2Q	
Capability Verification and Assessment Report			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
Adversary Capability Document/updates		2Q	1Q				
Capability Verification and Assessment Plan			1Q	1Q,4Q	4Q	4Q	4Q
Capability Verification and Assessment Report		3Q					
IDO Capability & Assessment Report		4Q					
BLOCK 2004							
Block 04 Adversary Data Package/updates		3Q,4Q					
Block 04 Design Review		3Q					
Block 04 System Integration Plan		3Q					
Block 04 System Integration Strategy/updates		3Q					
BLOCK 2006							
Block 06 System Capability Specifications/updates		1Q,3Q					
Target Requirements Block 06 - Part 1		2Q					
Target Requirements Block 06 - Part 2		4Q	2Q				
Block 06 Target Specs		4Q					
Block 06 Design Review		4Q					
Block 06 Readiness Review			4Q				
Block 06 System Integration Strategy/updates		4Q					
Block 06 System Integration Plan		4Q					
Block 06 TPM & Metric Status		4Q					

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 06 Verification Cross Reference Matrix		2Q,3Q,4Q					
Block 06 Adversary Data Package/updates			1Q,2Q				
Block 06 Interface Control Specification		4Q					
BLOCK 2008							
Block 08 Design Review			3Q				
Block 08 Integration Review Board		4Q					
Block 08 Interface Control Specifications			4Q				
Block 08 System Capability Specification/updates		4Q,4Q	3Q				
Block 08 Capability Review				1Q			
Block 08 Target Specs			4Q				
Target Requirements Block 08 - Part 1			1Q				
Block 08 System Integration Strategy/updates			2Q,3Q				
Block 08 TPM & Metric Status				1Q			
Block 08 Verification Cross Reference Matrix		4Q	4Q				
Block 08 Adversary Data Package/updates			3Q,4Q				
Block 2010							
Block 10 Adversary Data Package/updates				1Q,2Q			
Block 10 SCS/updates				1Q			
Ground Tests							
MUDPACK II			3Q				
Studies & Analyses							
Review future design for Block & BMDS Elements		2Q					
Alternatives for BMDS Block architecture		2Q					
Conceptual design for Block & BMDS Element		2Q					
Review multiple candidates for Block architecture		2Q					
Software							
Block 04 Software Acquisition Program		3Q					
Virtual Model/updates		4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q
Contractual Activities& Events							
MDNTS(I) Phase 3 Contract Award		2Q					
MDNTS(I) Phase 4 Contract Award				1Q			

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
MDNTS(I) Phase 5 Contract Award						1Q	
Other							
BMDS Technical Risk Summary			1Q				
Risk Mgt Plan Update		3Q					

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004																										
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core																											
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009																								
0201 Command and Control, Battle Management and Communications Core	0	15,379	1,696	1,695	1,796	1,899	6,781																								
RDT&E Articles Qty	0	0	0	0	0	0	0																								
<p><i>Note: This Project was funded under PE 0603880C (BMD System), Projects 1010 and 1020, for FY 2002 and FY 2003.</i></p> <p><i>Starting FY 2005, this project is captured under PE 0603889C (BMD Products) Projects 0701, 0801 and 0901.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The BMDS Command, Control, Battle Management and Communications (C2BMC) element is the integrating function across all BMDS elements. It is also the element that integrates the BMDS into the C2 structure of the Combatant Commanders and into that of allies and friends. C2BMC will evolve from today's limited autonomous defense BMDS capability into a global integrated BMDS capability. The BMDS C2BMC functionality will mature into Collaborative Distributed Planning and increased Situational Awareness C2 capabilities that support Engagement Coordination and Integrated Fire Control BM capabilities.</p> <p>MDA established a Missile Defense National Team for Command, Control, Battle Management and Communications (MDNTB) to deliver an integrated BMDS C2BMC Element. This effort requires a collaborative enterprise comprised of the best and most experienced minds of Industry and Government. Beginning in FY 2004 this project provides funding in support of Federally Funded Research and Development Center (FFRDC), and University Affiliated Research Center (UARC) providers. The concept of operations for the MDNTB will continue to be as follows: the Government continues to provide the overall management of the BMDS program and participates within the MDNTB; and the MDNTB is responsible for the C2BMC Element engineering, design, specifications development, development, integration and testing, installation and activation, and logistics and maintenance of the BMDS C2BMC Element capability.</p> <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Missile Defense National Team for C2BMC - Industry</td> <td></td> <td align="right">13,160</td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>The MDNTB(I) core reflects infrastructure costs, cross-Block and cross-IPT activities.</p> <p>- Infrastructure costs include: facilities lease, equipment and recurring purchases expenses; property administration; security management and labor; material; I/T support, contract I/T, HW and SW maintenance; telecommunications expenses including contract telecommunications, HW circuits, SW and SW Maintenance.</p> <p>- Cross-Block and Cross-IPT activities are captured in the Program Control IPT that manages the business functions of the MDNTB(I). These activities include: finance, program management, ODC, travel, subcontract management, development of the Integrated Management Plan and Integrated Master Schedule, Configuration Management, information security, and others.</p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Government Personnel</td> <td></td> <td align="right">1,679</td> <td align="right">1,696</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>MDA C2BMC Directorate government civilian salaries.</p>									FY 2003	FY 2004	FY 2005	Missile Defense National Team for C2BMC - Industry		13,160		RDT&E Articles (Quantity)					FY 2003	FY 2004	FY 2005	Government Personnel		1,679	1,696	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																												
Missile Defense National Team for C2BMC - Industry		13,160																													
RDT&E Articles (Quantity)																															
	FY 2003	FY 2004	FY 2005																												
Government Personnel		1,679	1,696																												
RDT&E Articles (Quantity)																															

Project: 0201 Command and Control, Battle Management and Communications Core

MDA Exhibit R-2A (PE 0603890C)

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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	FY 2003	FY 2004	FY 2005
SETA Support		295	
RDT&E Articles (Quantity)			

Represents Scientific Engineering Technical Assistance (SETA) HQ allocation

	FY 2003	FY 2004	FY 2005
FEDERALLY FUNDED RESEARCH DEVELOPMENT CENTERS (FFRDC)		245	
RDT&E Articles (Quantity)			

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603890C Ballistic Missile Defense System Core				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing

D. Acquisition Strategy

C2BMC will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The Department has restructured the missile defense acquisition strategy into a multi-path approach to assure that the most effective missile defense is available at the earliest possible time. The strategy is to build the initial C2BMC Element of the BMDS Test Bed NLT 4th Quarter FY 2004 as an early BMDS Test Bed and deliver capability block upgrades as early as practical. An integrated team named the Missile Defense National Team for C2BMC (MDNTB) was formed to accomplish the design and specifications development; software development, integration and testing; installation and activation; and logistics and maintenance of the C2BMC Element for the BMD System. The MDNTB is composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. An Other Transactions Agreement was awarded to Lockheed Martin Mission Systems as the prime contractor for the industry team (MDNTB(I)).

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Missile Defense National Team for C2BMC - Industry										
C2BMC Element	SS/CPAF	LMMS/ Crystal City, VA		13,160	1Q				13,160	
Government Personnel										
C2BMC Element		MDA HQ/ Arlington, VA		1,679	1/4Q	1,696	1/4Q		3,375	
FEDERALLY FUNDED RESEARCH DEVELOPMENT CENTERS (FFRDC)										
CBMC Element	SS/CPAF	MITRE,IDA,ORL/ Washington, DC		245	1Q				245	
Subtotal Product Development			0	15,084		1,696		0	16780	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SETA Support										
C2BMC Element	SS/CPFF	Sparta/ MDA HQ, Arlington, VA		295	1Q				295	
Subtotal Support Costs			0	295		0		0	295	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	15,379		1,696			17,075	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Contractual Activities & Events																												
MDNTB(I) Part 2 Contract Integrated Baseline Rvw		▲																										
MDNTB(I) Part 3 Contract Integrated Baseline Rvw							Δ																					
MDNTB(I) Part 3 Contract Negotiations			▲	—	▲																							
MDNTB(I) Part 5 Contract Negotiations																		Δ	—	Δ								
MDNTB(I) Part 3 Contract Award						Δ																						
MDNTB(I) Part 4 Contract Integrated Baseline Rvw														Δ														
MDNTB(I) Part 5 Contract Award																			Δ									
MDNTB(I) Part 4 Contract Negotiations											Δ	—	Δ															
MDNTB(I) Part 5 Contract Integrated Baseline Rvw																						Δ						
MDNTB(I) Part 4 Contract Award													Δ															

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Contractual Activities& Events							
MDNTB(I) Part 2 Contract Integrated Baseline Rvw	2Q						
MDNTB(I) Part 3 Contract Integrated Baseline Rvw		3Q					
MDNTB(I) Part 3 Contract Negotiations	3Q-4Q	1Q					
MDNTB(I) Part 5 Contract Negotiations					3Q-4Q	1Q	
MDNTB(I) Part 3 Contract Award		2Q					
MDNTB(I) Part 4 Contract Integrated Baseline Rvw				3Q			
MDNTB(I) Part 5 Contract Award						1Q	
MDNTB(I) Part 4 Contract Negotiations			3Q-4Q	1Q			
MDNTB(I) Part 5 Contract Integrated Baseline Rvw						3Q	
MDNTB(I) Part 4 Contract Award				1Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0102 Intelligence	0	19,141	21,123	21,881	23,299	26,724	28,275
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: In FY 2003 and prior, this Project was funded under Program Element (PE) 0603880C (BMD System).</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>As part of the Ballistic Missile Defense System (BMDS) Core Program Element, the Intelligence Project fulfills a critical role by providing current and projected intelligence information (detailing threat capabilities) to the many groups responsible for making the BMDS capability a reality. This threat information is invaluable to ensuring the BMDS successfully defeats threat capabilities. Without sufficient threat information, it is impossible to know which defense capabilities should be development priorities in the BMDS. But with sufficient threat information, it is possible to better assess the importance of certain defensive capabilities and thereby make informed decisions regarding uses of limited resources throughout the missile defense development community.</p> <p>Critical to the overall BMDS engineering, development, and evolution is the use of threat information to introduce characteristics and types of threat information into the engineering and development process. Consideration of threat information will help minimize risks and improve system performance by enabling BMDS-wide system engineers to better understand threat capabilities.</p> <p>This Project is aimed at studying and exploiting threat relevant information to the maximum extent possible and making this threat system information accessible to all MDA organizations. As a result, this Project supports all four of the overarching MDA objectives:</p> <ol style="list-style-type: none"> 1) In support of the Initial Defensive Capability (IDC) objective, this Project provides: <ol style="list-style-type: none"> a. System Engineering & Integration (SE&I) with threat data information for populating the Adversaries Capability Document (ACD); b. Countermeasures/Counter-Countermeasures (CM/CCM) with detailed information regarding threat systems and countermeasures capabilities; c. Modeling & Simulation (M&S) with all threat modeling and support activities, to include threat ballistic missile capabilities, signature data, and countermeasures. 2) In support of the BMDS on alert objective, this Project supports the Command Control and Battle Management Communications (C2BMC) with critical signature data acquired from national technical means necessary to engage enemy missiles. 3) In support of the concurrent testing and operations procedures objective, this Project provides the Joint Warfighter Support Project with a realistic opposing force team for all MDA sponsored wargames and exercises. This uncooperative opponent uses likely threat courses of action (based on threat scenarios) thereby enabling the development of effective US responses and a Concept of Operations (CONOPS) through integrated wargaming and scenario support. 4) In support of the enhanced BMDS capabilities objective, this Project continues to maximize exploitation of threat data throughout the FYDP. <p>In an effort to improve the relevance and timeliness of intelligence information to influence the development of a BMDS capability, the Intelligence Project Office is working more aggressively with the MDA community in order to provide more specificity in requests for intelligence collection efforts from the Intelligence Community, e.g., rather than request all information associated with a known threat system, requests will be for specific information based on requests for information from the MDA community.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Intelligence Support		450	523				
RDT&E Articles (Quantity)							
Work closely with the Intelligence Community and the various BMDS Component Managers in order to ensure missile defense intelligence production requirements (PR) are accurately defined and designed to support development and deployment of a BMDS capable of countering a missile threat.							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop intelligence production requirements to provide studies of foreign missile parameters in sufficient detail to allow developers of missile defenses to engage and destroy threat missiles. - Develop intelligence production requirements to provide country specific foreign missile: doctrine, strategies, tactics, concepts of operation, order of battle, command and control structure, denial and deception methods, and operating procedures. <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop intelligence production requirements to provide studies of foreign missile parameters in sufficient detail to allow developers of missile defenses to engage and destroy threat missiles. - Develop intelligence production requirements to provide country specific foreign missile: doctrine, strategies, tactics, concepts of operation, order of battle, command and control structure, denial and deception methods, and operating procedures. 			
	FY 2003	FY 2004	FY 2005
Tactics & Specifications Center (TSC) Program		3,550	4,000
RDT&E Articles (Quantity)			
<p>Conduct threat modeling and threat capabilities studies and analyses. Develop detailed characterizations of threat missile systems for analysis of the BMDS. Characterizations include highly detailed threat missile specifications (aerodynamics, mass properties, propulsion, guidance), penaid suite specifications and deployment dynamics, and infrared (IR) and radio frequency (RF) signatures for all threat objects. Conduct studies and analyses based on "surrogate intelligence," i.e., intelligence outside the range of traditional intelligence estimates.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Produce all required threat missile specifications for two (2) capabilities-based scenarios, to include Intel-based as well as conceptual missile systems. - Update the Threat Modeling & Simulation System (TMSS). <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Produce all required threat missile specifications for two (2) capabilities-based scenarios, to include intell-based as well as conceptual missile systems. - Update the TMSS. 			
	FY 2003	FY 2004	FY 2005
Special Programs Center (SPC)		2,400	2,600
RDT&E Articles (Quantity)			
<p>Develop and produce threat scenario trajectory data designed for use in analyzing the engineering and architecture of the BMDS. These scenarios are critical to the development of concept of operations (CONOPS) for the BMDS. Also perform modeling and simulation of all threat missiles and related objects for use in scenario development.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Produce and combine all simulation and trajectory data necessary to support the scenario production effort. - Update the Threat Modeling & Simulation System (TMSS). 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Produce and combine all simulation and trajectory data necessary to support the scenario production effort. - Update the TMSS. 			
	FY 2003	FY 2004	FY 2005
SPC Wargaming		400	400
RDT&E Articles (Quantity)			
<p>Represent the opposing force in all MDA sponsored wargames and exercises including Integrated Missile Defense (IMD) 04. Portray a realistic and dynamic opponent to enable effective analyses of tactics used for the BMDS in order to assist in the development of concept of operations (CONOPS) for the BMDS.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Provide threat support in all MDA sponsored and supported wargames and exercises. <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Provide threat support in all MDA sponsored and supported wargames and exercises. 			
	FY 2003	FY 2004	FY 2005
MASINT		4,266	5,000
RDT&E Articles (Quantity)			
<p>Measurement and Signature Intelligence (MASINT) applications for missile defense testing and contingency support is a high priority requirement in support of the agency mission. MASINT functions include electro-optical, radar and radio frequency tasking, collection, analysis and testing. Exploiting these areas provides some of the best possibilities for worldwide missile launch detection, characterization and typing. Also, these capabilities and associated sensor and processing assets provides an important infrastructure for building near term (Block 04 and 06) missile defense systems. Incorporating current MASINT asset capabilities, tailoring those capabilities to the BMD mission and connectivity to designated BMDS Command and Control (C2) nodes is critical.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Restructure current MASINT reporting to provide real-time (R/T) data streams to BMD node(s). - Leverage community algorithm development effort for ballistic missile events and focus on reporting to enhance missile defense. - Establish National Sensor Integration Rapid Prototype (NSIRP) to provide enhanced and more timely reporting of missile launch events, system type, metric and signature data summaries in a reduced timeline and directed by MDA requirements. <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Expand MASINT reporting data streams to BMD nodes through increasing number of assets used in warning of potential launch events and co-process these data streams with other assets to bring higher confidence of detection and characterization and reduce the potential for false alarms. - Expand worldwide missile event reporting capability to provide for near real-time (NRT) assessment and fusion of signature and metric performance data sets to evaluate reporting on threat ballistic missiles and to support fusion of national technical means. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
	FY 2003	FY 2004	FY 2005
Current Intelligence/Intelligence, Surveillance & Reconnaissance (ISR) Support		1,500	1,500
RDT&E Articles (Quantity)			
<p>Provide MDA Senior Leadership with situation awareness based on current intelligence relating to (1) foreign ballistic missile developments affecting BMDS, and (2) other worldwide events/crises involving countries that possess ballistic missiles. Maintain webpage on MDA's SIPRNET and JWICS websites.</p> <p>Support Measurement and Signature Intelligence (MASINT) efforts by providing data management and analysis necessary to assess sensors and sensor systems to support detection, classification and reporting of worldwide ballistic missile activity.</p> <p>FY 2004 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Prepare and present daily intelligence summaries, current intelligence briefings, and monthly intelligence digests to apprise MDA Senior Leadership of relevant missile related intelligence. - Apply results of data management and scientific analysis to current and developing sensor systems for ISR functions and thereby leverage technologies to enhance the metric or signature discrimination elements of the BMDS function. <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue preparing and presenting daily intelligence summaries, current intelligence briefings, and monthly intelligence digests to apprise MDA Senior Leadership of relevant missile related intelligence. - Continue applying results of data management and scientific analysis to current and developing sensor systems for ISR functions and thereby leverage technologies to enhance the metric or signature discrimination elements of the BMDS function. 			
	FY 2003	FY 2004	FY 2005
Forces & Capabilities Assessment Element		0	400
RDT&E Articles (Quantity)			
<p>Draw on available intelligence (e.g., Intelligence Community reports, defense contractor studies, in-house analyses) to determine adversary capabilities and force utilization. Track terrorist activities, including potential use of missiles launched from non-traditional platforms. Acquire intelligence with greater fidelity from the Intelligence Community. Develop systems and tools to better communicate intelligence requirements and products, particularly in support of international missile defense partnership programs.</p> <p>FY 2004 PLANNED PROGRAM: Effort starts in FY05.</p> <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Further develop and enhance a visualization software tool (that was initially developed under the Intelligence Program Task) to communicate threat picture and options based on intelligence data (support to MDA/CF (MDA Deputy Director for Cooperative Programs and Allied Support) and to the MDA National Team). - Conduct various studies based on adversary use of missiles against the U.S. and its interests. - Conduct studies to understand and take into account adversary technical capability and strategy. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
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	FY 2003	FY 2004	FY 2005
Project Management		6,575	6,700
RDT&E Articles (Quantity)			

