Missile Defense Agency
Fiscal Year (FY) 2004/FY 2005 Biennial Budget Estimates

Program Element Not Providing R Exhibits Due to Classification

0603879C Advanced Concepts, Evaluations and Systems

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	145021	151130	240820	205791	200956	247990	287864	306472
6010/0502 Advanced Technology Development	141510	148297	189056	154439	147699	194075	232137	249123
0503 Laser Technology	0	0	47130	47002	48863	48797	49734	50676
6090/0602 Program Operations	3511	2833	4634	4350	4394	5118	5993	6673

A. Mission Description and Budget Item Justification

NOTE:
Beginning in FY 2004, the BMD Technology PE projects change, as follows:
-Project 6010 changes to 0502
-Project 6090 changes to 0602
-New Project 6020 changes to 0503
All projects will continue to employ their previous names. Project numbers more accurately reflect the Missile Defense Agency's (MDA's) desired management structure.

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 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 the enabling technologies for new systems or 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.

The Ballistic Missile Defense (BMD) Technology program demonstrates new system concepts and develops key components needed to keep pace with the constantly evolving ballistic missile threat. The program focuses on developing enhanced capabilities to support block upgrades to the BMD System and places its remaining emphasis on maturing a select group of next-generation technologies that could lead to new, revolutionary BMD System elements.

The flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in Command Control Battle Management and Systems Engineering & Integration now guides the integration of new technology into the BMD System and Test Bed. The FY 2004 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.

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 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-Based Infrared Systems, 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; 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

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

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 and complement radar systems.

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	139340	121751	155056	130299
Current President's Budget (FY 2004 PB)	145021	151130	240820	205791
Total Adjustments	5681	29379	85764	75492
Congressional Specific Program Adjustments	0	33200	0	0
Congressional Undistributed Adjustments	-873	-2539	0	0
Reprogrammings	9400	-1282	85764	75492
SBIR/STTR Transfer	-2846	0	0	0

FY 2002 changes due to internal realignments to meet program goals.

FY 2003 changes due to Congressionally directed interest increased funding, as well as other directed adjustments.

FY 2004 and FY 2005 changes due to transfer of the Laser Technology program to the BMD Technology PE. Funding for this effort (previously known as Space Based Laser) was previously part of the Boost Defense PE. Also, new project "Advanced Concepts" has been added to BMD Technology. Work performed under this effort will be geared towards SBIR proposal evaluation, the Advanced Systems Innovation Cell for evaluating industry's latest ideas, and related advanced studies.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE **0603175C Ballistic Missile Defense Technology**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
6010/0502 Advanced Technology Development	141510	148297	189056	154439	147699	194075	232137	249123
RDT&E Articles Qty	0	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, invests in global surveillance, and matures enabling technologies for the next-generation BMDS. Boost Phase Interceptor (BPI) efforts are developing early launch detection and tracking (ELDT) to support the earliest possible commitment of interceptors. In addition, this effort pursues innovative low-mass propulsion concepts to dramatically reduce overall interceptor size and mass. Midcourse defense develops state-of-the-art systems and technologies to increase BMD system firepower and sensor capability.

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

-The Radar Systems Technology (formerly: Advanced Radar Technology) program integrates and tests next-generation transmitters, receivers, processors and software to demonstrate new concepts and technologies to insert in future BMDS Blocks.

-The Advanced Discrimination effort explores novel systems approaches to counter decoys and related adversary countermeasures.

-The Terminal Phase efforts include applied research to extend the footprint of current terminal systems, as well as investigate revolutionary concepts for strategic terminal defense.

-The Airship program portrays 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.

-Enabling Technology Support pursues basic technologies in components and materials driven by the capabilities of the BMDS. Examples include:
- --Multi-color focal plane arrays
- --High-power semi-conductors
- --Radiation-hardened electronic components

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Terminal Missile Defense	12777	2200	33873	2764
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

MANEUVERING THREAT COUNTER COUNTERMEASURES:

-Advanced THAAD Thruster - Demonstrated lightweight high temperature material applicable to multiple missile divert and attitude control system (DACS). Increased effective DACS thrust and permit use of propellants with burn temperatures of 4,500 F (TRL (Technology Readiness Level) 5).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)	R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology

-PAC-3 Radome - Demonstrated lightweight low cost ceramic radome for PAC-3. Met PAC-3 weight objective of less than 2.0 kg (TRL 7).

EXTENDED FOOTPRINT:

-Next Generation THAAD Seeker - the Seeker software was delivered, Seeker housing modification was designed, and the controller board for the steering mirrors was designed and fabricated (TRL 4).

-Next Generation THAAD Window - Window material test coupons were procured. Coupon material is being etched and will be tested in Nov 02 (TRL 3).

-PAC-3 Thermal Battery - PAC-3 prototype batteries were built and tested (TRL 5).

LONG RANGE ATMOSPHERIC DEFENSE:

-Initiated Concept Development - Developed a revolutionary concept for terminal defense that will increase the defended area of the system by 3 to 10 times our current terminal systems (TRL 1).

FY 2003 PLANNED PROGRAM:

-Refine long-range atmospheric defense concept (TRL 2).

FY 2004 and FY 2005 PLANNED PROGRAM:

-Refine long-range atmospheric defense concept (TRL 2).

	FY 2002	FY 2003	FY 2004	FY 2005
Midcourse Defense	55761	66348	76228	88336
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

DISCRIMINATING SEEKER:

-Angle Laser Radar (LADAR) - Angle-Angle Range (AAR) LADAR - Brassboard hardware integrated and characterized at reduced power levels in a laboratory environment. This is a direct detect LADAR that measures angles and range-to-target and is applicable to Boost Phase and Midcourse (TRL 4).