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
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PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

D. Acquisition Strategy

Not Applicable. The Intelligence efforts are intended to support all BMDS components (and functional areas) as needed in order to influence and enhance overall BMDS design, architecture, and concept of operations.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Intelligence Support										
USAF		NASIC (Travel Costs)/ Wright Patterson, OH	0	150	1/4Q	150	1/2Q	CONT.	300	TBD
MDA	CPFF	Northrup Grumman/ Huntsville, AL	0	258	3Q	333	2Q	CONT.	591	TBD
MDA	SS/TM	Abyl Consulting/ Herndon, VA	0	12	1Q	0			12	TBD
MDA	MIPR	MSIC (Travel Costs)/ Huntsville, AL	0	30	1/4Q	40	1/4Q	CONT.	70	TBD
Tactics & Specifications Center (TSC) Program										
SMDC	Various	Tactics & Specs Ctr (TSC)/ Huntsville, AL	0	2,800	2/4Q	3,227	1/2Q	CONT.	6,027	TBD
MDA	CPFF	JHU/APL/ Laurel, MD	0	70	1Q	70	1/2Q	CONT.	140	TBD
MDA		TBD	0	300	3Q	310	2Q	CONT.	610	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MDA	MIPR	NASIC/ Wright Patterson, OH	0	140	2Q	145	2Q	CONT.	285	TBD
MDA	MIPR	MSIC/ Huntsville, AL	0	105	2/3Q	110	2/3Q	CONT.	215	TBD
MDA	MIPR	ONI/ Washington, DC	0	135	2Q	138	2Q	CONT.	273	TBD
Special Programs Center (SPC)										
JNIC (Special Programs Center (SPC))	SS/CPAF	Northrup Grumman/ Schriever AFB, CO	0	2,400	2/3Q	2,600	2/3Q	CONT.	5,000	TBD
SPC Wargaming										
JNIC (Special Programs Center (SPC))	SS/CPAF	Northrup Grumman/ Schriever AFB, CO	0	400	2/3Q	400	1/2Q	CONT.	800	TBD
MASINT										
MDA	MIPR	NRO/ Chantilly, VA	0	800	2Q	920	1/3Q	CONT.	1,720	TBD
MDA	MIPR	SMC-Northrup Grumman contract/ Los Angeles, CA	0	1,300	2Q	1,530	1/3Q	CONT.	2,830	TBD
MDA	MIPR	SMC-Raytheon Contract/ Los Angeles, CA	0	1,100	3Q	1,300	3Q	CONT.	2,400	TBD
MDA		JNIC (SPC)/ Schriever AFB, CO	0	620	2/3Q	700	2Q	CONT.	1,320	TBD
MDA	MIPR	NASIC/ Wright Patterson, OH	0	446	2/4Q	550	2/3Q	CONT.	996	TBD
Current Intelligence/Intelligence, Surveillance & Reconnaissance (ISR) Support										
MDA	SS/CPAF	PRA/ San Diego, CA	0	1,000	2/3Q	1,000	1/3Q	CONT.	2,000	TBD
MDA	Various	TBD	0	500	1/3Q	500	1/3Q	CONT.	1,000	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Forces & Capabilities Assessment Element										
MDA	Various	TBD	0	0		400	1/2Q	CONT.	400	TBD
Subtotal Support Costs			0	12,566		14,423		0	26989	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Management										
Govt Personnel		SMDC/ Huntsville, AL	0	275	1/4Q	290	1/4Q	CONT.	565	TBD
Support Contracts	C/FFP	BAH/ McLean, VA	0	2,776	1/4Q	2,850	2Q	CONT.	5,626	TBD
Support Contract	SS/CPAF	BAH/ McLean, VA	0	600	2Q	0		TBD	600	TBD
Support Contract	C/FFP	TBD/ TBD	0	2,000	2/3Q	2,740	1/2Q	CONT.	4,740	TBD
Support Contract	FFP	Northrup Grumman/ Huntsville, AL	0	200	1/3Q	200	1/2Q	CONT.	400	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support Contract	CPAF	CSC/ VA	0	124	1/3Q	0		CONT.	124	TBD
Support Contract	MIPR	SMC (Aerospace)/ Los Angeles, CA	0	600	1Q	620		CONT.	1,220	TBD
Subtotal Management Services			0	6,575		6,700		0	13275	
Remarks										
Project Total Cost			0	19,141		21,123			40,264	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004															
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core																						
Fiscal Year	2003				2004				2005				2006				2007				2008				2009							
	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				
Production Requirements																																
Missile & Space Intel Ctr - approx 6 per QTR					▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Nat'l Air & Space Intel Ctr - approx 6 per QTR					▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Nat'l Ground Intel Ctr - approx 3 per QTR					▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Studies & Analyses																																
Scenario Dev (e.g., Campaigns & Vignettes)					▲																											▲
Wargaming Support					▲																											▲
Defended Area Visualization Tool and Upgrades						▲				▲				▲				▲				▲				▲						
Current Intelligence																																
Intelligence Briefings					▲																											▲
Intelligence Digests					▲																											▲
Intelligence Summaries and Readbooks					▲																											▲
Other																																
Intelligence Assessments					▲																											▲
Update and Maintain Foreign Missile Knowledge Base					▲																											▲

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RD&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Requirements							
Missile & Space Intel Ctr - approx 6 per QTR		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Nat'l Air & Space Intel Ctr - approx 6 per QTR		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Nat'l Ground Intel Ctr - approx 3 per QTR		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Studies & Analyses							
Scenario Dev (e.g., Campaigns & Vignettes)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Wargaming Support		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Defended Area Visualization Tool and Upgrades		2Q	2Q	2Q	2Q	2Q	2Q
Current Intelligence							
Intelligence Briefings		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence Digests		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence Summaries and Readbooks		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Other							
Intelligence Assessments		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update and Maintain Foreign Missile Knowledge Base		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0203 Joint Warfighter Support	0	242	0	0	0	0	0												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: In FY 2002 and FY 2003, this Project was funded under PE 0603880C (BMD System), Project 1055.</i></p> <p><i>Starting FY 2005, this project is captured under PE 0603889C (BMD Products) Projects, 0703, 0803 and 0903.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The missile defense program focuses on the development of a single, integrated, layered Ballistic Missile Defense System (BMDS). Factors critical to deploying an effective BMDS include an understanding by joint warfighters of missile defense technologies and capabilities; the development and incorporation by joint warfighters of an Integrated Missile Defense (IMD) Concept of Operations (CONOPS) and other human interface factors into evolutionary designs of the BMDS; providing comprehensive and timely Integrated Logistic Support to the BMDS, including training and sustainment of hardware/software equipment; and coordinating rapid and efficient delivery and fielding of the elements of the BMDS and its subsequent block enhancements to the Combatant Commanders (CoComs) for actual operational employment against threat ballistic missiles.</p> <p>The Deputy for Force Structure Integration and Deployment (TR) works with the CoComs, Services and Joint Staff, international Allies and Friends to achieve these missions, and the Joint Warfighter Support Program (JWSP) is its key integrating mechanism. By using a comprehensive series of interactive seminars, tabletops, wargames, and exercises, the JWSP ensures that warfighter operational perspectives and concerns are reflected in the development of BMDS capabilities and that areas of improvement in the BMDS are identified for action. This program also supports planning for emergency deployments, experiments, System Integrated Tests, and Hardware in the Loop Tests requiring enhanced use of JNIC to support operational concept development. This program further provides funds to support MDA participation in the Joint Air and Missile Defense (JTAMD) process; coordinated development of the BMDS integrated architecture; pro-active planning for the efficient integration of the BMDS into coherent offensive-defensive warfighting capabilities; and other integrating functions, including working with foreign military forces and emerging international BMDS partners.</p> <p>The JWSP also ensures that the CoComs are provided with a BMDS that is supported logistically by establishing overarching logistics policies and practices. The program facilitates transition and transfer of BMD capabilities to the Services, as directed; develops an above-element training program that educates and trains staffs and senior decision makers about BMDS capabilities; and develops and operates the MDA Operations Center (MOC) as an enabler for rapid technical support to the Combatant Commands.</p> <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Government Personnel</td> <td></td> <td align="center">242</td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>In FY 2004 funds was reprogrammed to PE 0603890C Project 0101 consolidated salary account.</p>									FY 2003	FY 2004	FY 2005	Government Personnel		242		RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Government Personnel		242																	
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<u>D. Acquisition Strategy</u> 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. TR will accomplish this through development and vetting of Operational Concepts through JTAMDO, the Combatant Commanders and the Services utilizing seminars, workshops, table tops, wargames and exercises, which also support Military Utility Assessment.		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government Personnel										
		MDA/ Arlington VA		242	2Q				242	
Subtotal Management Services										
Remarks										
Project Total Cost										
			0	242		0			242	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 2006							
Core			1Q-4Q	1Q-4Q	1Q-4Q		

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0103 Producibility & Manufacturing Technology	0	38,821	33,219	29,658	37,676	41,037	43,952
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: In FY 2002 and FY 2003, this Project was funded under PE 0603880C (BMD System).</i>							
<u>A. Mission Description and Budget Item Justification</u>							
<p>Producibility and Manufacturing Technology (MP) is integral to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the implementation of two-year capability blocks. An essential component of strong systems engineering practices, MP provides common, integrated programs across the BMDS Elements to ensure mature industrial manufacturing capabilities are available to the Blocks through risk reduction, cost reduction/avoidance, and performance enhancement. MP furthers efforts in commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts. MP provides crosscutting BMDS manufacturing risk assessments, industrial capability assessments, and near term producibility enhancements. Manufacturing risk assessments are accomplished through Engineering and Manufacturing Risk Level (EMRL) Assessments, the MP systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes for BMDS and the Elements that insert into the BMDS Risk Management Process. Industrial Capability Assessments (ICAs) are accomplished broadly across the BMDS Industrial Base where trades are performed to assess and analyze the original equipment manufactures (OEMs), supplier base, and others that produce end items for the BMDS. Near Term Producibility Improvements are accomplished through the MP Key Investment Area (KIA) Structure: Power Systems, Radiation Hardening (RAD HARD), Manufacturing Processes and Advanced Materials, Electro-Optics/Infrared (EO/IR), Lasers and Ladar, Radar and RF, Propulsion, Signal Processing and Adaptive Computing, Composite Materials and Structure, and Software. In FY05 there is a significant increase in resources applied to the RAD HARD Program. This increase is a result of BMDS near-term capability improvements desired for the Block 06 BMDS and is part of the overall funding profile for the RAD HARD Electronics Program.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Power Systems		1,000	1,500				
RDT&E Articles (Quantity)							
<p>The Power Systems Key Investment Area objective is to provide alternative higher energy density power sources for BMDS systems that are more producible, reliable, and predictable. This includes advanced but available thermal power sources for interceptors, as well as other advanced primaries for KVs. Higher density secondary (rechargeable) power sources for STSS and possibly the High Altitude Airship (HAA), and advanced but available solar array technology that can be hardened against natural and enhanced radiation environments.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Battery Manufacturing Improvements: <ul style="list-style-type: none"> -- Processes - lithium oxyhalide battery manufacturing layout improvements -- Modeling - assist in developing high fidelity battery design and performance models and manufacturing process models that will enable the optimization of MDA batteries -- Risk Mitigation and Evaluation - lithium oxyhalide battery feasibility study and representative prototype demonstration as an alternate approach to current battery baselined for THAAD and GBI <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue FY04 initiatives in Battery Manufacturing Improvements - Initiate efforts in Solar Cells, Fuel Cells, and High Capacity Storage Devices 							