-Range LADAR - Range Resolved Doppler Imaging (RRDI) LADAR- Breadboard components have been procured, fabricated and are being tested individually. Initiated brassboard design to move LADAR. In addition to angle and range, the RRDI LADAR also provided velocity measurements on the target. Fabricated and tested first-ever simultaneous, three-band long wave infrared (LWIR) FPA (TRL 3).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

-Advanced Focal Plane Arrays (FPA) - Five FPA efforts were funded during FY 2002. These efforts focused on demonstrating simultaneous multi-waveband infrared FPAs. Leading interceptor application FPA material is Mercury Cadmium Telluride (TRL 2-3).

TRANSPORTABLE DISCRIMINATING RADAR:

-Militarized Analog-to-Digital Controller - Completed development and transferred a 100 Megahertz analog to digital convert (A/D) to the PATRIOT for insertion into their existing radar (TRL 7-8).

-Gallium Arsenide Transmitter/Receiver Modules - Initiated contracts for the development of both X band and S band high power amplifiers (TRL 2).

-Transportable Discriminating Radar - The Next Generation Radar Concept Definition Team developed a baseline concept for a "proof of concept" Test Bed for the BMDS. The desired attributes of the system are: 1) moveable to allow relocation in approximately 30 days; 2) scalable to support increased sensitivity; 3) developed with an open system architecture approach to support subsystem refresh, insertion of new hardware and software technology, and advanced discrimination data collection and testing in a parallel non-intrusive manner (TRL 1).

MINIATURE KILL VEHICLE (MKV):

-Optics Design and Demo - Fabricated and demonstrated a low cost MKV electroformed optics/telescope assembly (TRL 3).

-Propulsion Static Fire Test - Demonstrated through static fire test a low cost, lightweight divert system for MKV (TRL 3).

-Concept Definition - Initiated MKV/Carrier Vehicle integrated concept designs with three prime contractors. With down select to two prime contractors during 2003(TRL 2).

Side note: The MKV concept was initiated by the SBIR (Small Business Innovative Research) process starting in 1990.

ADVANCED DISCRIMINATION:

-Concept A - Initiated contract award for advanced discrimination.

FY 2003 PLANNED PROGRAM:

-This program supports the BMDS Interceptor.

-Continue MKV program, working toward FY 2005 flight experiment (TRL 3-5).

-Upgrade range-resolved Doppler imaging LADAR to full power and other discriminating seeker capabilities (TRL 3-5).

-Further mature simultaneous two-color and three-color FPAs (TRL 3-4).

-Continue advanced discrimination development (TRL 3-5).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

FY 2004 and FY 2005 PLANNED PROGRAM:

-This program supports the BMDS Interceptor.

-Continue MKV program, working toward FY 2005 flight experiment (TRL 3-5).

-Upgrade range-resolved Doppler imaging LADAR to full power and other discriminating seeker capabilities (TRL 3-5).

-Further mature simultaneous two-color and three-color FPAs (TRL 3-4).

-Continue advanced discrimination development (TRL 3-5).

	FY 2002	FY 2003	FY 2004	FY 2005
Boost Phase Intercept	5035	9330	7570	9994
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

EARLY LAUNCH DETECTION AND TRACKING (ELDT):

-This effort supported Kinetic Energy Boost.

-Concept definition and initial data collection were conducted in FY 2001. Of the 12 concepts evaluated in FY 2001 seven were funded in FY 2002. Of the seven funded in FY 2002, three showed promise and will be continued in FY 2003: Over the Horizon Radar (OTHR), Hypertemporal Infrared, and First alert and Cueing (FAC) sensors (TRL 1-4).

-Over the horizon radar (OTHR) - Initiated use of available OTHR assets to collect data on three target of opportunity launches demonstrating capability to detect a missile launch event soon after liftoff (TRL 3).

-Simulated Target Data - Initial proof of principle test. The Hypertemporal Infrared sensor was placed on a Lear jet and flown above cloud cover. Using a narrow band short wave infrared (SWIR) a Hot Air Balloon Burner was Detected Through the Clouds. The test was conducted on 27 March 2002. This effort was started in FY 2001 and will continue in FY 2003 (TRL 3-4).

-Titan II Launch Data - Data was collected on operational system launches using Hypertemporal InfraRed and First Alert and Cueing (FAC) sensor. This effort was started in FY 2001 and will continue in FY 2003.

BOOST PHASE INTERCEPT HIGH ENERGY LASER:

-Extended Range Beam Control - Initiated modification of tracking and pointing system algorithms to improve the effective kill range of airborne laser (ABL) system for boost phase applications.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

FY 2003 PLANNED PROGRAM:

-Continue development and test of promising ELDT capabilities including flight tests (TRL 4-6).

FY 2004 and FY 2005 PLANNED PROGRAM:

-Continue development and test of promising ELDT capabilities including flight tests (TRL 4-6).

	FY 2002	FY 2003	FY 2004	FY 2005
Global Defense Technology	9705	17152	33336	13267
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

SPACE-BASED PASSIVE SURVEILLANCE:

-Focal Plane Arrays - Continued Mercury Cadmium Telluride and Silicon Arsenide focal plane arrays for space surveillance applications (TRL 3-4).

-Proof-of-Principle 10-Kelvin Cryocooler - Continued development of a 10-Kelvin cryocooler using pulse tube technology for space surveillance application. Enabled extended tracking range for SBIRS-Low (TRL 3-5).

ACTIVE TRACKING:

-Relay Mirror Concept - Initiated concept design studies of an advanced relay mirror system to increase the tracking range of Airborne Laser. Concept focused on support of the boost phase intercept mission using a relay mirror on a high altitude airborne platform (TRL 3).

AIRSHIP:

-Airship ACTD - MDA/Advanced Systems is the Executing Agent for the HAA ACTD which includes participation with Army OSD and NORAD. Completed airship platform studies and analysis of alternatives. Initiated power system Test Bed design. (TRL 2).

FY 2003 PLANNED PROGRAM:

-Continue development of space-based surveillance FPAs and cryocoolers for Space Tracking and Surveillance System applications (TRL 4-7).

-Executing Agent for High Altitude Airship ACTD scheduled for FY 2005 demonstration (TRL 4-7). The objective of this ACTD is to demonstrate the engineering feasibility and potential military utility of an unmanned, un-tethered, gas-filled, solar powered airship that can fly at 70 kilo feet (kft). 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. The demonstration will include multiple launch and recovery operations as well as varied flight profiles to validate and refine airship concepts of operations (CONOPS).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

FY 2004 and FY 2005 PLANNED PROGRAM:

-Executing Agent for High Altitude Airship ACTD scheduled for FY 2005 demonstration (TRL 4-7). The objective of this ACTD is to demonstrate the engineering feasibility and potential military utility of an unmanned, un-tethered, gas-filled, solar powered airship that can fly at 70 kft. 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. The demonstration will include multiple launch and recovery operations as well as varied flight profiles to validate and refine airship concepts of operations (CONOPS).

-Continue development of space-based surveillance FPAs and cryocoolers for Space Tracking and Surveillance System applications (TRL 4-7).

-Conduct investigations into micro-satellite experiments.

	FY 2002	FY 2003	FY 2004	FY 2005
Enabling Technology Support	25257	20019	19058	21695
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

MULTI-APPLICATION FOCAL PLANE ARRAYS:

-Thin Film Ferro-Electric IR Detector Pixel - Successfully produced imaging array; material system still being optimized. Effort matured to TRL 4 in FY 2002.

-Type II Superlattice - 40 x 40um InAs/(GaIn)Sb-Mesadiodes of a 256 x 256 focal plane array. Effort matured to TRL 3 in FY 2002.

MATERIALS, STRUCTURES, AND POWER:

-Dual-Mode Experiment on Bowshock Interaction (DEBI) Payload - The purpose was to investigate the properties of seeker windows in the interceptor flight regime of the upper atmosphere and correlate observations with aero-thermo chemistry data. Payload scheduled to fly in FY 2003 aboard the DEBI (TRL 3-4).

-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).

INNOVATIVE SCIENCE AND TECHNOLOGY (IS&T):

-Antenna-coupled focal plane array - By Nanolithography, test structures were deposited on standard Focal Plane Array (FPA) multiplexer chips to fabricate uncooled, antenna-coupled Infrared FPA devices (TRL 2-3).

-Optical Target Characterization - Under the Optical Target Characterization program, the Innovative Science and Technology Experimentation Facility (ISTEF), an Imaging Facility owned by the Missile Defense Agency and operated by Computer Science Corporation (CSC), participated in missile flight tests with telescopic mounts located at Wake Island and Kwajalein (TRL 7-8).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

-True Time Delay - Experiments have progressed to fabricate and test two photonic devices for future radar applications: a polymer-based phase shifter and a polymer-based True Time Delay (TTD) module to achieve directional steering of a radar beam (TRL 3-4).

-Achieved three gratings in single plane holographic glass combining optical function into a single element useful for beam steering and focusing (TRL 3).

INTERNATIONAL:

-Space Technology Research Vehicle II (STRV2) Payload - STRV-2 was a multi-national, highly integrated suite of experiments designed to push the envelope of space-based imaging technology, satellite vibration suppression, and material science. STRV-2 was sponsored by the MDA and the United Kingdom (UK). The STRV-2 primary objectives included demonstration of operation of optical instruments (Medium Waveband IR (MWIR) and Laser communication (LASERCOM)) on a low-cost, non-precision platform, downlinking of data via Lasercom, obtaining infrared background data in selected wavelength bands at low and high altitudes and assessing performance of candidate components in the space environment.

-Cellular Neural Network - A processing system based on human neural sensing system. It was capable of processing sensor input at an extremely high rate, which makes it suitable for application in target detection, tracking, and discrimination and sensor fusion.

FY 2003 PLANNED PROGRAM:

-Continue innovative component technology development at the TRL 2-4 level, IS&T, and international cooperative efforts at TRL 2-5 level.

FY 2004 and FY 2005 PLANNED PROGRAM:

-Continue innovative component technology development at the TRL 2-4 level and international cooperative efforts at TRL 2-5 level.

	FY 2002	FY 2003	FY 2004	FY 2005
Statutory and Mandated	3922	3627	3927	4000
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

-Incrementally funded twelve Historically Black Colleges and Universities / Minority Institutions (HBCU/MI) contracts in the areas of electronics, sensors, materials, and BMC3 selected in FY 2001 competition.

-Several grants go to the same HBCU with different Points of Contacts.

-HBCU/MIs include:
*Norfolk State
*University of Texas, El Paso
*Grambling

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

*Howard University
*Fisk University
*City College of CUNY
*North Carolina A&T

-The Technology Applications program assisted 128 companies and university-based researchers in scaling up and commercializing their MDA-funded technology for future use in MDA systems.

-Program support for the administration of the SBIR/STTR Program.

FY 2003 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 2004 and FY 2005 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 2002	FY 2003	FY 2004	FY 2005
Directed Interest	29053	29621	0	0
RDT&E Articles (Quantity)				

FY 2002 ACCOMPLISHMENTS:

-Photoconduction on Active Pixels (POAP)- Program was to complete the POAP wafer-based process development and demonstrate this process on a 3-color 2M-pixel HDTV video camera. Work under previous funding was directed to demonstrate the POAP technology and to produce sample cameras using a chip-level process.