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
	FY 2003	FY 2004	FY 2005
Radiation Hardening		10,500	13,000
RDT&E Articles (Quantity)			
<p>The Radiation Hardening Key Investment Area objective is to provide an integrated strategy to increase the availability of affordable Radiation Hardened (RH) and Radiation Tolerant (RT) devices for MDA application. Efforts include: support of programs at established foundries for critical devices being developed under the Radiation Hardening Oversight Council (RHOC), support programs at specified commercial foundries that utilize special Hardness by Design (HBD) rules to enhance radiation hardness with commercial manufacturing processes and practices, enhanced circuit modeling and simulation capabilities to better predict radiation hardness levels, developing a catalog of RH and RT devices available to MDA system designers, and exploring alternate hardening techniques.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Cataloging of industry capabilities - Radiation Hardened Electronics: <ul style="list-style-type: none"> -- Non-Volatile Memory - Chalcogenide RAM (C-RAM) and 1 Mb EEPROM -- Field Programmable Gate Array (FPGA) -- A/D Read Out Integrated Circuit (ROIC) Converter -- Hardened Solar Array <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue FY04 initiatives in Radiation Hardened Electronics - Initiate efforts in Electro-Optical Sensors to include optical filters and coatings and signal processors 			
	FY 2003	FY 2004	FY 2005
Manufacturing Processes and Advanced Materials		7,192	800
RDT&E Articles (Quantity)			
<p>The Manufacturing Processes and Advanced Materials Key Investment Area objective is to identify manufacturing processes, practices, and advanced materials that serve both short-term and long-term MDA requirements. Efforts to accomplish this include: reducing unit cost for major subsystems in MDA systems, exploiting commercial practices to reduce capitalization costs, reducing timelines for long lead items through rapid prototyping of items with audit trail to demonstrated manufacturing heritage, eliminating hazardous or difficult to obtain materials that may add to cost and schedule, introducing metrics such as Engineering and Manufacturing Readiness Levels (EMRLs) to assure technologies are ready for insertion in MDA systems, and providing prime contractors and major subcontractors with support to adopt best practices and lean manufacturing to enhance productivity.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Manufacturing Processes: <ul style="list-style-type: none"> -- Engineering Manufacturing Readiness Levels (EMRLs) -- Lean Manufacturing processes - Advanced Materials: 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<ul style="list-style-type: none"> -- Removing hazardous materials -- Weight reduction, performance improvements -- Insulating materials <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue FY04 initiatives in Manufacturing Processes and Advanced Materials - Initiate efforts in Commercial Off-The-Shelf (COTS)/Parts Obsolescence, Technology Refresh, Tin Whiskers, and Supply Chain as they impact the BMDS 			
	FY 2003	FY 2004	FY 2005
Electro-Optics/Infrared (EO/IR)		7,600	3,300
RDT&E Articles (Quantity)			
<p>The Electro-Optics/Infrared (EO/IR) Key Investment Area objective is to implement producibility and reliability programs to assure availability of Radiation Hardened (RH) and Radiation Tolerant (RT) IR and visible Focal Plane Arrays (FPAs), readouts, cryocoolers and optics to meet the diverse requirements of BMDS systems for missile and satellite environments.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Advanced Very Long Wavelength Infrared (VLWIR) Detectors, VLWIR FPA, and STSS FPA - Two-Color FPA - establish manufacturing technology to lower cost, enhance availability of two-color long wavelength IRFPAs with increased discrimination capability for insertion into AEGIS BMD and MKV - Visible Hybrid - support satellite missions by developing for STSS visible or Near IR sensors for sunlit targets and star trackers - Passive Sensor Mirror Development - Hybrid Stirling/ Pulse Tube Cryocooler - design and fabricate high efficiency, high capacity protoflight cryocooler and flight electronics for multistage sensor and optics cooling built to STSS requirements <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Continue FY04 initiatives in VLWIR Detectors, VLWIR FPA, STSS FPA, Two-Color FPA, Visible Hybrid, Passive Sensor Mirror Development, and Hybrid Stirling/Pulse Tube Cryocooler - Initiate efforts in Optical Filters and Coatings 			
	FY 2003	FY 2004	FY 2005
Lasers & LADAR		3,100	1,400
RDT&E Articles (Quantity)			
<p>The Lasers Key Investment Area objective is to demonstrate producible and available systems to meet MDA capability improvements for interceptors, airborne and space platforms. Efforts will provide modular approaches and architectures with different power levels to meet the range and sensitivity requirements of each venue. Support of critical subsystem developments to avoid production and cost obstacles to Laser technology insertion will also be performed.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
FY 2004 PROGRAM:			
- Pump-Phased Laser Diode			
FY 2005 PLANNED PROGRAM:			
- Initiate High Powered Laser efforts			
- Initiate an Angle-Angle Range LADAR Program			
	FY 2003	FY 2004	FY 2005
Radar & RF		1,800	2,500
RDT&E Articles (Quantity)			
The Radar & RF Key Investment Area objective is to provide subsystem improvements to enhance BMDS radar performance and sensitivity for emerging threats. Efforts to accomplish this will include: demonstrating producibility and reliability of high-power amplifiers, introducing producible materials and technologies to enhance thermal management, improving manufacturability of T/R Modules and TRIMMs for cost and schedule, introducing Open System approaches and architecture to prevent parts obsolescence and stimulate competition at the subsystem level, and introducing composite materials to reduce antenna weight and improve transportability.			
FY 2004 PROGRAM:			
- High Temperature Electronic Devices - Silicon Carbide (SiC) Microwave Monolithic Integrated Circuits (MMIC) and High Voltage Gallium Arsenide (GaAs) producibility enhancements			
- Packaging Technology - technical evaluation of available packaging technologies for phased array radar system T/R modules			
- Wide Band Gap RF Devices - test methodologies to achieve high reliability and repeatable components for military systems in evaluation of candidate devices for insertion into MDA systems			
FY 2005 PLANNED PROGRAM:			
- Continue FY04 initiatives in High Temperature Electronic Devices, Packaging Technologies for T/R Modules, and Wide Band Gap RF Devices			
- Initiate efforts in T/R Modules and Line Arrays			
	FY 2003	FY 2004	FY 2005
Propulsion		3,400	3,000
RDT&E Articles (Quantity)			
The Propulsion Key Investment Area objective is to provide affordable, reliable propulsion systems/subsystems for the BMDS Elements. Efforts to achieve this objective will include: introducing innovative high-temperature materials to replace refractory metals reducing cost, weight and manufacturing time; implementing lean manufacturing and quality control to recapture cost and schedule for affected BMDS Elements; and executing programs to address scalability in propulsion systems addressing endurance, erosion resistance and improved manufacturing processes.			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - TDACS (Throttling Divert & Attitude Control System) - advance technology for a solid propellant DACS utilizing energy management schemes and a proportional throttling pintle design. Fabricate flight-weight components for system and subsystem tests, which will demonstrate operability and scalability of the design. - Material Characterization - will address reliability for various high temperature materials to establish well defined materials properties, which are required to ensure satisfactory design margins for high system reliability from the beginning of the design process <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - TDACS - continue FY04 efforts to further proportional Pintle DACS for insertion into BMDS - Material Characterization - continue efforts to improve understanding of C-SiC/Composites characteristics during high temperature operation - Axial Propulsion - explore producibility enhancements and identify insertion candidates for Solid Rocket Motor (SRM) manufacturing improvements that benefit BMDS Elements 			
	FY 2003	FY 2004	FY 2005
Signal Processing & Adaptive Computing		0	2,500
RDT&E Articles (Quantity)			
<p>The Signal Processing & Adaptive Computing Key Investment Area objective is to implement very high throughput computational hardware and novel architectures that provide order-of-magnitude increases in image and signal processing capability, with current generation proven semiconductor and optical devices.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Funding in this project is not programmed until FY05 <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Develop and assess the producibility of wideband processor technology to support a capability of instantaneous processing to 1 GHz 			
	FY 2003	FY 2004	FY 2005
Composite Materials & Structures		0	1,200
RDT&E Articles (Quantity)			
<p>The Composite Materials & Structures Key Investment Area objective is to replace exotic material such as Beryllium and Lithium Aluminum alloys with polymer matrix composites (PMCs) and metal matrix composites (MMCs) that exhibit equivalent strength and stiffness while being more easily producible at a lower cost. Program also aims to provide manufacturing processes, similar to those in commercial industry, that allow rapid prototyping and limited production without long lead times for: Interceptor and KV structures, Radar and EO Seekers, and missile canisters and launchers.</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Funding in this project is not programmed until FY05 <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Composite Sunshade - develop a replacement for the baseline Beryllium sensor sunshade for EKV using a low-density composite material that meets structural, dynamic, and permeability requirements for insertion into the GMD EKV - Next Generation Composite Canisters (NGCC) - develop and demonstrate common manufacturing processes for missile canisters across multiple MDA systems to reduce cost and weight and improve operational capabilities - Integrated Heatshield Thermal Analysis - provide government-run thermal characterization, analysis, and testing of competing integral heatshield designs and materials for insertion into THAAD 			
	FY 2003	FY 2004	FY 2005
Software		0	252
RDT&E Articles (Quantity)			
<p>The Software Key Investment Area objective is to provide tools and techniques for generating software that is more producible, reliable, and able to be maintained in a predictable and affordable manner.</p> <p>FY 2004 PROGRAM:</p> <ul style="list-style-type: none"> - Funding in this project is not programmed until FY05 <p>FY 2005 PLANNED PROGRAM:</p> <ul style="list-style-type: none"> - Provide object-oriented C++, commercial software, and software standards where appropriate - Use of innovative techniques for converting and integrating legacy software, including ADA - Developing techniques for generating software in a structured environment to reduce the overall software burden for system integrators 			
	FY 2003	FY 2004	FY 2005
SETA Contract Support		3,460	2,743
RDT&E Articles (Quantity)			
<ul style="list-style-type: none"> - Staff augmentation, engineering, program management, and administrative support 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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	FY 2003	FY 2004	FY 2005
Government Salaries		769	1,024
RDT&E Articles (Quantity)			

- Program strategy, leadership, planning, programming, and execution of MP initiatives

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603890C Ballistic Missile Defense System Core				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

D. Acquisition Strategy

Producibility and Manufacturing Technology adheres to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. It leverages existing industry and government efforts to include the missile defense elements. This is accomplished by assessing baseline systems, identifying high-risk areas and performing analyses to recommend to the Director what the proper course of action is to improve quality and reliability.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Power Systems										
	MIPR	NSWC/ Crane, IN		900	1Q	1,350	1Q	CONT.	2,250	TBD
Radiation Hardening										
		AFRL/ Kirtland, NM		3,250	1Q	4,500	1Q	CONT.	7,750	TBD
	CPFF	Fibertek/ Herndon, VA		1,200	1Q	1,500	1Q	CONT.	2,700	TBD
		SMDC/ Huntsville, AL		2,150	1Q	3,000	1Q	CONT.	5,150	TBD
	MIPR	Various		2,850	2Q	2,700	2Q	CONT.	5,550	TBD
Manufacturing Processes and Advanced Materials										
SMDC	CPFF	Vanguard/CA		2,500	1Q	400	1Q	CONT.	2,900	TBD
NSWC	CPFF	Northrup Grumman/CA		1,000	1Q	50	1Q	CONT.	1,050	TBD
Man Proc & Adv. Materials	MIPR	REDCOM/AL		1,000	2Q	50	2Q	CONT.	1,050	TBD
Man Proc & Adv. Materials	MIPR	Various		1,973	2Q	220	2Q	CONT.	2,193	TBD
Electro-Optics/Infrared (EO/IR)										
EO/IR		AFRL/ Kirtland, NM		4,590	2Q	2,250	2Q	CONT.	6,840	TBD
ONR	CPFF	Electro-optics Center/ Kittaning, PA		1,350	2Q	720	2Q	CONT.	2,070	TBD
NAVAIR	CPFF	Essex Corp/ Columbia, MD		900	2Q				900	
Lasers & LADAR										
ONR	CPFF	Electro-Optics Center/ Kittaning, PA		2,790	2Q	1,260	2Q	CONT.	4,050	TBD
Radar & RF										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ONR		CREE; Triquint/NC; TX		1,470	1Q	2,000	1Q	CONT.	3,470	TBD
Radar & RF		NRL/ Washington, DC		150	1Q	250	1Q	CONT.	400	TBD
Propulsion										
SMDC	CPFF	Aerojet/ Sacramento, CA		2,510	2Q	2,100	2Q	CONT.	4,610	TBD
Propulsion	MIPR	NSWCCD/MD		375	2Q	400	2Q	CONT.	775	
Propulsion	MIPR	NAWCWD/CA		175	2Q	200	2Q	CONT.	375	
Signal Processing & Adaptive Computing										
	Various	Various				2,250	2Q	CONT.	2,250	TBD
Composite Materials & Structures										
	Various	Various				1,080	2Q	CONT.	1,080	TBD
Software										
	Various	Various				227	2Q	CONT.	227	TBD
Subtotal Product Development			0	31,133		26,507		0	57640	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Power Systems										
	MIPR	NSWC/ Crane, IN		100	2Q	150	2Q	CONT.	250	TBD
Radiation Hardening										
		AFRL/ Kirtland, NM		350	1Q	425	1Q	CONT.	775	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
	CPFF	Fibertek/ Herndon, VA		150	1Q	225	1Q	CONT.	375	TBD
		SMDC/ Huntsville, AL		240	1Q	300	1Q	CONT.	540	TBD
	MIPR	Various		310	2Q	350	2Q	CONT.	660	TBD
Manufacturing Processes and Advanced Materials										
SMDC	CPFF	Vanguard/CA		275	2Q	40	2Q	CONT.	315	TBD
NSWC	CPFF	Northrup Grumman/CA		115	2Q	10	2Q	CONT.	125	TBD
Man. Proc. & Adv. Materials	MIPR	REDCOM/AL		110	2Q	5	2Q	CONT.	115	TBD
Man. Proc. & Adv. Materials	MIPR	Various		219	2Q	25	2Q	CONT.	244	TBD
Electro-Optics/Infrared (EO/IR)										
EO/IR		AFRL/ Kirtland, NM		490	2Q	250	2Q	CONT.	740	TBD
ONR	CPFF	Electro-Optics Center/ Kittaning, PA		170	2Q	80	2Q	CONT.	250	TBD
NAVAIR	CPFF	Essex Corp/ Columbia, MD		100	2Q				100	
Lasers & LADAR										
ONR	CPFF	Electro-Optics Center/ Kittaning, PA		310	2Q	140	2Q	CONT.	450	TBD
Radar & RF										
ONR		CREE; Triquint/NC; TX		170	2Q	225	2Q	CONT.	395	TBD
Radar & RF		NRL/ Washington, DC		10	2Q	25	2Q	CONT.	35	TBD
Propulsion										
SMDC	CPFF	Aerojet/ Sacramento, CA		275	2Q	225	2Q	CONT.	500	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Propulsion	MIPR	NSWCCD/MD		40	2Q	45	2Q	CONT.	85	TBD
Propulsion	MIPR	NAWCWD/CA		25	2Q	30	2Q	CONT.	55	TBD
Signal Processing & Adaptive Computing										
	Various	Various				250	2Q	CONT.	250	TBD
Composite Materials & Structures										
	Various	Various				120	2Q	CONT.	120	TBD
Software										
	Various	Various				25	2Q	CONT.	25	TBD
SETA Contract Support										
	FFP	Andrulis/VA		2,250	2Q	1,783	2Q	CONT.	4,033	TBD
	FFP	SPARTA/VA		1,210	2Q	960	2Q	CONT.	2,170	TBD
Subtotal Support Costs			0	6,919		5,688		0	12607	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government Salaries										
Government Personnel		MDA/ VA		769	1Q	1,024	1Q	CONT.	1,793	TBD
Subtotal Management Services			0	769		1,024		0	1793	
Remarks										
Project Total Cost			0	38,821		33,219			72,040	
Remarks										

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MDA Exhibit R-4 Schedule Profile																	Date February 2004																			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core																							
Fiscal Year	2003				2004				2005				2006				2007				2008				2009											
	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								
Power Systems																																				
Battery Manufacturing Improvements												Δ																								
Solar & Fuel Cells, High Capacity Storage Devices																																				
Radiation Hardening																																				
Catalog																Δ																				
EO Sensors												Δ																								
RH Electronics												Δ				Δ																				
Manufacturing Processes and Advanced Materials																																				
Advanced Materials												Δ																								
COTS, Tech Refresh, Tin Whiskers, Supply Chain								Δ								Δ																				
Manufacturing Processes								Δ								Δ																				
EO/IR																																				
Advanced VLWIR								Δ																												
Hybrid Stirling/Cryocooler																																				
Optical Filters/Coatings																																				
Passive Sensor Mirror Development												Δ																								

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core															
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
EO/IR																												
Two Color FPA												Δ																
Visible Hybrid															Δ													
Lasers																												
High Power Lasers															Δ													
Pump Phased Diode										Δ																		
Radar & RF																												
High Voltage GaAs Producibility							Δ							Δ														
RF Device Reliability Test												Δ		Δ														
SiC MMIC Producibility Enhancement										Δ				Δ														
Propulsion																												
Axial Propulsion												Δ																
Material Characterization								Δ				Δ																
TDACS							Δ			Δ					Δ													
Signal Processing and Adaptive Computing																												
Wide Band Processor Tech												Δ																

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Power Systems							
Battery Manufacturing Improvements			1Q	2Q			
Solar & Fuel Cells, High Capacity Storage Devices				4Q			
Radiation Hardening							
Catalog				3Q			
EO Sensors			1Q	2Q			
RH Electronics		4Q	1Q,2Q				
Manufacturing Processes and Advanced Materials							
Advanced Materials			2Q				
COTS, Tech Refresh, Tin Whiskers, Supply Chain		2Q	2Q	2Q			
Manufacturing Processes		2Q	2Q	2Q			
EO/IR							
Advanced VLWIR		2Q					
Hybrid Stirling/Cryocooler				4Q			
Optical Filters/Coatings				4Q			
Passive Sensor Mirror Development			1Q				
Two Color FPA			4Q				
Visible Hybrid				4Q			
Lasers							
High Power Lasers				4Q			
Pump Phased Diode			3Q				
Radar & RF							
High Voltage GaAs Producibility		3Q		1Q			
RF Device Reliability Test			4Q	2Q			
SiC MMIC Producibility Enhancement			2Q	2Q			
Propulsion							
Axial Propulsion			4Q				
Material Characterization		4Q	4Q				
TDACS		3Q	2Q	3Q			
Signal Processing and Adaptive Computing							
Wide Band Processor Tech			4Q				

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Composite Materials and Structures							
Composite Sunshade				1Q			
Integrated Heat Shield Analysis				1Q			
Next Generation Composite Canisters				1Q			
Software							
Legacy (ADA)				4Q			
Standards			2Q	2Q			
Structured Development				4Q			

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	0	25,553	30,900	31,800	32,800	33,800	34,800												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: This Project was funded under PE 0603882C (Midcourse Defense Segment), Project 3050, in FY 2002. In FY 2003, this Project was funded under PE 0603880C (BMD System), Project 1050, and PE 0603882C (Midcourse Defense Segment), Project 3050.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>The Missile Defense Agency's (MDA) Countermeasures/Counter-Countermeasures (CM/CCM) Program assesses technical risks, identifies mitigation approaches, and integrates engineering changes to the baseline Ballistic Missile Defense System (BMDS) that improve its performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures.</p> <p>The CM/CCM Program determines the range of feasible engineering approaches an adversary could use to defeat or degrade the BMDS, and develops conceptual countermeasures to realize those approaches. The CM/CCM Program works in conjunction with Threat Systems Engineering to ensure consistency of these adversary capabilities with the MDA Adversary Capability Document. The CM/CCM Program brings together capabilities from across MDA; to include System, Element, and Component technical experts; to conduct integrated engineering assessments of BMDS performance against countermeasures and the technical risks posed by these countermeasures. High-risk areas in the BMDS are identified, and counter-countermeasure options are proposed to mitigate these risks. An independent team of senior experts, funded by the CM/CCM Program, reviews the adversary capabilities, BMDS performance analyses, risks, and counter-countermeasure proposals and provides their assessment to the MDA Director. CM/CCM Program assessments help to focus and prioritize MDA investments in counter-countermeasures that have a strong potential to mitigate the BMDS risks identified by the program.</p> <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Adversary Engineering</td> <td></td> <td align="center">7,300</td> <td align="center">7,500</td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>Adversary Engineering funds the engineering development of the adversary capabilities and countermeasure concepts for program risk assessment, and studies focused on specific topical areas related to countermeasures.</p> <p>FY 2004 PLANNED PROGRAM</p> <ul style="list-style-type: none"> - Characterize adversary countermeasures capabilities and phenomenology related to midcourse countermeasure design, deployment, and performance - Develop a detailed parametric description of adversary capabilities and conceptual countermeasures through the midcourse phase of flight - Deliver engineering designs for three conceptual midcourse countermeasure suites <p>FY 2005 PLANNED PROGRAM</p> <ul style="list-style-type: none"> - Continue characterization of adversary countermeasures capabilities and phenomenology related to countermeasure design, deployment, and performance - Update and continue development of detailed parametric descriptions of the adversary capability space and countermeasures - Deliver engineering designs for up to three conceptual countermeasure suites 									FY 2003	FY 2004	FY 2005	Adversary Engineering		7,300	7,500	RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Adversary Engineering		7,300	7,500																
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
	FY 2003	FY 2004	FY 2005
BMDS Risk Assessment		9,503	12,150
RDT&E Articles (Quantity)			
<p>BMDS Risk Assessment funds integrated performance and risk assessments of the BMDS against the adversary capability and conceptual countermeasures.</p> <p>FY 2004 PLANNED PROGRAM - Conduct a risk assessment of the BMDS performance against offensive ballistic missiles with countermeasure capabilities through the midcourse phase of flight</p> <p>FY 2005 PLANNED PROGRAM - Conduct risk assessments of BMDS performance against countermeasures</p>			
	FY 2003	FY 2004	FY 2005
Mitigation Concept Engineering		8,150	10,650
RDT&E Articles (Quantity)			
<p>Mitigation Concept Engineering funds identification and characterization of counter-countermeasure options to mitigate BMDS risks posed by these adversary capabilities and countermeasures, and the system-level engineering required to identify the BMDS baseline changes required to implement and integrate the options into the operational system baseline.</p> <p>FY 2004 PLANNED PROGRAM - Identify and characterize counter-countermeasures to mitigate BMDS risks posed by adversary ballistic missiles with countermeasures - Initiate and integrate support from Element Program Offices and Contractors into the CM/CCM Program assessment of BMDS capabilities against adversary midcourse countermeasures and the identification and characterization of counter-countermeasure initiatives - Conduct advanced study to determine the engineering changes to the baseline BMDS required to integrate a counter-countermeasure initiative that enhances the lethality of kill vehicles - Conduct advanced study to determine the engineering changes to the baseline BMDS required to improve integrated midcourse sensor target designation capabilities - Perform system engineering and integration to support a demonstration of an advanced discrimination initiative</p> <p>FY 2005 PLANNED PROGRAM - Continue to identify and characterize counter-countermeasures to mitigate BMDS risks posed by adversary ballistic missiles with countermeasures - Conduct advanced studies to determine the engineering changes to the baseline BMDS required to integrate counter-countermeasure initiatives proposed by the CM/CCM Program</p>			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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	FY 2003	FY 2004	FY 2005
Independent Assessment		600	600
RDT&E Articles (Quantity)			

Independent Assessment supports the operations of the analyses by the senior experts of the risk assessment and proposed mitigation approaches, and the assessment development.