-Silicon Thick Films - The objective of this task is to develop the processes, materials, and device technology necessary for implementation of both the optics (Silicon Carbide) and sensor (Silicon) capabilities.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

-Gallium Nitride Microwave Power Amplifier - Program is developing four advanced transistor designs and substrates. Advanced device designs seek to solve current collapse, a problem at high power operation in many modern devices, and increase channel mobility and carrier confinement to increase power capability.

-High Data Rate Wireless Communications

-Silicon Brain Architecture

-Wafer-Scale Planarization Technology

-Advanced RF Technology Development

-AEOS MWIR Adaptive Optics

-Airborne Infrared Surveillance (AIRS) System

FY 2003 PLANNED PROGRAM:

-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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)	R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology

	FY 2002	FY 2003	FY 2004	FY 2005
Advanced Concepts	0	0	15064	14383
RDT&E Articles (Quantity)				

FY 2004 and FY 2005 PLANNED PROGRAM:

-Advanced Systems Innovation Cell (ASIC): The ASIC evaluates all internally and externally generated advanced concepts to prove their technical feasibility and initial capability and maintains cognizance over leading edge concepts. It is the ASIC team's goal to release an annual Broad Agency Announcement (BAA) and to review concepts for integrated systems and for technical improvements in boost, mid-course and terminal phases of missile defense.

-SBIR Evaluations: The SBIR Evaluation team leads the development of SBIR/STTR (Small Business Technology Transfer) 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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)				R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology						
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)	R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0503 Laser Technology	0	0	47130	47002	48863	48797	49734	50676
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Laser Technology program is a new program derived from the former Space-Based Laser (SBL) program. 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 SBL effort. The emphasis on low-power systems is driven by their considerable potential to improve and support MDA's hit-to-kill weapons. The Agency plans to select concepts and award contracts for six focused technology projects in FY 2003, continue these through FY 2004, and initiate two to four new projects in FY 2004. These projects will be drawn from proposals solicited from the laser and electro-optics industry.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Laser Technology			47130	47002
RDT&E Articles (Quantity)				

FY 2004 and FY 2005 PLANNED PROGRAM:

All projects below were selected in FY 2003 and are planned for continuation through FY 2005. Funding levels are approximately $10M/year for major projects and $2.5M/year for technology base projects.

The major projects are:
- Strategic Illuminator; multi-kilowatt brassboard illuminator system that will significantly advance the state of the art in high-power laser illuminator brightness, reliability, and packaging.
- An additional major project is anticipated for selection in FY 2004.

The technology base projects are:
- Hydrogen-Fluorine Overtone laser; initial development of a candidate laser for a future SBL.
- Electro-Chemical Oxygen Iodine Laser; electrically rechargeable multi-use high-energy laser.
- Compact Laser Radar Amplifier; powerful small laser transmitter (hundreds of watts) suitable for insertion on a missile defense platform with tight weight and volume constraints.
- Inertial Reference Unit; device for highly accurate laser pointing and tracking.
- Advanced Detectors; improved detectors for laser radars, with better sensitivity and bandwidth.

One to three technology base projects are anticipated for selection in FY 2004. In addition to these projects, in FY2004, approximately $9M is planned to cover costs associated with SBL facilities closeout.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)	R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology

C. Other Program Funding Summary

	FY 2002	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	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **3. Advanced Technology Development (ATD)**	R-1 NOMENCLATURE: **0603175C Ballistic Missile Defense Technology**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
6090/0602 Program Operations	3511	2833	4634	4350	4394	5118	5993	6673
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 6090 and Fiscal Years 2004 and out are in Project 0602.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel			2215	1974
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)	R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	2580	1570	1720	1631
RDT&E Articles (Quantity)				

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

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	86	750	699	745
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
IM/IT Operations	845	513		
RDT&E Articles (Quantity)				

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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 3. Advanced Technology Development (ATD)							R-1 NOMENCLATURE: 0603175C Ballistic Missile Defense Technology			
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	114781	0	0	0	0	0	0
2015 Medium Extended Air Defense (MEADS)	0	114781	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

MEADS in FY 2002 was included in the Missile Defense Agency (MDA) Terminal Defense Segment Program Element (PE) 0603881C. MEADS was programmed to transfer to the Army in FY 2003 but per Congressional direction remained with MDA and was assigned its own MDA PE (0603869C). MEADS is programmed to transfer to the Army in FY 2004.

The Medium Extended Air Defense System (MEADS) is an Objective Force system. As an international co-development program, MEADS is a Terminal Defense Segment Mission Area investment that is essential to fulfill the requirements of the U.S. Army and U.S. Marine Corps for a low-medium air and missile defense system in the 21st century. MEADS will offer a significant improvement in 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 and other air-breathing threats throughout all phases of tactical operations. MEADS will operate with upper-tier systems in areas of debarkation and assembly and provide continuous coverage alone, or with Short-Range Air Defense Systems (SHORAD) systems in the division area 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 and modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, cruise missiles, unmanned-aerial-vehicles, tactical air-to-surface missiles, rotary-wing and fixed-wing threats.

The MEADS program has been restructured to leverage the interceptor from the PATRIOT Advanced Capability-3 (PAC-3) program and to extend the Program Definition/Validation (PD/V) phase with a thirty-two and half month Risk Reduction Effort (RRE) that focuses on developing the critical technologies required for maneuver force protection and overall risk reduction. U.S. funded bridging effort commenced on 14 August 2000 to begin work on the highest risk and long-lead items in the RRE Scope of Work. The International Memorandum of Understanding (MOU) was signed 27 June 2001, and the RRE contract was awarded 10 July 2001.