FY 2004 PLANNED PROGRAM

- Conduct four reviews of CM/CCM Program adversary countermeasures, risk assessments, and proposed mitigation options
- Provide independent assessments of CM/CCM Program products to MDA Director

FY 2005 PLANNED PROGRAM

- Conduct reviews of CM/CCM Program adversary countermeasures, risk assessments, and proposed mitigation options
- Provide independent assessments of CM/CCM Program products to MDA Director

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603890C Ballistic Missile Defense System Core				

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

D. Acquisition Strategy

The execution of program activities is a collaborative effort of the Missile Defense National Team, involving subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), and System Engineering and Technical Assistance (SETA), and Industry. In addition extensive involvement by the major defense contractors responsible for the development of the BMDS, Elements, and major components is required. CCM initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems Deputate and BMDS Element Program Offices.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Adversary Engineering										
SETA Support	CPFF	SPARTA/ VA		857	2Q	860	2Q	CONT.	1,717	TBD
SETA Support	CPFF	CSC/ VA		118	2Q	120	2Q	CONT.	238	TBD
CM Design		Xontech/ NM		198	2Q	200	2Q	CONT.	398	TBD
Models and Signatures		Delta Research/ AL		125	2Q	125	2Q	CONT.	250	TBD
Intel Projections	Various	NAIC/MSIC/ Various		125	2Q	125	2Q	CONT.	250	TBD
Models and Simulations	MIPR	ARL/ NM		500	2Q	500	2Q	CONT.	1,000	TBD
Analysis Support	MIPR	Battelle/ OH		250	2Q	250	2Q	CONT.	500	TBD
Countermeasure Engineering and Analysis		Missile Defense Center/ VA		3,000	3Q	3,100	3Q	CONT.	6,100	TBD
BMDS Risk Assessment										
SETA Support	CPFF	CSC/ MA		470	2Q	550	2Q	CONT.	1,020	TBD
System Engineering & Integration	CPAF	Boeing/ VA		530	2Q	650	2Q	CONT.	1,180	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Assessment Support	Various	MDA Elements/ Various		7,293	2Q	9,550	2Q	CONT.	16,843	TBD
Mitigation Concept Engineering										
System Engineering and Integration	CPAF	Boeing/ VA		3,600	2Q	4,400	2Q	CONT.	8,000	TBD
Concept Development	Various	MDA Elements/ Various		4,550	2Q	6,250	2Q	CONT.	10,800	TBD
Independent Assessment										
Subtotal Support Costs			0	21,616		26,680		0	48296	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Adversary Engineering										
Lab Support		APL/ MD		234	2Q	250	2Q	CONT.	484	TBD
Lab Support	MIPR	IDA/ VA		575	2Q	600	2Q	CONT.	1,175	TBD
Lab Support	MIPR	CNA/ VA		163	2Q	170	2Q	CONT.	333	TBD
Lab Support	MIPR	MIT-LL/ MA		690	2Q	700	2Q	CONT.	1,390	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Lab Support	MIPR	Sandia / NM		465	2Q	500	2Q	CONT.	965	TBD
BMDS Risk Assessment										
Lab Support	MIPR	MIT-LL/ MA		690	2Q	750	2Q	CONT.	1,440	TBD
Lab Support		APL/ MD		520	2Q	650	2Q	CONT.	1,170	TBD
Independent Assessment										
Lab Support		IDA/ VA		600	2Q	600	2Q	CONT.	1,200	TBD
Subtotal Management Services			0	3,937		4,220		0	8157	
Remarks										
Project Total Cost			0	25,553		30,900			56,453	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Adversary Engineering																												
Deliver Countermeasure Concepts					▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲
Deliver Special Studies Report					▲				▲				▲				▲				▲				▲			
BMDS Risk Assessment																												
Develop Annual Study Plan												▲				▲				▲				▲				▲
Mitigation Concept Engineering																												
Incorporate CCM Options into System Evolution Plan							▲	▲			▲	▲			▲	▲			▲	▲			▲	▲			▲	▲

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Adversary Engineering							
Award Missile Defense Center Contract		2Q	2Q	2Q	2Q	2Q	2Q
Develop Countermeasure Concepts		1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q
Deliver Countermeasure Concepts		1Q,3Q,4Q	1Q,3Q,4Q	1Q,3Q,4Q	1Q,3Q,4Q	1Q,3Q,4Q	1Q,3Q,4Q
Conduct Special Studies		2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q
Deliver Special Studies Report		1Q	1Q	1Q	1Q	1Q	1Q
BMDS Risk Assessment							
Develop Annual Study Plan		4Q	4Q	4Q	4Q	4Q	4Q
Conduct Performance Assessments		1Q,2Q	1Q,2Q	1Q,2Q	1Q,2Q	1Q,2Q	1Q,2Q
Mitigation Concept Engineering							
Develop Counter-Countermeasure Options		2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q
Incorporate CCM Options into System Evolution Plan		3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q	3Q,4Q
Present Counter-Counter Options to MDA CCB		1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q
Independent Assessment							
Provide Independent Assessments to MDA		2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q
Review Blue Team CCM Concepts and Plans		1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004														
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core															
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009												
0202 Hercules Core	0	26,276	0	0	0	0	0												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: In FY 2005, Project 0202, Hercules Core, is moved to PE 0603889C, Ballistic Missile Defense Products, Projects 0802 and 0902, Project Hercules Blocks 06 and 08, respectively.</i></p> <p><u>A. Mission Description and Budget Item Justification</u> This Project covers the core elements of Project Hercules. The Hercules products are described in PE 060889C, Projects 0802 and 0902.</p> <p>Project Hercules is a national effort to develop robust detection, tracking, and discrimination algorithms to counter off nominal and evolving missile threats. Hercules is also developing a physics-based Decision Architecture that applies advanced decision theory to future BMD System command, control, and battle management (C2BM) concepts. In addition to a general program to develop algorithms useful against targets in all phases of flight, Hercules has specific projects to develop algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMD System element capabilities in Block 06, 08 and beyond and will provide these algorithms to the BMD System elements for insertion into their respective programs.</p> <p>Project Hercules Core activities include the collection and analysis of flight test data, systems engineering, the Hercules test bed infrastructure, and the development of models and simulations generalized for off nominal and evolving threats.</p> <p><u>B. Accomplishments/Planned Program</u></p> <table border="1"> <tr> <td></td> <td align="center">FY 2003</td> <td align="center">FY 2004</td> <td align="center">FY 2005</td> </tr> <tr> <td>Project Hercules</td> <td></td> <td align="center">26,276</td> <td></td> </tr> <tr> <td>RDT&E Articles (Quantity)</td> <td></td> <td></td> <td></td> </tr> </table> <p>1) Hercules successfully participated in the Red Dog countermeasure flight test campaign in FY03 and began the extensive analysis necessary to incorporate the results of the flight tests into countermeasure models and tracking and discrimination algorithms. Additional flight test support and post-flight data analysis are planned for most major MDA flight tests.</p> <p>2) System engineering is performed by Hercules to ensure algorithms addressing specific enemy missile threats or phases of flight can be integrated into overarching algorithm concepts or C2/BM concepts such as the Decision Architecture.</p> <p>3) Hercules completed successful live time testing of discrimination algorithms and elements of the Decision Architecture, an approach to applying advanced decision theory concepts to C2BMC. Hercules also completed several digital test program studies used to characterize the break points of algorithms developed within Hercules. The live time and digital testing infrastructure funded under the BMD Core PE is necessary to support risk reduction tests associated with transitioning Hercules technology into all BMD elements.</p> <p>4) Models and simulations have been and continue to be developed and upgraded within Hercules to expand the ability of Hercules to address the off-nominal and evolving missile threats. The boost, midcourse, and terminal phase algorithm development teams and the forward based sensor, decision architecture, and clutter mitigation teams all need advanced models and simulations to develop their algorithms.</p>									FY 2003	FY 2004	FY 2005	Project Hercules		26,276		RDT&E Articles (Quantity)			
	FY 2003	FY 2004	FY 2005																
Project Hercules		26,276																	
RDT&E Articles (Quantity)																			

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core				
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p><u>D. Acquisition Strategy</u></p> <p>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.</p> <p>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.</p> <p>Capabilities can be transitioned into future operational force structure by integrating the Hercules concepts into MDA elements. MDA element managers then coordinate with the Services and their acquisition community so they can plan, budget, and procure necessary hardware and software for operational deployed and sustained forces.</p>		

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
MIT/LL	CPFF	Hanscomb AFB		2,083	1Q			CONT.	2,083	CONT.
SEG		NSWC-Corona, CA		1,093	1Q			CONT.	1,093	CONT.
Northrup Grumman XonTech	CPFF	Van Nuys, CA		2,106	1Q			CONT.	2,106	CONT.
SMDC Hercules	Various	Various		1,359	1Q			CONT.	1,359	CONT.
MDA Hercules	Various	Various		6,020	1Q			CONT.	6,020	CONT.
AFRL - Eglin AFB	Various	Various		840	1Q			CONT.	840	CONT.
Subtotal Support Costs			0	13,501		0		0	13501	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
Northrup Grumman XonTech	CPFF	Van Nuys, CA		1,755	1Q			CONT.	1,755	CONT.
SMDC Hercules	Various	Various		1,420	1Q			CONT.	1,420	CONT.
MDA Hercules	Various	Various		710	1Q			CONT.	710	CONT.
AFRL-Eglin AFB	Various	Various		820	1Q			CONT.	820	CONT.
Subtotal Test and Evaluation			0	4,705		0		0	4705	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules										
CSC-SETA	FFP	Fairfax, VA		1,891	1Q			CONT.	1,891	CONT.
SPARTA-SETA	FFP	Arlington, VA		1,730	1Q			CONT.	1,730	CONT.
MDA Hercules	Various	Various		3,238	1Q			CONT.	3,238	CONT.
SMDC Hercules	Various	Various		1,211	1Q			CONT.	1,211	CONT.
Subtotal Management Services			0	8,070		0		0	8070	
Remarks										
Project Total Cost			0	26,276		0			26,276	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RD&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Hercules							
Program Review		1Q					

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0104 BMD Information Management Systems	0	31,006	62,835	58,592	72,336	77,070	84,108
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: In FY 2002 and FY 2003, Ballistic Missile Defense (BMD) Information Management Systems was an initiative under Project 1050, PE 0603880C (BMD System). In FY02, \$7 million of additional funds for the BMD Information Management Systems effort was provided in Project 3050, PE 0603882C (Midcourse Defense Segment). In FY03, an additional \$8.2 million was provided to support classified connectivity to the Ballistic Missile Defense System (BMDS) community facilitating information sharing to meet the aggressive Initial Defensive Operations (IDO) schedule for the BMDS.

Beginning in FY 2004, the BMD Information Management Systems Project is located in Project 0104 in PE 0603890C (Ballistic Missile Defense System Core).

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense (BMD) Information Management Systems Project 0104 integrates and supports every aspect of the BMD System (BMDS) by providing a secure and reliable Information Technology (IT) infrastructure and the Information Management/Information Technology (IM/IT) services necessary to enable the BMDS System elements and operators to collaborate and share information which is essential to accomplishing the complex integrated BMDS mission and achieving Initial Defensive Operations (IDO). This project is an essential and integral component of the BMDS Core Program Element (PE) because it funds the Agency's communications backbone and infrastructure that enables all the Projects in all the PEs to communicate in a safe, secure and affordable manner.

The mission of the CIO is to ensure that MDA IM/IT assets are administered, acquired, managed and operated in compliance with and meet the goals of existing statutes and DoD regulations, in particular the President's Management Agenda, the Clinger-Cohen Act, the E-Government Act of 2002, the Government Paperwork Elimination Act, and the Office of Management and Budget (OMB) requirements to align IT investments with the Federal Enterprise Architecture (FEA).

The BMD Information Management Systems project, executed by the Missile Defense Agency (MDA) Chief Information Office (CIO), consists of the following major initiatives: 1) Enterprise Architecture and Engineering, 2) Service IM/IT, 3) Public Key Infrastructure/Common Access Card (PKI/CAC) 4) Enterprise Communications Infrastructure 5) Enterprise IT Security, 6) Enterprise Information Management, 7) Data Centers, 8) Enterprise Plans and Policies, and 9) Virtual Data Centers (VDCs).

This 0104 Project includes vital initiatives such as the MDA Enterprise Communications Infrastructure that includes access to the classified Secret Internet Protocol Router Network (SIPRNET), Missile Defense Agency Network (MDANet), classified and unclassified Video Teleconferencing circuits and the Joint Worldwide Intelligence Connectivity System (JWICS). Connectivity to JWICS is essential to the MDA Intelligence project to obtain and provide intelligence data used to feed the Command, Control, Battle Management and Communication (C2BMC) project, the Hercules Project, the Countermeasures/Counter-Countermeasures (CM/CCM) project, and the Modeling & Simulation project.

This Project funds initiatives that support the MDA Systems Engineering and Integration (SE&I) mission for the BMDS System including:

- Information Assurance (IA) and Computer Network Defense (CND) management and Certification and Accreditation (C&A) support to the Ballistic Missile Defense System (BMDS) and all elements networks required for BMDS IDO;
- Establishing electronic business practices and processes that help achieve more effective, efficient and secure business and mission support activities throughout the MDA enterprise;
- Creating an IM/IT Enterprise Architecture to support information needs, solutions and standards for the business and mission support activities of the MDA;
- Creating an IM/IT Enterprise Architecture that allows both information sharing, electronic records management, financial management, and decision support using web-based technologies;
- Providing guidance, planning, oversight, and monitoring to enable the MDA enterprise with IM/IT capabilities to comply with statutes, regulations, directives, and policies;
- Establishing IM/IT policies, processes and infrastructure throughout the MDA enterprise that allows IM/IT operations to be performed in an efficient, secure, and effective manner.