There remains a critical void in maneuver force defense against the current and future Air and Missile Defense (AMD) threat of short and medium range TBMs, cruise missiles, 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 lightweight launcher, reloader, 360-degree multifunction fire control radar 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 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 lightweight launcher to satisfy mobility, strategic deployability and interoperability requirements.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	0	114781	0	0
Total Adjustments	0	114781	0	0
Congressional Specific Program Adjustments	0	117745	0	0
Congressional Undistributed Adjustments	0	-2082	0	0
Reprogrammings	0	-882	0	0
SBIR/STTR Transfer	0	0	0	0

MEADS in FY 2002 was included in the Missile Defense Agency (MDA) Terminal Defense Segment Program Element (PE) 0603881C. MEADS was programmed to transfer to the Army in FY 2003 but per Congressional direction remained with MDA and was assigned its own MDA PE (0603869C). MEADS is programmed to transfer to the Army in FY 2004.

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

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2015 Medium Extended Air Defense (MEADS)	0	114781	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: MEADS in FY 2002 was included in the Missile Defense Agency (MDA) Terminal Defense Segment Program Element (PE) 0603881C. MEADS was programmed to transfer to the Army in FY 2003 but per Congressional direction remained with MDA and was assigned its own MDA PE (0603869C). MEADS is programmed to transfer to the Army in FY 2004.

The Medium Extended Air Defense System (MEADS) is an objective force system. As an international co-development program, MEADS is a Terminal Defense Segment Mission Area investment that is 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 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 and other air-breathing threats throughout all phases of tactical operations. MEADS will operate with upper-tier systems in areas of debarkation and assembly and provide continuous coverage alone or with Short-Range Air Defense System (SHORAD) systems in the division area 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 and modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, cruise missiles, unmanned-aerial-vehicles, tactical air-to-surface missiles, rotary-wing and fixed-wing threats.

The MEADS program has been restructured to leverage the interceptor from the PATRIOT Advanced Capability-3 (PAC-3) program with a thirty-two and half month Risk Reduction Effort (RRE) that focuses on developing the critical technologies required for maneuver force protection and overall risk reduction. U.S. funded bridging effort commenced on 14 August 2000 to begin work on the highest risk and long-lead items in the RRE Scope of Work. The International Memorandum of Understanding (MOU) was signed 27 June 2001, and the RRE contract was awarded 10 July 2001.

There remains a critical void in maneuver force defense against the current and future Air and Missile Defense (AMD) threat of short and medium range TBMs, cruise missiles, 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 lightweight launcher, reloader, 360-degree multifunction fire control radar, and a netted and distributed Battle Management/Command, Control, Communications, Computers and Intelligence (BM/C4I) Tactical Operation 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 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 lightweight launcher to satisfy mobility, strategic deployability and interoperability requirements.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Risk Reduction (RRE)		38533		
RDT&E Articles (Quantity)	0	0		

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603869C Meads Concepts - Dem/Val

	FY 2002	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 2002	FY 2003	FY 2004	FY 2005
Multi-Spectral RF Datalink		2879		
RDT&E Articles (Quantity)	0	0		

Provides for the Development of the Multi-Spectral Radio Frequency (RF) Datalink (MRFDL) in the PAC-3 Missile (Hardware Only).

	FY 2002	FY 2003	FY 2004	FY 2005
Program Integration		53580		
RDT&E Articles (Quantity)	0	0		

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 2002	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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

	FY 2002	FY 2003	FY 2004	FY 2005
Internal Operating		6530		
RDT&E Articles (Quantity)	0	0		

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Agencies and Support Contracts		13259		
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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

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).

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	90510	37033	2Q						127543	
Risk Reduction (RRE)	C/CPFF	LMMC/Orlando, FL	6612								6612	
Bridging Effort	C/CPFF	NAMEADSMA/HSV, AL	12000								12000	
Implement TPRP	C/CPFF	LMMC/Orlando, FL	3000								3000	
Proj Def-Val (PD/V)												
Proj Def-Val (PD/V)	C/FFP	NAMEADSMA/HSV, AL	101672								101672	
International Teaming	C/FFP	LM/H&R Teams/HSV, AL	9605								9605	
Multi-Spectral RF Datalink												
Multi-Spectral RF Datalink	C/CPFF	LMMC/Dallas, TX	9135	2879	1Q						12014	
Subtotal Product Development			232534	39912		0		0			272446	

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.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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/Other	PEO AMD/MDA/HSV, AL	2057	48605	2Q						50662	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603869C Meads Concepts - Dem/Val

Int`l Program Office	C/Other	NAMEADSMA/HSV, AL	7432	1500	2Q						8932	
U.S. Contracts	C/Other	MEADS Product Office/HSV, AL	10510	2595	2Q						13105	
U.S. OGAs	C/MIPR	MEADS Product Office/HSV, AL	16530	10664	2Q						27194	
U.S. Security	C/Other	Lockheed Martin/Syracuse, NY, Dallas, TX, FL	4000	3745	3Q						7745	
U.S. AoA	C/MIPR	MEADS Product Office/HSV, AL	2298								2298	
Composite Tracker	C/MIPR	CAS/HSV, AL		1230	2Q						1230	
Government Agencies and Support Contracts												
Subtotal Support Costs			42827	68339		0		0			111166	

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.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	C/MIPR	RTTC/HSV, AL	253								253	
ADSAM	Other	SMDC/HSV, AL	9915								9915	
Subtotal Test and Evaluation			10168	0		0		0			10168	

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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/Other	MEADS Product Office/NAMEADS MA/HSV, AL	19956	6530	2Q						26486	
Subtotal Management Services			19956	6530		0		0			26486	