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Enterprise Architecture and Engineering		5,582	7,540
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments were achieved under PE 0603880C, BMD System, Project 1050.</p> <p>Discussion: Enterprise Architecture and Engineering initiatives support the MDA and especially the Ballistic Missile Defense System (BMDS) Core projects by funding engineering support to design, develop and deploy the MDA Enterprise Architecture. The Enterprise Architecture will improve the management of and access to data, information and knowledge throughout the MDA. Development of the Enterprise Architecture will facilitate the information sharing needs for interoperability among the MDA elements and systems. It will improve the Information Management and Information Technology (IM/IT) infrastructure that facilitates and supports design, development, modeling and simulations, testing of BMDS components and the management and sharing of the critical BMD-related data.</p> <p>This initiative funds the development of an integrated MDA Enterprise Network with a single corporate identity; implementing reliable information storage that can maintain continuity and disaster recovery of operations; implementing information applications that support MDA business processes and E-government initiatives; implementing unclassified and classified enterprise portals to securely share information; and upgrading Video Teleconferencing Centers (VTCs) and Virtual Data Centers (VDCs) regional connectivity and capabilities. The DoD Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Framework is the model being used to develop an MDA Enterprise Information Architecture.</p> <p>This initiative will support expansion of bandwidth to the MDA's VTC and VDCs to improve reliability of systems currently in place, and establish additional VTC sites to efficiently and effectively increase the information sharing capability to support the BMDS IDO schedule.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Expanded MDANet to include Service Delivery Points (SDPs) and connectivity for SSTS, AEGIS - Established mda.smil.mil stand-up at the Joint National Integration Center (JNIC) in Colorado and at the Ground-based Midcourse Defense (GMD) in Huntsville, AL - Begin 14/7 monitoring of the Enterprise Network through the Network Operations Security Center. - Delivered classified enterprise services to the NCR - Initiated Disaster Recovery Program between the NCR and JNIC - Began conversion of the VDC into the MDA classified knowledge repository (MDA Classified Portal) <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Establish MDANet tail sites from SMDC to GMD Bradford Facility - Establish MDA enterprise services at ABL Edward AFB - Complete mda.smil.mil stand-up at locations servicing Space Tracking Surveillance System (SSTS), Airborne Laser (ABL), and National Capital Region (NCR) for existing user base. - Continue engineering planning for IDO classified connectivity. - Provide spiral 1 of the classified enterprise portal. - Expand secure connectivity to BMDS elements. - Implement Enterprise Disaster Recovery. - Enhance VTC capabilities - Sustain Network Operations and Security Center (NOSC) operations. 			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Migrate the MDA Enterprise Network layer from Asynchronous Transfer Mode (ATM) to Internet Protocol (IP) in support of the DoD Global Information Grid (GIG) architecture plan. - Expand secure connectivity to BMDS elements. - Define IM/IT requirements and support planning, documentation, and testing of the BMDS to achieve Interim Approval to Operate (IATO) - Continue implementation of Enterprise Disaster Recovery. - Sustain Network Operations and Security Center (NOSC) operations. 			
	FY 2003	FY 2004	FY 2005
Service IM/IT		4,032	5,347
RDT&E Articles (Quantity)			
<p>Discussion: This initiative provides funds to three MDA Executing Agents for IM/IT costs incurred to support MDA BMDS-related efforts. The Executing Agents include 1) U.S. Army Space and Missile Defense Command (SMDC), 2) the U.S. Army Program Executive Office, Air, Space and Missile Defense (PEO ASMD), and 3) U.S. Air Force BMD Program Executive Office (USAF PEO).</p> <p>Funds provided to SMDC supports continuing operations and maintenance of their communications and computing infrastructure. This includes costs for operation and maintenance of a Corporate Information Management System (CIMS). CIMS is a system that has several modules that support a variety of business and administrative functions including: procurement, personnel, logistics, financial and contractual. This initiative supports the communications costs for LAN's/WAN's, and database management activities that support MDA IM/IT initiatives as well as network services including help desk, user support and software maintenance.</p> <p>SMDC also receives MDA funds to update and maintain the Program Resource Internet Database Environment (PRIDE), a database management tool used by MDA and the executing agents that supports mission operations. The PRIDE application provides MDA users access to planning, budgeting and administrative data.</p> <p>Funds provided to PEO ASMD support computing infrastructure costs for providing automated services for gathering, storing, sharing and retrieving technical and management information to provide oversight of multiple research contracts and business activities in support of MDA-related projects.</p> <p>Funds provided to the USAF PEO are used to fund support costs for logistics and database management efforts and communications costs for LANs/WAN's that are MDA related.</p>			
	FY 2003	FY 2004	FY 2005
Public Key Infrastructure/Common Access Card (PKI/CAC)		1,860	3,770
RDT&E Articles (Quantity)			
<p>Description: This initiative is a newly reported initiative for FY 2005. The funds in this initiative provides resources that protect information to safeguard data as it is being created, used, modified, stored, moved, and destroyed to ensure that all information has a level of trust commensurate with mission needs. This includes Public Key Infrastructure (enterprise-wide service that supports digital certificates and signatures and other public key-based security mechanisms for DoD functional domain programs); its associated manpower, HW/SW encryption services, and operational and support efforts. Public Key Enabling (PKE) includes the same needed to make applications capable of employing digital certificates and signatures. Also includes all Common Access Card (CAC)/Smart Card-related Information Assurance (IA) resources.</p>			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>FY 2004 Planned Program: - Accelerate the development and use of Public Key Infrastructure (PKI) services and enable applications to support a broad range of security services.</p> <p>FY 2005 Planned Program: - Continue implementation of PKI/CAC for Enterprise applications.</p>			
	FY 2003	FY 2004	FY 2005
MDA Enterprise Communications Infrastructure		3,721	8,709
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments were achieved under PE 0603880C, BMD System, Project 1050.</p> <p>Discussion: The MDA Enterprise Communications Infrastructure initiative consists of leased communications costs for classified and unclassified voice and data circuits including T1, fractional T1, OC3, and video teleconferencing capabilities and circuit access to the Joint Worldwide Intelligence Communications System (JWICS). Circuits and associated services are provided by the Defense Information Systems Agency (DISA) as well as the Defense Research and Engineering Network (DREN). Circuit access includes government and industry locations to enable and support information processing and information sharing of BMD-related data, globally, throughout the MDA Enterprise. Additionally, services are provided by other providers to monitor and manage network usage to ensure optimal reliability as well as ensuring network security.</p> <p>FY 2003 Accomplishments - Funded MDA Enterprise leased communications and services for existing circuits provided by DISA and DREN. - Funded maintenance agreements on MDA Enterprise network equipment. - Expanded MDANet connectivity to include AEGIS, GMD, ABL, and STSS.</p> <p>FY 2004 Planned Program - Upgrade obsolete networking equipment to improve system reliability and standardize equipment across the MDA Enterprise. - Continue procurement and installation of Service Delivery Points (SDPs) that provide Wide Area Network (WAN) connectivity to MDA regional locations in accordance with the Enterprise Architecture design. - Fund MDA Enterprise leased communications and services for existing circuits provided by DISA and DREN. - Continue maintenance agreements on MDA Enterprise network equipment.</p> <p>FY 2005 Planned Program - Upgrade obsolete networking equipment to improve system reliability and standardize equipment across the MDA Enterprise. - Fund MDA Enterprise leased communications for existing circuits provided by DISA and DREN. - Continue maintenance agreements on MDA Enterprise network equipment.</p>			

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	FY 2003	FY 2004	FY 2005
Enterprise Information Assurance		2,753	5,014
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments were achieved under PE 0603880C, BMD System, Project 1050.</p> <p>Mission Description: Beginning in FY04, the Enterprise IT Security initiative was established to track IT security costs separately. The Information Assurance (IA)/Computer Network Defense (CND) Program objective is to implement Department security requirements across the Agency. This initiative is a vital aspect of the Ballistic Missile Defense System (BMDS) and the MDA Enterprise; it provides funding for Information Security and Assurance, Computer Network Defense (CND), Certification and Accreditation (C&A) activities within the Missile Defense Agency (MDA) infrastructure and network security operations centers, training and system security upgrades. This initiative will also integrate Protection Common Tools in MDA systems that manage, protect, detect, and react to system vulnerabilities, threats, reconfigurations, and reconstitutions. Risk management tools will be used to develop protection capabilities, enabling the war fighter to distribute complete and unaltered information and maintain a dynamic, continuous synchronous operational force.</p> <p>MDA IA activities will ensure that intended protection, detection and reaction processes are outlined and implemented to protect and defend information and information systems by providing for availability, integrity, authentication, confidentiality and non-repudiation for the mission, test and administrative environments across MDA. This initiative provides system security engineering, integration of available Information Security (INFOSEC) products, development, and testing to ensure that command, control, communications, computing and intelligence (C4I) systems are protected against malicious or accidental attacks. This entails architecture studies, system integration testing and C&A processes. Project efforts will also assess, procure and integrate hardware and software that provides protection for IT infrastructure.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Completed Information Assurance Vulnerability Assessment (IAVA) Compliance. - Completed Ports and Protocols Compliance. <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Support IA Network Assessment to verify robustness of network tools. - Develop initial capability to enhance training of Information Assurance Officer (IAO) and Information Assurance Manager (IAM) to recognize and respond to IA attacks. - Continue IA support to the BMDS elements. - Operate MDA Enterprise NOSC. - Evaluate IA tools. - Select and assess advanced COTS/GOTS IA tools for use in the Agency. - Complete C&A efforts to achieve ATO on classified/unclassified LANs/WAN's. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Continue to support C&A efforts and implementation and testing of IA controls to ensure that mission, test and administrative networks, systems and applications are implemented with appropriate IT security measures and procedures. - Continue IAVA compliance. - Continue to operate and maintain the NOSC. - Begin a CND approach for the BMDS Block 6. - Perform IA network assessments on BMDS and Enterprise architectures. 			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
	FY 2003	FY 2004	FY 2005
Enterprise Information Management		1,240	2,513
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments were achieved under PE 0603880C, BMD System, Project 1050.</p> <p>Discussion: The Enterprise Information Management initiative consists of projects that enable an integrated BMDS including: implementation of enterprise information applications which are used to collect, analyze, display and share data. Examples include the MD Enterprise Portal, E-Management System (EMS), an integrated master schedule tool, a personnel tracking system, a standard procurement system, and tools to assist the BMDS University. This initiative facilitates connecting the MDA elements and operators providing vital information sharing across the MDA community across the country which is essential to accomplishing the complex mission of the BMDS and supporting IDO. Examples of vital information sharing includes intelligence-related information provided to the countermeasures/counter-countermeasures (CM/CCM), the Command, Control, Battle Management and Communication (C2BMC); and the Modeling and Simulation (M&S) projects who use the data to collaborate on threat scenarios and design threat system countermeasures as well as kill vehicle discrimination algorithms.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Conducted product evaluation and selected E-Management solution - Procured pilot hardware and software licenses for unclassified E- Management System (EMS) project <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Implement the EMS Phase 1 pilot program. - Begin implementation of an unclassified and classified web-based Enterprise Portal. - Begin implementation of application programs that support information sharing and collaboration, decision support tools, financial management, and automated task management. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Implement EMS Phase 2 program. - Continue implementation of application programs that support information sharing and collaboration, decision support tools, financial management, and automated task management. - Continue implementation of an unclassified and classified web-based Enterprise Portal. 			
	FY 2003	FY 2004	FY 2005
Data Centers		6,512	
RDT&E Articles (Quantity)			
<p>Discussion: The Data Center Program consists of Scientific and Technical Data Centers that facilitate acquiring, storing and distributing relevant BMD mission-related data in a secure manner throughout the MDA Enterprise. They provide access to the investment of years of vital MD data such as: architecture/systems engineering data; war gaming, modeling and simulations, science and technology data centers and flight test data, program data including financial, contracts administrative and personnel, and MD historical data. This data is linked to the MDA community through use of a classified portal using decision support tools and collaboration tools. Examples of vital information sharing includes intelligence-related information provided to the countermeasures/counter-countermeasures (CM/CCM), the Command, Control, Battle Management and Communication (C2BMC); and the Modeling and Simulation (M&S) projects who use the data to collaborate on threat scenarios and design threat system countermeasures as well as kill vehicle discrimination algorithms.</p>			

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603890C Ballistic Missile Defense System Core	
<p>Four Executing Agents receive funding for Data Centers and VDC operations. They include the Missile Defense Data Center (MDDC), a component of the US Army Space and Missile Defense Command (USASMDC), the Advanced Missile Signature Center (AMSC), a component of the US Air Force, the Joint National Integration Center Ballistic Missile Defense System Integration Data Center (BMDS IDC) and the Naval Warfare Assessment Station in Corona, California receives funding from this initiative.</p> <p>Each Data Center processes data relevant to their field of expertise. For example, NAWC developed an interface to existing data from the AEGIS Combat System, Ship Self Defense, STANDARD Missile, Fleet Readiness Assessment, Joint and Navy Warfare Exercises and BMD program. The NAWC role includes exercise planning, determining data collection requirements, maintaining data requirements definition, and collecting and assessing data.</p> <p>Beginning in FY05, funding for the core Data Centers will be transferred to Project 0204 of PE 0603882C. Funding provided to the BMDS IDC will transition to the Virtual Data Center indicative within this project 0104.</p> <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Fund the Core Data Centers operation and maintenance. - Begin implementation of Disaster Recovery Capability (Phase 1) at the BMDS IDC. <p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Transition indicative to project 0204 in PE 0603882C. 			
	FY 2003	FY 2004	FY 2005
Virtual Data Centers		2,170	3,770
RDT&E Articles (Quantity)			
<p>Description: The Virtual Data Center (VDC) indicative includes the operations, maintenance and support costs to provide a classified portal access capability to Ballistic Missile Defense-related test, experiment, modeling and simulation data that is processed, cataloged and made available to the MDA community by the Data Centers. The VDC initiative allows for information sharing among the MDA community as well as access to the subject matter experts and desktop video teleconferencing capabilities as well as forums and bulletin boards.</p> <p>Four Executing Agents receive funding for VDC operations. They include the Missile Defense Data Center (MDDC), a component of the US Army Space and Missile Defense Command (USASMDC), the Advanced Missile Signature Center (AMSC), a component of the US Air Force, Naval Warfare Assessment Station, and the Joint National Integration Center Ballistic Missile Defense System Integration Data Center (BMDS IDC). The BMDS IDC will transition to the VDC initiative beginning in FY05.</p> <p>The BMD Information Resource Center (BIRC), a resource and research service library, will begin conversion to a virtual library in FY04. The BIRC funding was located in Enterprise Information Management in FY02 and FY03. Beginning in FY04, the BIRC transitioned to a virtual library and the funding was moved to this initiative.</p> <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Fund the VDC Program operations and maintenance. - Begin implementation of Disaster Recovery Capability (Phase 1) at the BMDS IDC. - Begin the conversion of the BMD Information Resource Center (BIRC) to Virtual Data Center capability 			

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<p>FY 2005 Planned Program:</p> <ul style="list-style-type: none"> - Fund the VDC Program operations and maintenance - Continue implementation of Disaster Recovery Capability (Phase II) at the BMDS IDC 			
	FY 2003	FY 2004	FY 2005
Enterprise Plans & Policies		3,136	11,238
RDT&E Articles (Quantity)			
<p>FY 2003 Accomplishments were achieved under PE 0603880C, BMD System, Project 1050.</p> <p>Discussion: This initiative provides for development and implementation of Agency-wide IM/IT policies, guidelines and management processes to ensure efficient and effective oversight of information resources in accordance with various Federal and statutory policies including the Clinger-Cohen Act, the Federal Information Security Management Act (FISMA), the Government Paperwork Elimination Act (GPEA), and the Office of Management and Budget (OMB) IT budget reporting in accordance with the DoD Financial Management Regulations.</p> <p>This initiative also includes performance measurement assessment and management of the Enterprise IM/IT architecture and engineering contract, the Systems Engineering and Technical Advisor (SETA) CIO staff support provided by Engineering Management Concepts with Milestone Group as a subcontractor and a Federally Funded Research and Development Contractor (FFRDC) Technical Advisory effort performed by The MITRE Corporation. Specific efforts include implementation of the CIO vision, mission and goals, development of the agency Strategic IM/IT Plan, IM/IT budget formulation and execution in accordance with the Planning, Programming, Budgeting and Execution (PPBE) process, development of IM/IT policies and procedures, Capital Planning and Investment Control (CPIC) process development and implementation, business case development, review and approval, CIO participation on IT-related boards and working groups, and Section 508 and Enterprise Software Initiative (ESI) compliance reporting within and outside the Agency.</p> <p>FY 2003 Accomplishments:</p> <ul style="list-style-type: none"> - Submitted the Office and Management and Budget Exhibits 53 and 300, Selected Capital Investment Business Case analysis - Published the MDA IM/IT Overarching Guideline and the Information Assurance (IA) Guideline - Submitted the Government Paperwork Elimination Act (GPEA) Report for FY03 - Submitted the Federal Information Security Management Act (FISMA) Report for FY03 - Executed the CPIC process for FY04/05 - Managed FY03 Planning, Programming, Budgeting and Execution <p>FY 2004 Planned Program:</p> <ul style="list-style-type: none"> - Prepare budget submissions in accordance with the MDA Capital Planning and Investment Control (CPIC) process using OMB guidelines. - Draft, coordinate, publish, and maintain policies, guidelines and processes in accordance with applicable legislation, OMB, OSD and DoD guidance. - Prepare status reports and report metrics/progress of the MDA IM/IT Enterprise to OMB, OSD, and DoD. - Coordinate all MDA/IO personnel management actions to include establishment of positions and hiring. - Provide assistance in preparing for MDA Corporate Boards and CIO Advisory Committee (CAC) meetings. 			

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FY 2005 Planned Program:

- Prepare budget submissions in accordance with the MDA Capital Planning and Investment Control (CPIC) process using OMB guidelines for IM/IT technologies.
- Draft, coordinate, publish, and maintain policies, guidelines and processes in accordance with applicable legislation, OMB, OSD and DoD guidance.
- Prepare status reports and report metrics/progress of the MDA IM/IT Enterprise to OMB, OSD, and DoD CIO.
- Coordinate all MDA/IO personnel management actions to include establishment of positions and hiring.
- Provide assistance in preparing for MDA Corporate Boards and CIO Advisory Committee (CAC) meetings.

	FY 2003	FY 2004	FY 2005
Computing & Network Management Services			14,934
RDT&E Articles (Quantity)			

Description: Computing Infrastructure costs include IT infrastructure costs to include cabling, desktop PCs, printers, and other peripherals to accommodate agency growth of government and contractors. Also included are the additional operations and support costs to support the additional staff at several separate locations. Costs also include IT equipment such as projectors, video teleconferencing equipment and other IT equipment needed to equip conference rooms with the capability to conduct meeting and accommodate information sharing across the MDA enterprise at many geographical locations.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing

D. Acquisition Strategy

The BMD Information Management Systems Project will ensure that IM/IT assets acquired incorporate the Federal and statutory policies such as the Clinger-Cohen Act, the Federal Information Security Management (FISMA), the Government Paperwork Elimination Act (GPEA), and the Office of Management and Budget (OMB) IT budget reporting in accordance with the DoD Financial Management Regulations.

FY 2004 activities will be focused on completing engineering and architectural plans, continuing development of the MDA Enterprise Network layer; implementing Phase I classified and unclassified of the Enterprise Portal and Phase 1 of the E-Management System (EMS), and the implementation of the PKI/CAC initiative for email support; certifying and accrediting BMDS systems and the MDA Enterprise Networks in accordance with information assurance (IA) requirements. These efforts will be a contributing factor in facilitating the efforts of the MDA to support the BMDS IDO schedule.

FY 2005 and beyond activities will be focused on completing Enterprise Network development, continued implementation of Information Sharing initiatives such as collaborative tools, PKI/CAC for applications, Phase 2 of the EMS, expanding the capability of Video Teleconferencing Center (VTC) and Virtual Data Center upgrades, and Phase II of the classified and unclassified enterprise portal.

MDA/IO uses contract support services to assist the CIO government staff with the implementation of the BMD Information Management Systems Project initiatives. MDA also uses Executing Agents to help accomplish the IM/IT mission. These Executing Agents operate under the cognizant authority of their individual Services (e.g. Army, Navy, and Air Force). Funds and initiatives provided to Executing Agents can be found in the Service IM/IT initiative and the Data Center initiative.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Enterprise Architecture and Engineering										
Ent Architecture & Engineering	MIPR	FEDSIM/SRA/ VA		2,121	1/2Q	1,810	1/2Q	CONT.	3,931	
Ent Architecture & Eng.	C/FFP	Bearing Point/ VA		112	1Q				112	
Ent Architecture & Engineering	C/CPAF	Northrop Grumman/ CO		3,293	2/3Q	5,353	2/3Q		8,646	
Service IM/IT										
Service IM/IT	C/CPAF	SMDC/SAIC/ AL		2,943	4Q	4,072	4Q		7,015	
Service IM/IT	C/CPAF	PEO ASMD/SAIC/ AL		887	4Q	1,244	4Q		2,131	
Service IM/IT	C/CPFF	USAF/SAIC/ CA		202	1/2Q	339	1/2Q		541	
Public Key Infrastructure/Common Access Card (PKI/CAC)										
PKI/CAC Support	MIPR	FEDSIM/SRA/ VA		1,860	1/2Q	3,770	1/2Q		5,630	
MDA Enterprise Communications Infrastructure										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Leased Comms	MIPR	DISA/ IL		1,823	1Q	3,431	1Q		5,254	
DREN circuits	MIPR	Army Rsch Lab/ MD		409	1Q	1,056	1Q		1,465	
Hub Site Support	MIPR	Army Rsch Lab/ MA		10	1Q	10	1Q		20	
Hub Site Support	MIPR	Army Research/ MD		23	1Q	23	1Q		46	
Vendor Maintenance	C/CPAF	Northrop Grumman/ CO		600	1/2Q	2,254	1/2Q		2,854	
VTC Maintenance & Support	SS/CPFF	SIGCOM/ VA		856	1/2Q	1,935	1/2Q		2,791	
Enterprise Information Assurance										
DITSCAP Support	MIPR	FEDSIM/ VA		1,265	1/2Q	2,488	1/2Q		3,753	
C&A Support	MIPR	NAWC/EMC/ CA		1,488	1/2Q	2,526	1/2Q		4,014	
Enterprise Information Management										
Acquisition Support	C/CPAF	Northrop Grumman/ CO		1,240	1/2Q	2,513	1/2Q		3,753	
Data Centers										
Data Center Support	C/CPAF	AMSC/ AL		1,758	1/3Q				1,758	
Data Center Support	C/CPAF	MDDC/SAIC/ AL		2,995	1/3Q				2,995	
Data Center Support	C/CPAF	BMDS IDC/ CO		456	1/3Q				456	

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Data Center Support	MIPR	NSWC/ CA		326	1/3Q				326	
Data Center Support	Various	MDA/ VA		977	1/2Q				977	
Virtual Data Centers										
VDC Support	C/CPAF	AMSC/ AL		369	1/3Q	641	1/3Q		1,010	
VDC Support	C/CPAF	MDDC/ AL		239	1/3Q	415	1/3Q		654	
VDC Support	MIPR	NSWC/ CA		87	1/2Q	151	1/2Q		238	
VDC Support	C/CPAF	DRC/ VA		477	2Q	603	2Q		1,080	
VDC Support	C/CPAF	Northrop Grumman/ CO		998	2Q	1,960	2Q		2,958	
Enterprise Plans & Policies										
SETA Support	SS/MIPR	NAWC / EMC/ Milestone Group/ VA		2,171	1Q	3,318	1Q	CONT.	5,489	
FFRDC Support	SS/FFRDC	MITRE/ VA		62	1/3Q	402	1/3Q	CONT.	464	
CIO Program Mgmt	Various	MDA/ VA		866	1/2Q	7,386	1/2Q		8,252	
CIO Misc	Various	MDA/ VA		93	1/2Q	201	1/2Q		294	
Computing & Network Management Services										
Computing & Network Services	C/CPFF	Zen Tech/ VA			1/3Q	9,707	1/3Q	CONT.	9,707	TBD

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Acquisition Support	MIPR	GOVWORKS/ VA			1/3Q	5,227	1/3Q	CONT.	5,227	TBD
Subtotal Support Costs			0	31,006		62,835		0	93841	
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation										
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			0	31,006		62,835			93,841	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Enterprise Architecture and Engineering																												
Implemented Web Exchange with Remote Access		▲	▲																									
Document 'As-Is' Enterprise Architecture	▲						▲																					
Sustain Network Operations					▲																							▲
Design 'To-Be' Enterprise Architecture							▲		▲																			
Establish MDA Domain	▲										▲																	
Implement Network Management Capability			▲																									▲
Enhance VTC Capability	▲																											▲
Implement Enterprise Disaster Recovery	▲																											▲
Expand secure connectivity to BMDS elements					▲																							▲
Enterprise Information Assurance																												
Complete IAVA Compliance		▲				▲				▲				▲				▲				▲				▲		
Complete Implementation Plan for PKI/CAC			▲	▲																								
Implement PKI/CAC Capability			▲																									▲
Complete certification requirement for IDO							▲																					
Obtain ATO on MDA networks						▲		▲																				

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MDA Exhibit R-4 Schedule Profile																	Date February 2004											
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core																		
Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
Enterprise Information Assurance																												
Complete BMDS Block Accreditation								☆								☆								☆				
Complete MDA Network Accreditation				▲				△				△				△				△				△				△
Document BMDS Security Architecture				▲				△				△				△				△				△				△
Enterprise Information Management																												
Engineered proxy solution for NCR portal				▲																								
Implement Enterprise Portal Capability			△		△							△																
Implement Enterprise E-Management System			△		△																							△
Implement Corporate Business Applications					△				△				△				△				△				△			△
Implement Collaborative Tools									△				△				△				△				△			△
Data Center																												
Sustain and Operate Virtual Data Centers					△				△				△				△				△				△			△
Continue to operate Data Centers					▲																							
Enterprise Plans, Policies, and Analyses																												
Manage the CPIC process					△				△				△				△				△				△			△
Submit Budget Exhibit 53 IT Resources						△	△			△	△			△	△			△	△			△	△			△		
Submit FISMA Report				▲				△				△				△				△				△				△

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Enterprise Architecture and Engineering							
Completed Ports and Protocols Compliance	3Q						
Implemented Web Exchange with Remote Access	2Q-3Q						
Document 'As-Is' Enterprise Architecture	1Q-4Q	1Q-2Q					
Sustain Network Operations		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Design 'To-Be' Enterprise Architecture		2Q-4Q					
Establish MDA Domain	1Q-4Q	1Q-4Q	1Q				
Implement Network Management Capability	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Develop Network Op Security Ctr (NOSC)	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Enhance VTC Capability	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Implement Enterprise Disaster Recovery	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Expand secure connectivity to BMDS elements		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
Enterprise Information Assurance							
Complete IAVA Compliance	2Q	2Q	2Q	2Q	2Q	2Q	2Q
Complete Implementation Plan for PKI/CAC	4Q	1Q					
Implement PKI/CAC Capability	4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Complete certification requirement for IDO		3Q					
Obtain ATO on MDA networks		2Q,4Q					
Complete BMDS Block Accreditation		4Q		4Q		4Q	
Complete MDA Network Accreditation	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Document BMDS Security Architecture	4Q	4Q	4Q	4Q	4Q	4Q	4Q
MDA Ent. Communications Infrastructure							
Continue migration of circuits to DISA	1Q	4Q		1Q,2Q			
Execute Service Level Agreements for hub services	1Q	1Q	1Q	1Q	1Q	1Q	1Q
Fund DISA/DREN for comms and services	1Q	1Q	1Q	1Q	1Q	1Q	1Q
Enterprise Information Management							
Engineered proxy solution for NCR portal	3Q						
Implemented MDA Lessons Learned on Portal	3Q						
Implement Enterprise Portal Capability	2Q-4Q	1Q-4Q	1Q-2Q				
Implement Enterprise E-Management System	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Initiate Disaster Recovery between NCR and JNIC	4Q	1Q-4Q					

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Implement an E-Management System at GMD		1Q-4Q	1Q				
Implement the BMDS University applications		1Q-4Q	1Q				
Implement a Personnel Tracking System		1Q-4Q	1Q				
Implement a System Development Schedule		1Q-4Q	1Q				
Implement Corporate Business Applications		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement Collaborative Tools			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Data Center							
Convert the BIRC to a Virtual Library		1Q-2Q					
Sustain and Operate Virtual Data Centers		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Continue to operate Data Centers		1Q,4Q					
Process BMD data for MDA Information Sharing	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q
Enterprise Plans, Policies, and Analyses							
Manage the CPIC process		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update Info Security Approach w/evolving DoD Stnds		1Q-4Q	1Q-4Q				
Update MD Enterprise IM/IT Program Plan		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Complete DOJ Section 58 Survey		1Q	1Q	1Q	1Q	1Q	1Q
Complete Qtrly update of MDA IT Registry	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Coordinate FISMA review, inspection, audit	2Q	2Q	2Q	2Q	2Q	2Q	2Q
Manage the SW Asset Management Program		1Q					4Q
Submit Budget Exhibit 53 IT Resources		2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q	2Q
Submit FISMA Report	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Submit GPEA Report	3Q	3Q	3Q	3Q	3Q	3Q	3Q

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program-Wide Support	0	8,400	8,946	10,182	10,136	10,771	11,212
RDT&E Articles Qty	0	0	0	0	0	0	0
<i>Note: Transferred in from the Ballistic Missile Defense System Segment Program Element 0603880C.</i>							
<u>A. Mission Description and Budget Item Justification</u>							
This project covers personnel and related support costs, statutory and fiscal requirements.							
Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.							
Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.							
Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.							
Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Program-Wide Support efforts.							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Civilian Salaries and Support	0	8,400	8,946				
RDT&E Articles (Quantity)							
Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.							
Management Support: Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.							

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)						R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			

Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	864,216	0	0	0	0	0	0
2011 Theater High Altitude Area Defense (THAAD)	814,843	0	0	0	0	0	0
2090 Program-Wide Support	49,373	0	0	0	0	0	0

Note: Project 2011 THAAD is transferred to the BMD Terminal Defense Segment Program Element (PE) 0603881C for FY 2004 and out.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The MDA develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters as quickly as possible while allowing for rapid insertion of emerging technology in the most affordable manner. These capability blocks will subsequently build on and be integrated with the predecessor blocks. Block capabilities are built by using complete elements and their individual components to integrate a single BMDS and provide layered defense against ballistic missiles during all flight phases, Boost, Midcourse, and Terminal, using multiple basing modes and phenomenology.

As an integral part of the total BMDS, this THAAD Program Element (PE) funds the THAAD developmental efforts for FY 2003 as part of the overall Terminal Defense Segment (TDS). The overall Terminal Defense Segment elements and activities include Theater High Altitude Area Defense (THAAD) and the Israeli Arrow Program. The Patriot Advanced Capability (PAC) 3 element is also a part of the Terminal Defense mission, however, it is funded by the U.S. Army beginning in 2004. The BMDS elements in Terminal Defense pursue development and selective upgrades of missile defense capabilities that engage short to medium-range ballistic missiles in the late mid-course and terminal phase of their trajectory.

The Terminal Defense Elements provide the final opportunity to engage short and medium-range ballistic missiles not engaged or destroyed in the boost or mid-course phases of trajectory. Upon direction of the Ballistic Missile Defense System (BMDS) Command & Control/Battle Management Communications (C2BMC) and in conjunction with the fielded Patriot System, the THAAD, AEGIS, and Patriot Systems, provide the only capability to defend deployed U.S. forces from short to medium-range ballistic missiles, and protect broadly dispersed assets and population centers or selected U.S. sites (Homeland Defense) from short to medium-range ballistic missile attacks. The THAAD system contributes in its ability to engage and negate ballistic missiles and asymmetric threats in both the late mid-course (exo-atmospheric engagements) and terminal phase (endo-atmospheric engagements) of their trajectory and adds significant capability to the BMDS as the threat missiles transition from the mid-course to terminal phases. Integrated with the AEGIS and PATRIOT Systems, the rapidly deployable THAAD system improves the BMDS overall effectiveness by engaging missiles as they transition from exo- to endo- atmospheric flight where the reentry vehicles are more vulnerable. The flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in C2BMC and Systems Engineering & Integration will guide the integration of TDS into the BMD System and the BMDS C2BMC architecture.

Block 2004: Block 2004 represents the design and development of a significant, fundamental THAAD capability against short to medium-range Ballistic Missiles (BMs) and asymmetric threats and demonstration of exo and high endo intercept capability against a limited target set. The rapidly deployable Block 2004 THAAD element will have the following block objectives: - Test Missile with Exo and High Endo Algorithms; -Radar with Initial Discrimination Capability; - C2BMC with Limited TADIL-J and Defense Design Planner. Flight testing for Block 2004 begins in 1st quarter, FY 2005, and continues through 1st quarter, FY 2006 with a total of 5 flight tests.

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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Program-Wide Support under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	888,323	0	0
Current President's Budget (FY 2005 PB)	864,216	0	0
Total Adjustments	-24,107	0	0
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	0	0
Reprogrammings	-2,270	0	0
SBIR/STTR Transfer	-21,837	0	0

FY 2003 - In the submission for FY 2003 the R-1 did not match the R-2 which resulted in a net zero sum transfer between Ground Based Midcourse, PE 0603882C, and the THAAD PE 0604861C. The -\$2510 corrects the documentation to match the OSD database.

Project 2011 THAAD is transferred to the BMD Terminal Defense Segment Program Element (PE) 0603881C for FY 2004 and out.

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2011 Theater High Altitude Area Defense (THAAD)	814,843	0	0	0	0	0	0
RDT&E Articles Qty	7	0	0	0	0	0	0

Note: The THAAD program was restructured from Project 2260 in FY 2001 to Project 2011 starting with FY 2002. Project 2011 THAAD transferred to the BMD Terminal Defense Segment Program Element 0603881C for FY 2004 and out.

A. Mission Description and Budget Item Justification

The Theater High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS) and will greatly enhance the BMDS capability. The Terminal Defense Elements provide the final opportunity to engage short to medium-range ballistic missiles not engaged or destroyed in the boost or mid-course phase of trajectory. THAAD contributes to the Missile Defense Agency's Terminal Defense System by being rapidly deployable and in its ability to engage and negate ballistic missiles and asymmetric threats in both the later mid-course and terminal phases of their trajectory. THAAD's ability to defend against short to medium-range ballistic missiles and asymmetric threats protects U.S. and allied armed forces, broadly dispersed assets and population centers or selected U.S. sites (Homeland Defense) against ballistic missile attacks. THAAD, in conjunction with the fielded Patriot System, provides the Missile Defense Agency's (MDA) layered Terminal Defense System that further reduces leakage of ballistic missiles.

In FY 2003, \$10.500 million of THAAD funds were used to support the Forward Deployable Radar and TPS-X Radar. Enhancement to the Forward Deployable Radar can be used to add new capability to the THAAD Radar since they are similar radars. Likewise, any algorithm developments using the TPS-X Test Bed can be used on the THAAD Radar.

The RDT&E Articles:

FY 2003 (Delivery Schedule) includes 2 GTU missiles and 5 EDU missiles for a total of 7 RDT&E Articles.

FY 2003 (Buy Schedule): 3 full-up missiles, 2 EDU missiles, 1 Launcher w/Missile Round Pallet (MRP), 2 THAAD MRP (Reload), and 16 Missile mass Property Simulators for a total of 24 RDT&E Articles.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Block 2004 (Prime Contract)	725,605		
RDT&E Articles (Quantity)	7		

FY 2003 Accomplishments:

Continued Missile, Radar C2BMC, and Launcher hardware and software development. Completed Missile and Launcher detailed designs and initiate fabrication of Launcher and Missile ground test units. Supported range activation and operation activities at White Sands Missile Range (WSMR) and Pacific Missile Range Facility (PMRF). Continued fabrication of Launcher and Battle Manager test beds. Completed assembly of Radar antenna #1 and begin calibration and testing.

The RDT&E Articles: FY 2003 (Delivery Schedule) includes 2 GTU missiles and 5 EDU missiles for a total of 7 RDT&E Articles. FY 2003 (Buy Schedule): 3 full-up missiles, 2 EDU missiles, 1 Launcher w/Missile Round Pallet (MRP), 2 THAAD MRP (Reload), and 16 Missile mass Property Simulators for a total of 24 RDT&E Articles.

Project: 2011 Theater High Altitude Area Defense (THAAD)

MDA Exhibit R-2A (PE 0604861C)

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)		R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	
FY 2004 Planned Program: Not applicable (see PE 0603881C).			
FY 2005 Planned Program: Not applicable (see PE 0603881C).			
	FY 2003	FY 2004	FY 2005
Test Planning and Lethality	6,881		
RDT&E Articles (Quantity)			
FY 2003 Accomplishments: Test Planning - Continued integration into WSMR and PMRF. Lethality - Continued lethality simulation code development and validation. Initiated lethality test article development. FY 2004 Planned Program: Not applicable (see PE 0603881C). FY 2005 Planned Program: Not applicable (see PE 0603881C).			
	FY 2003	FY 2004	FY 2005
Support Costs	71,857		
RDT&E Articles (Quantity)			
FY 2003 Accomplishments: Support Contracts - Continued software independent verification and validation. Continued development of simulation-over-live-driver. Performed technical analysis support. Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Continued THAAD range operations at WSMR and BTB at PMRF and continued system Hardware-In-The-Loop development efforts. Continued C2BMC interoperability and simulation efforts. Continued threat vulnerability assessment. Maintained integrated logistics and product assurance efforts. Performed quality and manufacturing technology tasks. In-house support - Funded government salaries, benefits, travel, and training (includes MITRE). FY 2004 Planned Program: Not applicable (see PE 0603881C). FY 2005 Planned Program: Not applicable (see PE 0603881C).			