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			305485	114781		0		0			420266	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

Fiscal Year	2002				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	1	2	3	4
Decisions																																
System Level Interface Demo								▽																								
Other																																
Program Review								△																								

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603869C Meads Concepts - Dem/Val**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Decisions								
System Level Interface Demo		4Q						
Other								
Program Review		4Q						

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	790535	1046652	0	0	0	0	0	0
1010 Battle Management, Command and Control (BM/C2)	30690	121603	0	0	0	0	0	0
1020 Communications	9845	0	0	0	0	0	0	0
1030 Targets & Countermeasures	90943	125010	0	0	0	0	0	0
1050 Systems Engineering & Integration	221857	368977	0	0	0	0	0	0
1060 Test & Evaluation	390986	372352	0	0	0	0	0	0
1070 Producibility & Manufacturing Technology	14083	21360	0	0	0	0	0	0
1090 Program Operations	32131	37350	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

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

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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 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.

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.

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.

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.

The T&E project provides consolidated BMDS-wide T&E capabilities and resources required to allow for cohesive facilitation, management, and execution of 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 funds 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); and Facilities, Siting, and Environmental (FS&E) efforts.

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.

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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603880C Ballistic Missile Defense System Segment**

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	807993	1065982	1208546	1157025
Current President's Budget (FY 2004 PB)	790535	1046652	0	0
Total Adjustments	-17458	-19330	-1208546	-1157025
Congressional Specific Program Adjustments	0	7300	0	0
Congressional Undistributed Adjustments	-5392	-17912	0	0
Reprogrammings	2656	-8718	-1208546	-1157025
SBIR/STTR Transfer	-14722	0	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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1010 Battle Management, Command and Control (BM/C2)	30690	121603	0	0	0	0	0	0
RDT&E Articles Qty	0	6	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

(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.

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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
C2BMC	30690	109648		
RDT&E Articles (Quantity)		6		

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.

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.

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.

- 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

- 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

	FY 2002	FY 2003	FY 2004	FY 2005
COMMUNICATIONS	0	11955		
RDT&E Articles (Quantity)				

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	24890	108203	1Q						133093	
Subtotal Product Development			24890	108203		0		0			133093	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	2900	3400	1Q						6300	
Subtotal Support Costs			2900	3400		0		0			6300	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	3000	10000							13000	
Subtotal Test and Evaluation			3000	10000		0		0			13000	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

IV. Management Services Cost ($ in Thousands)

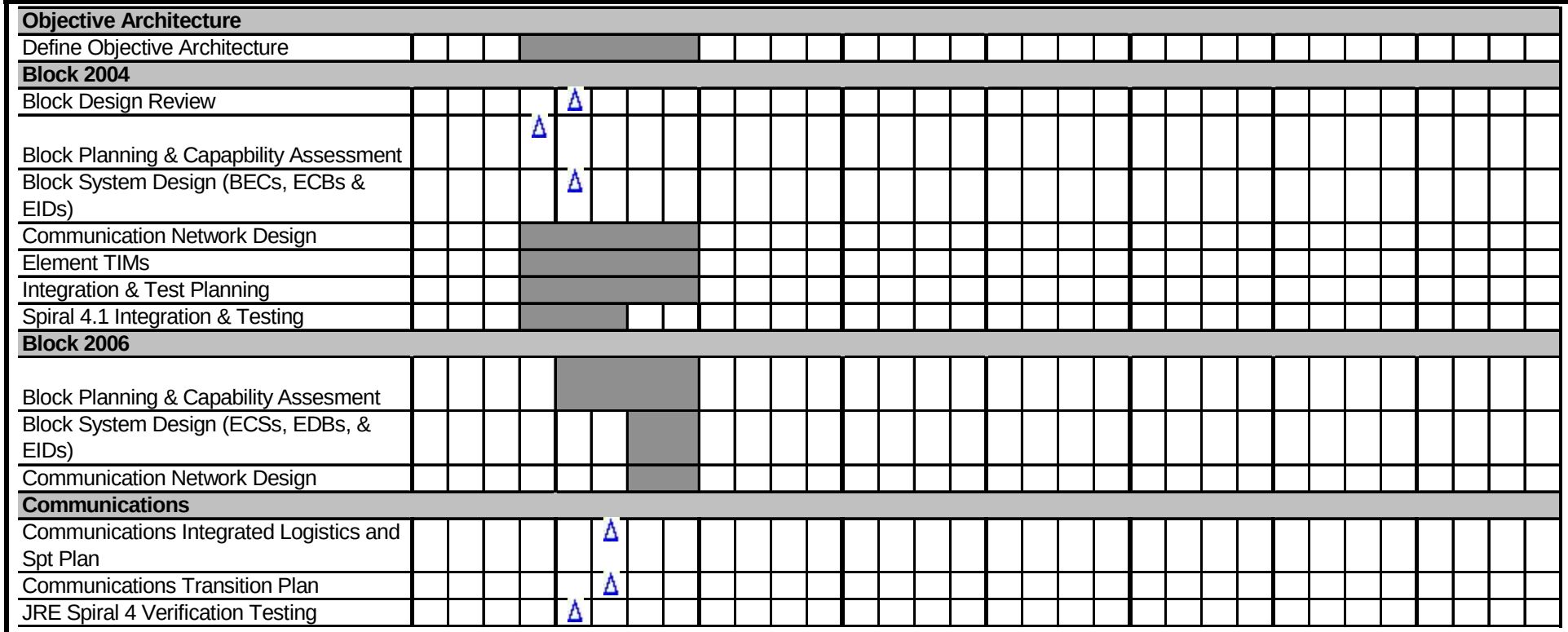
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			30790	121603		0		0			152393	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Objective Architecture								
Define Objective Architecture	4Q	1Q-4Q						
Block 2004								
Block Design Review		1Q						
Block Planning & Capability Assessment	4Q							
Block System Design (BECs, ECBs & EIDs)		1Q						
Communication Network Design	4Q	1Q-4Q						
Deployment & Logistics Spt Planning	4Q	1Q						
Element TIMs	4Q	1Q-4Q						
Integration & Test Planning	4Q	1Q-4Q						
Model & Sim Tools (Eval/Instal)	4Q	1Q-3Q						
Modeling & Simulation Analysis	4Q	1Q-4Q						
Spiral 4.1 Integration & Testing	4Q	1Q-2Q						
Spiral 4.1 Prototype Development	4Q	1Q-2Q						
Spiral 4.2 Integration & testing		3Q-4Q						
Spiral 4.2 Prototype Development		1Q-4Q						
Spiral 4.3 Prototype Development		3Q-4Q						
Block 2006								
Block Planning & Capability Assessment		1Q-4Q						
Block System Design (ECSs, EDBs, & EIDs)		3Q-4Q						
Communication Network Design		3Q-4Q						
Modeling & Simulation Analyses		3Q-4Q						
Communications								
Communications Integrated Logistics and Spt Plan		2Q						
Communications Transition Plan		2Q						
JRE Spiral 4 Verification Testing		1Q						
JNIC								
Facility Modifications		1Q-4Q						
Security System & Security Ops Center Upgrades		1Q-4Q						
Sustainment Engineering of Mission Infrastructure		1Q-4Q						
BM/C2/C-X Experiment								
BM/C2/C-X Experiment		1Q-4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1020 Communications	9845	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Missile Defense Agency (MDA) is establishing a Missile Defense National Team (MDNTB) Battle Management Command, Control and Communication (BM/C2/Comm) construct to deliver an integrated Ballistic Missile Defense System Battle Management Command and Control (BMDS BM/C2) 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 BM/C2/Comm component, BMDS BM/C2/Comm Block capability specifications, and the integration of BMDS Elements into the BMDS BM/C2/Comm component.