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MDA Exhibit R-2A RDT&E Project Justification		Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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	FY 2003	FY 2004	FY 2005
Forward Deployable and TPS-X Radar (Sensors Contract)	10,500		
RDT&E Articles (Quantity)			

FY 2003 Accomplishment:

Awarded letter contract for X-Band Radar to meet Block 2006 delivery.

Identified and initiated TPS-X Radar improvements for use as a test asset for advanced algorithm validation and risk reduction on C2BMC interface.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD				
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

D. Acquisition Strategy

THAAD will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The THAAD Block 2004 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 103-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 50% complete. Current development activities supporting THAAD Block 2004 can be used to provide an initial capability to protect deployed U. S. and allied forces, or selected U.S. sites.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2004 (Prime Contract)										
THAAD ADV COMPONENT DEV & PROT	SS/CPAF	LMSSC/ VARIOUS	725,605						725,605	
Forward Deployable and TPS-X Radar (Sensors Contract)										
Forward Deployable and TPS-X RADAR	C/CPAF	RAYTHEON/ BOSTON, MA	7,500						7,500	
Subtotal Product Development			733,105	0		0		0	733105	
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support Costs										
Support Contractor	C/CPAF	Various/ Various	30,058					CONT.	30,058	
In-House Support	Various	Various/ Various	23,573					CONT.	23,573	
Other Government Agencies	MIPR	Various/ Various	14,973					CONT.	14,973	
Subtotal Support Costs			68,604	0		0		0	68604	
Remarks										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD					
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test Planning and Lethality										
Test Planning	MIPR	WSMR/ PMRF	5,076					CONT.	5,076	
Lethality	MIPR	SMDC	1,805					CONT.	1,805	
Subtotal Test and Evaluation			6,881	0		0		0	6881	
Remarks										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2004 (Prime Contract)										
MIT/LL	MIPR	Lexington, MA	140						140	
MITRE	MIPR	Ft. Monmouth, NJ	3,113						3,113	
MIT/LL (SN RQMT.)	MIPR	Lexington, MA	3,000						3,000	
Subtotal Management Services			6,253	0		0		0	6253	
Remarks										
Project Total Cost			814,843	0		0			814,843	
Remarks										

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MDA Exhibit R-4 Schedule Profile	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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Fiscal Year	2003				2004				2005				2006				2007				2008				2009			
	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
PDR																												
C2BM Hardware Design/Development/Integration	▶————▶																											
Missile Hardware Design/Development/Integ	▶————▶																											
C2BM Software Design/Development	▶————▶																											
Missile Software Design/Development	▶————▶																											
Launcher Hardware Design/Development/Integ	▶————▶																											
Radar Software Design/Development	▶————▶																											
Launcher Software Design/Development	▶————▶																											

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, DW/05 System Development and Demonstration (SDD)				R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
PDR							
C2BM Hardware Design/Development/Integration	1Q-4Q						
Missile Hardware Design/Development/Integ	1Q-4Q						
C2BM Software Design/Development	1Q-4Q						
Missile Software Design/Development	1Q-4Q						
Launcher Hardware Design/Development/Integ	1Q-4Q						
Radar Software Design/Development	1Q-4Q						
Launcher Software Design/Development	1Q-4Q						

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2090 Program-Wide Support	49,373	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program-wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source. This structure often makes it difficult to level-fund all PE's while maintaining an orderly fiscal structure for executing the individual Programs-Wide Support efforts.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
Civilian Salaries and Support	49,373		
RDT&E Articles (Quantity)			

Personnel:

Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with program-wide support.

Management Support:

Funds the contract SETA support costs directly associated with Missile Defense Agency program-wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO-AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)						R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD			
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Fiscal Requirements:

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs foreign currency fluctuations, and charges from cancelled appropriations.

IM/IT Operations:

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are moved to the Management Headquarters Program Element in Fiscal Years 2004-2009

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604861C Theater High-Altitude Area Defense System - TMD - EMD				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	138,922	0	0	0	0	0	0
2014 PAC-3	138,922	0	0	0	0	0	0

Note: In accordance with the FY 2004 Appropriations Conference PAC-3 was transferred to the Army in PE 0604865A.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

The MDA develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters as quickly as possible while allowing for rapid insertion of emerging technology in the most affordable manner. These capability blocks will subsequently build on and be integrated with the predecessor blocks. Block capabilities are built by using complete elements and their individual components to integrate a single BMDS and provide layered defense against ballistic missiles during all flight phases, Boost, Midcourse, and Terminal, using multiple basing modes and phenomenology.

As a part of the total BMDS, this PATRIOT PAC-3 Program Element (PE) funds the PAC-3 developmental efforts for FY 2003 as part of the overall Terminal Defense System (TDS). The US Army is programming funding for PAC-3 beginning in FY 2004 in PE 0604865A. The overall Terminal Defense System elements and activities include Theater High Altitude Area Defense (THAAD), and the Israeli Arrow Program. The BMDS elements in Terminal Defense pursue development and selective upgrades of missile defense capabilities that engage short to medium-range ballistic missiles in the terminal phase of their trajectory, when the missile or warhead reenters the atmosphere, and short-range ballistic missiles that operate only in the atmosphere.

The Terminal Defense Elements provide the final opportunity to engage short and medium range ballistic missiles not engaged or destroyed in the boost or midcourse phases of trajectory. Upon direction of the Ballistic Missile Defense System (BMDS) Command, Control, and Battle Management Communications (C2BMC) and in conjunction with the fielded Patriot System, the THAAD and Patriot Systems, provide the only capability to defend deployed US forces from short and medium-range ballistic missiles, and protect broadly dispersed assets and population centers or selected U.S. sites (Homeland Defense) from short to medium-range ballistic missile attacks. The flow down of BMD System capability specifications resulting from Missile Defense national team efforts in C2BMC and Systems Engineering & Integration will guide the BMDS C2BMC architecture, the BMD Test Bed, and the integration of PAC-3 into the BMD System in accordance with the PAC-3 Transfer and MEADS Realignment Plan from the Missile Defense Agency to the United States Army.

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD
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B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	176,155	0	0
Current President's Budget (FY 2005 PB)	138,922	0	0
Total Adjustments	-37,233	0	0
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	0	0
Reprogrammings	-33,499	0	0
SBIR/STTR Transfer	-3,734	0	0

FY 2003 PAC-3 funding of \$23.0 million was reprogrammed to the PAC-3 procurement account in support of the PAC-3 missile acceleration for Operation Iraqi Freedom.

FY 2003 PAC-3 funding was also reduced by \$10.5 million for OSD/MDA adjustments.

FY 2003 PAC-3 funding was also reduced by \$3.7 million for SBIR/STTR.

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)				R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2014 PAC-3	138,922	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: The US Army is programming funding for PAC-3 beginning in FY 2004 in PE 0604865A. MDA will continue to program funding for BMDS interoperability.</i></p> <p><u>A. Mission Description and Budget Item Justification</u> PATRIOT is a mobile, field Army and Corps air defense system, using guided missiles to simultaneously engage and destroy multiple target types at varying ranges. The PATRIOT Advanced Capability 3 (PAC-3) Upgrade Program is the latest evolution of the phased materiel change improvement program to PATRIOT. PATRIOT PAC-3 provides the first fieldable missile defense capability in the near term to defeat both conventional and weapons of mass destruction warheads as a terminal defense element of the ballistic missile defense system. The materiel changes will provide improved performance across the spectrum for system and threat intercept performance. In addition to modernization of the ground support equipment, funding resources a new missile design providing a high velocity, hit to kill, surface to air missile with the range, accuracy, and lethality necessary to effectively intercept and destroy tactical missiles with Nuclear Biological Chemical/High Explosive (NBC/HE) warheads and air breathing threats. The full capability will provide defense against short to medium range theater ballistic missiles (TBMs), cruise missiles (CMs), unmanned aerial vehicles (UAVs) and other air breathing threats as part of the Ballistic Missile Defense (BMD) systems, a multi-layered Theater Air and Missile Defense Architecture. Funds will ensure PAC-3 will remain interoperable in the BMDS. The Army requirement for PAC-3 supports the Current to Future transition path of the Transformation Campaign Plan (TCP).</p> <p>No RDT&E articles were required during FY 2003. The articles under test were previously funded, procured, and accepted.</p>							
<u>B. Accomplishments/Planned Program</u>							
	FY 2003	FY 2004	FY 2005				
Complete Operational Test & Evaluation		2,000					
RDT&E Articles (Quantity)							
Flight tests completed 3Q FY 2002 with regression tests conducted 4Q FY 2002.							
	FY 2003	FY 2004	FY 2005				
Continue PAC-3 Target and Test Support		15,560					
RDT&E Articles (Quantity)							
Target planning and support to the EMD and follow-on test programs.							

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)				R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD					
	FY 2003		FY 2004		FY 2005				
THAAD/PATRIOT Launcher	5,000								
RDT&E Articles (Quantity)									
Development efforts for THAAD launcher with PATRIOT interface.									
	FY 2003		FY 2004		FY 2005				
Evolutionary Development	64,489								
RDT&E Articles (Quantity)									
Development efforts for improvements to system capabilities.									
	FY 2003		FY 2004		FY 2005				
Block Test Program with LMMFC and Raytheon	51,873								
RDT&E Articles (Quantity)									
Follow-on Block test program.									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865A Patriot Advanced Capability (PAC)-3	0	174,475	64,749	21,614	29,656	20,000	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)	R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD
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	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE C49200 PATRIOT PAC-3	0	561,555	490,754	490,892	490,814	671,251	722,409	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

D. Acquisition Strategy

The PAC-3 will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The design objective of the PATRIOT system is to provide an element of an integrated Ballistic Missile Defense system capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The PATRIOT program consists of two interrelated acquisition programs - the PATRIOT PAC-3 Growth Program and the PAC-3 Missile Program. Growth Program modifications are grouped into configurations which are scheduled to be fielded in the same time frame. However, incremental increases in performance are determined for each configuration in order to provide benchmarks for configuration testing and for the development of user doctrine and tactics. The PAC-3 Missile Program focuses on developing, fabricating and testing the high velocity, hit to kill, surface to air missile and associated ground support equipment to provide essential increases in battle space, accuracy, lethality and firepower to counter and destroy evolving air defense threats. Funds will ensure PAC-3 will remain interoperable in the BMDS. The missile performance is demonstrated through a series of flight tests and modeling and simulation activities. PAC-3 Block Evolutionary development efforts will further improve system interoperability, commonality, and capabilities against emerging and reactive threats.

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
THAAD/PATRIOT Launcher										
T/P Launcher	CPFF	LMSSC/ CA	12,916						12,916	
RSC Integration	CPFF	Raytheon/MA	2,000						2,000	
Evolutionary Development										
LMMFC ED	CPAF	LMMFC/ Dallas	54,199						54,199	
Raytheon ED	CPAF	Raytheon/ MA	31,859						31,859	
RDEC ED	CPFF	MRDEC/ AL	4,368						4,368	
Block Test Program with LMMFC and Raytheon										
LMMFC FOT	CPAF	LMMFC, Dallas	20,225						20,225	
RSC Integration	CPAF	Raytheon, MA	12,464						12,464	
RDEC FOT	MIPR	MRDEC, AL	3,358						3,358	
Subtotal Product Development			141,389	0		0		0	141389	
Remarks										
FY 2003 efforts included: - Continuing development of common launcher electronics for a THAAD/PATRIOT launcher. - Development and integration of cost reduction initiatives (Advanced Master Frequency Generator, Multiband Radio Frequency Data Link, and Advance Inertial Measurement Unit) for implementation. - Test planning, preparation, and analysis of the Congressionally directed Ripple Fire Test and future test efforts.										

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MDA Exhibit R-3 RDT&E Project Cost Analysis							Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD					
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Evolutionary Development										
SETA	CPAF	CAS/AL	3,822						3,822	
OGA	MIPR	PO/AL	3,290						3,290	
Block Test Program with LMMFC and Raytheon										
SETA	CPAF	CAS/AL	3,414						3,414	
OGA	MIPR	PO	3,876						3,876	
Engineering Spt	CPAF	Various	7,126						7,126	
Subtotal Support Costs			21,528	0		0		0	21528	
Remarks										
FY 2003 efforts included: - Test planning, conduct, preparation, and analysis of the Congressionally directed Ripple Fire Test and future test efforts. - System Engineering analysis supporting the continuing MDA ? BMDS development efforts (CCB, ICS, Test & Integration).										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Complete Operational Test & Evaluation										
Operational Test Support	MIPR	Various	69,202						69,202	
Continue PAC-3 Target and Test Support										
Targets	MIPR	SMDC/AL	108,371						108,371	
Lethality	MIPR	SMDC/AL	37,628						37,628	

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MDA Exhibit R-3 RDT&E Project Cost Analysis								Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)					R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD					
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block Test Program with LMMFC and Raytheon										
White Sands Missile Range	MIPR	WSMR, NM	6,868						6,868	
Targets	MIPR	SMDC/AL	10,103						10,103	
Evolutionary Development										
WSMR	MIPR	WSMR, NM	4,423						4,423	
Targets	MIPR	SMDC, AL	3,768						3,768	
Subtotal Test and Evaluation			240,363	0		0		0	240363	
Remarks										
FY 2003 efforts included: - Test planning, conduct, preparation, targets, and analysis of the Congressionally directed Ripple Fire Test and future test efforts.										
IV. Management Services Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services										
Remarks										
Project Total Cost			403,280	0		0			403,280	
Remarks										

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MDA Exhibit R-4A Schedule Detail						Date February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/05 System Development and Demonstration (SDD)				R-1 NOMENCLATURE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD			
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Milestones							
PAC-3 Missile Block 02 Production DAB	1Q						
PAC-3 Missile Block 04 Production DAB		4Q					
PAC-3 Missile Block 06 Production DAB					4Q		
Testing Milestones							
PAC-3 Missile FOT		2Q					
Decisions							
PAC-3 IOC			4Q				

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support	R-1 NOMENCLATURE 0605502C Small Business Innovative Research - MDA
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	138,791	0	0	0	0	0	0
6016 Statutory & Mandated Programs	138,791	0	0	0	0	0	0

Note: This Project has been restructured beginning in FY 2004 to Project 0510. This restructure represents MDA's Block development and management framework for the BMDS.

A. Mission Description and Budget Item Justification

Explores innovative concepts pursuant to Public Law 102-564 (Small Business Research and Development Enhancement Act of 1992) which mandates a two-phase competition for small businesses with innovative technologies that can also be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop a variety of new dual-use technologies for possible future MDA BMDS needs. Dual-use means that the technologies will also be judged on their potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new MDA BMDS technologies, and as a route to national economic growth through new commercial products. MDA will conduct the competition and the executing agents will award and manage the contracts.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	0	0	0
Current President's Budget (FY 2005 PB)	138,791	0	0
Total Adjustments	138,791	0	0
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	0	0
Reprogrammings	0	0	0
SBIR/STTR Transfer	138,791	0	0

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004				
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support					R-1 NOMENCLATURE 0605502C Small Business Innovative Research - MDA					
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009			
6016 Statutory & Mandated Programs	138,791	0	0	0	0	0	0			
RDT&E Articles Qty	0	0	0	0	0	0	0			
<i>Note: Note: This Project has been restructured beginning in FY 2004 to Project 0510. This restructure represents MDA's Block development and management framework for the BMDS.</i>										
<u>A. Mission Description and Budget Item Justification</u>										
This project explores innovative concepts pursuant to Public Law 102-564 (Small Business Research and Development Enhancement Act of 1992) which mandates a two-phase competition for small businesses with innovative technologies that can also be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop a variety of new dual-use technologies for possible future MDA BMDS needs. Dual-use means that the technologies will also be judged on their potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new MDA BMDS technologies, and as a route to national economic growth through new commercial products. MDA will conduct the competition and the executing agents will award and manage the contracts.										
<u>B. Accomplishments/Planned Program</u>										
	FY 2003		FY 2004		FY 2005					
SBIR/STTR Awards		138,791								
RDT&E Articles (Quantity)										
<u>C. Other Program Funding Summary</u>										
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost	
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing	
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing	
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing	
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing	
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing	

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support					R-1 NOMENCLATURE 0605502C Small Business Innovative Research - MDA				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support	R-1 NOMENCLATURE 0901585C Pentagon Reservation
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	7,432	14,327	13,884	12,958	12,850	13,158	13,476
1094 Pentagon Reservation Maintenance Reserve Fund (PRMRF)	7,432	0	0	0	0	0	0
0605 Pentagon Reservation Maintenance Reserve Fund (PRMRF)	0	14,327	13,884	12,958	12,850	13,158	13,476

Note: Fiscal Year 2003 is reflected in Project 1094 and Fiscal Years 2004 and out are in Project 0605.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

This DoD-directed Program Element started in FY 2001 to separately identify costs for the Pentagon Reservation Maintenance Reserve Fund (PRMRF). The PRMRF finances the following: real property operation and maintenance costs of the Pentagon and Federal Office Building Two and associated parking areas, the renovation of the Pentagon, the Remote Delivery Facility, and the Metro Entrance Facility Projects. The FY 2004 growth reflects the additional 66,000 square footage the Missile Defense Agency plans to acquire in Wings 1, 2, & 3 of Federal Office Building Two.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	7,432	14,481	13,384
Current President's Budget (FY 2005 PB)	7,432	14,327	13,884
Total Adjustments	0	-154	500
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	-154	0
Reprogrammings	0	0	500
SBIR/STTR Transfer	0	0	0

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MDA Exhibit R-2A RDT&E Project Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support	R-1 NOMENCLATURE 0901585C Pentagon Reservation
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1094 Pentagon Reservation Maintenance Reserve Fund (PRMRF)	7,432	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Fiscal Year 2003 is reflected in Project 1094 and Fiscal Years 2004 and out are in Project 0605.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

This DoD-directed Program Element started in FY 2001 to separately identify costs for the Pentagon Reservation Maintenance Reserve Fund (PRMRF). The PRMRF finances the following: real property operation and maintenance costs of the Pentagon and Federal Office Building Two and associated parking areas, the renovation of the Pentagon, the Remote Delivery Facility, and the Metro Entrance Facility Projects. The FY 2004 growth reflects the additional 66,000 square footage the Missile Defense Agency plans to acquire in Wings 1, 2, & 3 of Federal Office Building Two.

B. Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
PRMRF	7,432	0	0
RDT&E Articles (Quantity)			

This effort provides funding for real property operation costs to include maintenance and facility support costs associated with the Missile Defense Agency occupying Federal Office Building Two.

C. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support					R-1 NOMENCLATURE 0901585C Pentagon Reservation				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
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PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification						Date February 2004			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support				R-1 NOMENCLATURE 0901585C Pentagon Reservation					
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		
0605 Pentagon Reservation Maintenance Reserve Fund (PRMRF)	0	14,327	13,884	12,958	12,850	13,158	13,476		
RDT&E Articles Qty	0	0	0	0	0	0	0		
<i>Note: Fiscal Year 2003 is reflected in Project 1094 and Fiscal Years 2004 and out are in Project 0605.</i>									
<u>A. Mission Description and Budget Item Justification</u>									
Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.									
This DoD-directed Program Element started in FY 2001 to separately identify costs for the Pentagon Reservation Maintenance Reserve Fund (PRMRF). The PRMRF finances the following: real property operation and maintenance costs of the Pentagon and Federal Office Building Two and associated parking areas, the renovation of the Pentagon, the Remote Delivery Facility, and the Metro Entrance Facility Projects. The FY 2004 growth reflects the additional 66,000 square footage the Missile Defense Agency plans to acquire in Wings 1, 2, & 3 of Federal Office Building Two.									
<u>B. Accomplishments/Planned Program</u>									
	FY 2003		FY 2004		FY 2005				
PRMRF	0		14,327		13,884				
RDT&E Articles (Quantity)									
This effort provides funding for real property operation costs to include maintenance and facility support costs associated with the Missile Defense Agency occupying Federal Office Building Two.									
<u>C. Other Program Funding Summary</u>									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	151,217	225,268	204,320	199,468	246,291	286,286	305,365	Continuing	Continuing
PE 0603886C Ballistic Missile Defense System Interceptors	0	117,719	511,262	1,118,599	1,717,480	2,196,531	2,449,322	Continuing	Continuing
PE 0603888C Ballistic Missile Defense Test and Targets	0	635,782	716,427	673,476	656,152	654,015	688,119	Continuing	Continuing

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MDA Exhibit R-2A RDT&E Project Justification							Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support					R-1 NOMENCLATURE 0901585C Pentagon Reservation				
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603889C Ballistic Missile Defense Products	0	305,309	418,608	421,049	445,971	456,339	469,621	Continuing	Continuing
PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901598C Management Headquarters - MDA	35,331	92,449	141,923	146,099	145,112	151,727	154,583	Continuing	Continuing
PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,056,035	3,744,066	4,404,335	3,067,800	3,087,147	1,881,298	1,802,257	Continuing	Continuing
PE 0603883C Ballistic Missile Defense Boost Defense Segment	705,643	617,270	492,614	555,667	611,736	473,602	455,961	Continuing	Continuing
PE 0603884C Ballistic Missile Defense Sensors	327,013	425,421	591,957	790,265	1,453,679	1,122,189	1,232,893	Continuing	Continuing

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MDA Exhibit R-2 RDT&E Budget Item Justification					Date February 2004		
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support				R-1 NOMENCLATURE 0901598C Management Headquarters - MDA			
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COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	35,331	92,449	141,923	146,099	145,112	151,727	154,583
1095 Management Headquarters	35,331	0	0	0	0	0	0
0601 Management Headquarters	0	92,449	141,923	146,099	145,112	151,727	154,583

Note: Fiscal Year 2003 is reflected in project 1095 and Fiscal Years 2004 and out are in project 0601.

A. Mission Description and Budget Item Justification

Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.

As directed by the DoD Directive 5100.73, Major DoD Headquarters Activities, signed by the Deputy Secretary of Defense on 13 May 1999, this Program Element funds costs associated with the operation of the headquarters and headquarters activities of the Missile Defense Agency.

This project funds the following basic areas: government civilian personnel, related operational and facility costs, and service support contracts.

This Program Element (PE) increases due to substantial growth in Missile Defense Agency (MDA) mission requirements as well as consolidation of various activities from other PE into this PE. In particular, the increased MDA mission requirements for IM/IT Support and the consolidation of Support Contracts costs to this PE primarily responsible for driving this increase. In addition, funds required for the relocation of MDA office space contribute to the total increase in the Management Headquarters PE.

- Support Contracts is a new accomplishment for this PE, formerly budgeted in Program Operations. It provides contractual support for Management Headquarters related efforts. For a more detailed explanation, see the Support Contracts Accomplishments.
- Information Management/Information Technology (IM/IT) is also new to this PE, formerly budgeted in Program Operations, IM/IT budget increases for projected user increase, mandated efforts, and contract re-competition. Further explained the IM/IT Accomplishment.
- Rents & Utilities increase is cause by the Missile Defense Agency required move from FOB2; lease of commercial office space and the associated maintenance.
- Finally, the ramp-up in the support & administration costs is also due to the increased MDA mission.

Personnel and related costs covers payroll and benefits of government civilians performing program-wide oversight functions such as financial management, security, information management/information technology and legal services at the Missile Defense Agency located within Washington D.C. area. This project also funds related costs such as information technology support, training, travel, rents & utilities, supplies and equipment, and service support contracts for operational and maintenance activities of the Missile Defense Agency Headquarters.

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MDA Exhibit R-2 RDT&E Budget Item Justification	Date February 2004
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support	R-1 NOMENCLATURE 0901598C Management Headquarters - MDA
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B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004 PB)	25,365	93,441	101,373
Current President's Budget (FY 2005 PB)	35,331	92,449	141,923
Total Adjustments	9,966	-992	40,550
Congressional Specific Program Adjustments	0	0	0
Congressional Undistributed Adjustments	0	-992	0
Reprogrammings	9,966	0	40,550
SBIR/STTR Transfer	0	0	0

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MDA Exhibit R-2A RDT&E Project Justification					Date February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support				R-1 NOMENCLATURE 0901598C Management Headquarters - MDA			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1095 Management Headquarters	35,331	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: Fiscal Year 2003 is reflected in project 1095 and Fiscal Years 2004 and out are in project 0601.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.</p> <p>As directed by the DoD Directive 5100.73, Major DoD Headquarters Activities, signed by the Deputy Secretary of Defense on 13 May 1999, this Program Element funds costs associated with the operation of the headquarters and headquarters activities of the Missile Defense Agency.</p> <p>This project funds the following basic areas: government civilian personnel, related operational and facility costs, and service support contracts.</p> <p>This Program Element (PE) increases due to substantial growth in Missile Defense Agency (MDA) mission requirements as well as consolidation of various activities from other PE into this PE. In particular, the increased MDA mission requirements for IM/IT Support and the consolidation of Support Contracts costs to this PE primarily responsible for driving this increase. In addition, funds required for the relocation of MDA office space contribute to the total increase in the Management Headquarters PE.</p> <ul style="list-style-type: none"> - Support Contracts is a new accomplishment for this PE, formerly budgeted in Program Operations. It provides contractual support for Management Headquarters related efforts. For a more detailed explanation, see the Support Contracts Accomplishments. - Information Management/Information Technology (IM/IT) is also new to this PE, formerly budgeted in Program Operations, IM/IT budget increases for projected user increase, mandated efforts, and contract re-competition. Further explained the IM/IT Accomplishment. - Rents & Utilities increase is cause by the Missile Defense Agency required move from FOB2; lease of commercial office space and the associated maintenance. - Finally, the ramp-up in the support & administration costs is also due to the increased MDA mission. <p>Personnel and related costs covers payroll and benefits of government civilians performing program-wide oversight functions such as financial management, security, information management/information technology and legal services at the Missile Defense Agency located within Washington D.C. area. This project also funds related costs such as information technology support, training, travel, rents & utilities, supplies and equipment, and service support contracts for operational and maintenance activities of the Missile Defense Agency Headquarters.</p>							

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support					R-1 NOMENCLATURE 0901598C Management Headquarters - MDA				
B. Accomplishments/Planned Program									
		FY 2003			FY 2004			FY 2005	
Civilian Salaries & Support		35,331			0			0	
RDT&E Articles (Quantity)									
<p>Civilian Pay & Benefits: This effort provided funding for civilian payroll; the FY 2003 represents Missile Defense Agency response the DoD required to reduce the total authorized FTE's in the Management Headquarters Program Element to FY 1999 level minus a 15% reduction. Supplies: This effort provides for the materials and supplies to stock the Missile Defense Agency supply rooms. Rents & Utilities: The rents and utilities increase is associated with the Missile Defense Agency requirement to move from its' existing residence and the anticipated cost in leasing commercial office space. Travel & Transportation: Travel and Transportation provides funding for those specific functions for the individuals assigned to Management Headquarters organizations/functions, with the Missile Defense Agency. Service Contracts: These costs are for service contracts such as follows: office machines (copies, facsimile and printers), telephone service, leased vehicles, and various other service contracts. Training: This effort provides funding for the Missile Defense Agency civilian and military career development training.</p>									
C. Other Program Funding Summary									
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
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PE 0603869C Meads Concepts - Dem/Val	101,754	0	0	0	0	0	0	Continuing	Continuing
PE 0603879C Advanced Concepts, Evaluations and Systems	0	149,993	256,159	229,512	232,463	231,583	224,626	Continuing	Continuing
PE 0603880C Ballistic Missile Defense System Segment	1,028,016	0	0	0	0	0	0	Continuing	Continuing
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	134,093	874,527	937,748	993,048	1,117,657	570,000	410,324	Continuing	Continuing
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PE 0603890C Ballistic Missile Defense System Core	0	445,356	479,764	492,988	527,541	539,210	568,365	Continuing	Continuing
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	138,922	0	0	0	0	0	0	Continuing	Continuing
PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
PE 0901585C Pentagon Reservation	7,432	14,327	13,884	12,958	12,850	13,158	13,476	Continuing	Continuing

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support				R-1 NOMENCLATURE 0901598C Management Headquarters - MDA			
COST (\$ in Thousands)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0601 Management Headquarters	0	92,449	141,923	146,099	145,112	151,727	154,583
RDT&E Articles Qty	0	0	0	0	0	0	0
<p><i>Note: Fiscal Year 2003 is reflected in project 1095 and Fiscal Years 2004 and out are in project 0601.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>Our goal is to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. By the beginning of FY 2005, we will put the BMDS on alert and, for the first time, we will have a capability to defeat a ballistic missile threatening the United States. In FY 2005 and the remainder of the FYDP, we will increase the breadth and depth of our defense by adding forward-deployed, networked sensors, by adding interceptors at sea and on land, and by adding layers of increasingly capable weapons and sensors. Throughout this documentation, therefore, every activity can be tied to one of our four objectives: complete, verify and test the Initial Defensive Capability; put the Ballistic Missile Defense System on alert; develop procedures and logistics to perform and sustain concurrent testing and operations; and enhance the BMDS capability.</p> <p>As directed by the DoD Directive 5100.73, Major DoD Headquarters Activities, signed by the Deputy Secretary of Defense on 13 May 1999, this Program Element funds costs associated with the operation of the headquarters and headquarters activities of the Missile Defense Agency.</p> <p>This project funds the following basic areas: government civilian personnel, related operational and facility costs, and service support contracts.</p> <p>This Program Element (PE) increases due to substantial growth in Missile Defense Agency (MDA) mission requirements as well as consolidation of various activities from other PE into this PE. In particular, the increased MDA mission requirements for IM/IT Support and the consolidation of Support Contracts costs to this PE primarily responsible for driving this increase. In addition, funds required for the relocation of MDA office space contribute to the total increase in the Management Headquarters PE.</p> <ul style="list-style-type: none"> - Support Contracts is a new accomplishment for this PE, formerly budgeted in Program Operations. It provides contractual support for Management Headquarters related efforts. For a more detailed explanation, see the Support Contracts Accomplishments. - Information Management/Information Technology (IM/IT) is also new to this PE, formerly budgeted in Program Operations, IM/IT budget increases for projected user increase, mandated efforts, and contract re-competition. Further explained the IM/IT Accomplishment. - Rents & Utilities increase is cause by the Missile Defense Agency required move from FOB2; lease of commercial office space and the associated maintenance. - Finally, the ramp-up in the support & administration costs is also due to the increased MDA mission. <p>Personnel and related costs covers payroll and benefits of government civilians performing program-wide oversight functions such as financial management, security, information management/information technology and legal services at the Missile Defense Agency located within Washington D.C. area. This project also funds related costs such as information technology support, training, travel, rents & utilities, supplies and equipment, and service support contracts for operational and maintenance activities of the Missile Defense Agency Headquarters.</p>							

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/06 RDT&E Management Support		R-1 NOMENCLATURE 0901598C Management Headquarters - MDA	
B. Accomplishments/Planned Program			
	FY 2003	FY 2004	FY 2005
Civilian Salaries & Support	0	38,741	54,245
RDT&E Articles (Quantity)			
<p>Civilian Pay & Benefits: This effort provided funding for civilian payroll; the FY 2003 represents Missile Defense Agency response the DoD required to reduce the total authorized FTE's in the Management Headquarters Program Element to FY 1999 level minus a 15% reduction. Supplies: This effort provides for the materials and supplies to stock the Missile Defense Agency supply rooms. Rents & Utilities: The rents and utilities increase is associated with the Missile Defense Agency requirement to move from its' existing residence and the anticipated cost in leasing commercial office space. Travel & Transportation: Travel and Transportation provides funding for those specific functions for the individuals assigned to Management Headquarters organizations/functions, with the Missile Defense Agency. Service Contracts: These costs are for service contracts such as follows: office machines (copies, facsimile and printers), telephone service, leased vehicles, and various other service contracts. Training: This effort provides funding for the Missile Defense Agency civilian and military career development training.</p>			
	FY 2003	FY 2004	FY 2005
Information Management/Information Technology (IM/IT)		29,170	30,802
RDT&E Articles (Quantity)			
<p>In the past this effort has been budgeted and executed in Program Operations projects. This budget is based on actual's spent in FY 02 to support 1,500 users in the MDA NCR. At the end of FY 03 MDA NCR will expand to four locations and grow to approximately 3,000 users. Increase in personnel has a corresponding increase in support cost which include purchases of desktop hardware, telecommunications links, network equipment (new procurements and existing hardware), software applications (new procurements and existing maintenance costs), consumables, laptops, and other peripherals. Increase in customer base necessitates increases in must-pay contractor costs associated with help desk, system engineers, software specialists, computer operations, etc. personnel. Failure to provide funding will result in failure to meet customer and operational requirements to support the MDA mission. FY 2004 is the first year these efforts have been included in the Management Headquarters Program Element, in the past these requirements were budgeted and executed in the Program Operations projects.</p>			
	FY 2003	FY 2004	FY 2005
Support Contracts		24,538	56,876
RDT&E Articles (Quantity)			
<p>Support contracts effort pertains to the contractual services provided to support the Management Headquarters functions. FY 2004 is the first year these efforts have been included in the Management Headquarters Program Element, in the past these requirements were budgeted and executed in the Program Operations projects. The Support contracts project includes the following efforts: Security - provides physical security, facility entry control, CCTV & perimeter door alarm monitoring, DoD badge issue for MDA employees, self propelled vehicle operation, escort of visitors for MDA facilities, and address identified shortcomings in our facility security and force protection standards. Information Assurance - provides fault tolerance/fail-over horsepower, application development, network management, and storage needed to power the virtual Information Assurance Operations Center infrastructure (IAOC), which provides security for MDA IT systems. Workforce Management - responsible for providing organization development consultation on corporate workforce management systems and issues. In addition, provides support for directing and managing the development, coordination, and execution of workforce management goals, objectives, policies, plans and programs for the Missile Defense Agency. Financial Management - provides Ballistic Missile Defense Program budget direction, accounting and fiscal policy, and guidance to the Missile Defense Agency and Missile Defense Agency Executing Agents for Program Objective Memorandum, budget submissions, budget execution, and related financial reporting. Strategic Relations - provides support to the principal advisor for developing the strategy, analysis, planning and implementation for all strategic (international and interagency) relations to the agency.</p>			

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PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	887,616	0	0	0	0	0	0	Continuing	Continuing
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PE 0605502C Small Business Innovative Research - MDA	138,791	0	0	0	0	0	0	Continuing	Continuing
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