The Communications Project consolidates, refines requirements, and develops upgrades to existing communication systems that are being developed for the BMDS. It is the key, and critical enabler to integration of the BMDS BM/C2. The goal of BMDS communication is to provide robust network(s) that manage the dissemination of the information necessary to perform the BM and C2 objectives. It is responsible for developing capabilities that will allow all components of BMDS to exchange BM and situational awareness data, and to permit C2 orders to be transmitted to the weapon and sensor systems. Delivery of the Joint Range Extension (JRE) long-haul communications capability during the FY 2002 and FY 2003 timeframe will fill a critical, and timely, warfighter need in this area. Communication between BMDS and external sensors, to a wide range of command systems, and to other defense systems such as the Theater Air and Missile Defense (TAMD) and the NATO ACCS will be engineered and built to ensure the optimum effectiveness for Ballistic Missile Defense. The communication network(s) will seamlessly connect BMDS assets and link them with other applicable DoD networks and assets as required. In addition, the communication network(s) will also be able to link to other non-DoD networks and assets as required. The network infrastructure will make optimal use of existing data and information conduits and protocols.

Communication provides the engineering capability to assess allocated requirements and translate them into communication system specifications necessary to meet operator needs. This includes the development and allocation of communication specifications for transmission, for switches, relays and connection point hardware. Communication will use as a starting point the backbone system being developed by the Ground Based Midcourse System, a hybrid system of fiber optics and satellite systems. To meet the requirements of the other BMDS layers, it will be necessary to augment the Ground Based Midcourse System. On-going efforts such as the Joint Range Extension (JRE) program will be exploited to develop the global Ballistic Missile Defense (BMD) communication system.

The Joint National Integration Center (JNIC), formerly known as the Joint National Test Facility (JNTF), operates as the field-operating agency for the Missile Defense Agency. A state-of-the-art Development and Integration Environment Laboratory will be established to support BM/C2/Comm Architecture and Systems Specification development; develop, test and evaluate prototype BM/C2/Comm components; and support other critical BMDS BM/C2/Comm 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 Communications Architecture, System Specification and Elements assessment, integration; testing and validation work at the JNIC.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Communications	9845	0	0	0
RDT&E Articles (Quantity)				

Funding for the Communications effort will transition from Project 1020 to Project 1010 beginning in FY 2003 to consolidate similar program functions.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

The BMDS Communications efforts consolidate, refine requirements, and develop upgrades to existing communication systems that are being developed for 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 (JRE) long-haul communications capability during the FY 2002/03 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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Communications												
Comm Products	C/Various	MDA HQ/VA	7245								7245	
Subtotal Product Development			7245	0		0		0			7245	

Remarks

This Project transitioned to Project 1010 beginning in FY 2003.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Communications												
SETA	C/Other	MDA HQ/VA	1500								1500	
Subtotal Support Costs			1500	0		0		0			1500	

Remarks

This Project transitions to Project 1010 beginning in FY 2003.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Communications												
JNIC	C/Other	JNIC/CO	1100								1100	
Subtotal Test and Evaluation			1100	0		0		0			1100	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

IV. Management Services Cost ($ in Thousands)

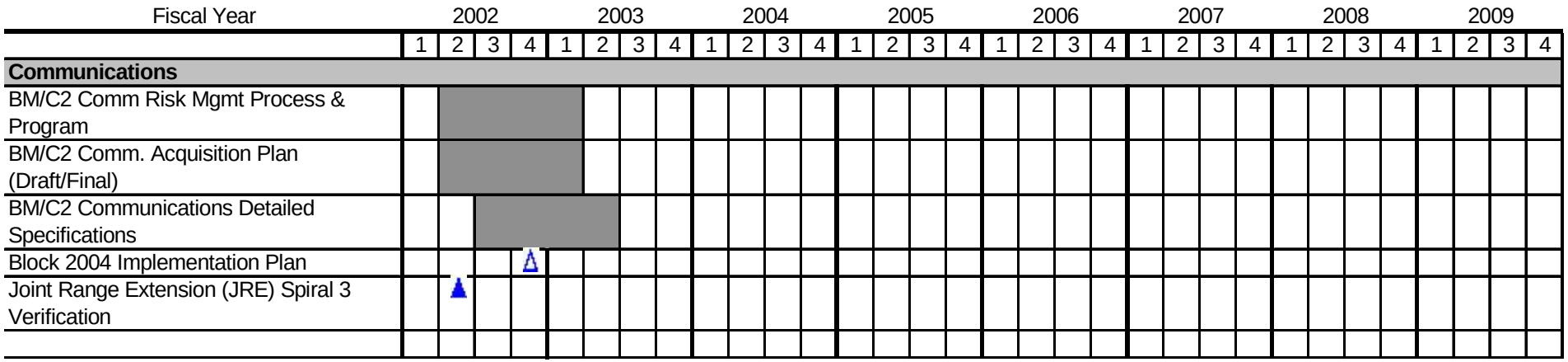
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			9845	0		0		0			9845	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Communications								
BM/C2 Comm Risk Mgmt Process & Program	2Q-4Q	1Q						
BM/C2 Comm. Acquisition Plan (Draft/Final)	2Q-4Q	1Q						
BM/C2 Communications Detailed Specifications	3Q-4Q	1Q-2Q						
Block 2004 Implementation Plan	4Q							
Joint Range Extension (JRE) Spiral 3 Verification	2Q							

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1030 Targets & Countermeasures	90943	125010	0	0	0	0	0	0
RDT&E Articles Qty	4	6	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Starting in FY 2004, this project will transition to PE 0603888C, Ballistic Missile Defense Test and Targets.

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:

- Continues the development of Short Range Air Launch Targets (SRALT) to support Arrow, Patriot (PAC-3), and Theatre High Altitude Area Defense (THAAD)
- Continues and completes development of Long Range Air Launch Targets (LRALT) to support THAAD and Arrow
- Continues the development of Short Range Liquid Fuel Target Booster
- Initiates the modification of a Foreign Material Acquisition (FMA) target launched from a Mobile Launch Platform to support Arrow and THAAD.
- Initiates the development of multi-mode Medium Range Targets to support Aegis BMD and THAAD.
- Initiates and completes 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 4Q/FY 2003, 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 2002	FY 2003	FY 2004	FY 2005
Payload Development	10590	23455		
RDT&E Articles (Quantity)	2	2		

This effort continues 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) and Critical Measurements Program (CMP-4) flight tests. These flight tests require 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 develops a next generation Fly Along Sensor Package (FASP), which will provide critical visible and infrared imagery for missile defense seeker performance risk reduction, algorithm evaluation, and target payload characterization.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

FY 2002 Accomplishments:
- RDT&E Test Articles: 1 CMP-4 decoy; 1 payload for ACFT-1a in April FY 2003;
- Complete development of a foreign cooperative program payload for Advanced Concepts Flight Test 1-a in April 2003.
- Continue development of two payloads for an ACFT-1b in April 2003.
- Initiate development of Fly Along Sensor Package (FASP).
- Complete a Critical Measurements Program (CMP-4) decoy.

FY 2003 Planned Accomplishments:
- RDT&E Test Articles: 2 payloads for ACFT-1b in April FY 2003
- Begin development of SLO payload suite (RV, instrumentation, associated objects, payload interface) to support Ground-based Midcourse Defense (GMD) to support RCF-2, IFT-21 and IFT-22.
- Initiate payload suite design and development for CMCM Campaign 1a & 1b tests in 3Q FY 2004.
- Initiate payload design and development for two CMCM-2a and 2b tests in 2QFY 2005.
- Complete payload development for an ACFT in April 2003.
- Continue development of the FASP.

	FY 2002	FY 2003	FY 2004	FY 2005
Target Development	49701	62270		
RDT&E Articles (Quantity)	2	4		

This effort provides for: 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) continues early concept development and prototyping of advanced systems or sub-systems for BMDS targets. Current, on-going target development efforts funded in this area include: 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 planned for FY 2003 include: 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 include an Enhanced Target Delivery System (ETDS) concept definition study, completed in FY 2002.

FY 2002 Accomplishments:
- RDT&E Test Articles: 2 Lance Fuel Refurbishment Proof of Design Tests
- Continued SRALT, LRALT, Short Range LFTB development efforts / contracts.
- Awarded FMA / Mobile Launch Platform contract.
- Completed ETDS concept definition study.

FY 2003 Planned Accomplishments:
- RDT&E Test Articles: 2 LRALTs for risk reduction testing; 2 Lances for FMA / Mission Launch Platform proof-of-principle testing.
- Complete two proof-of-principle tests (launch two Lance missiles from the Mobile Launch Platform) for the FMA / Mobile Launch Platform effort .
- Complete LRALT development and risk reduction flight testing.
- Continue SRALT and Short Range LFTB development efforts / contracts.
- Award a Medium Range Target contract.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Asset Management	13571	16180		
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel/Support Costs	5982	7826		
RDT&E Articles (Quantity)				

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

	FY 2002	FY 2003	FY 2004	FY 2005
Target Support	11099	15279		
RDT&E Articles (Quantity)				

This effort funds the Targets and Countermeasures Acquisition Strategy prime contract to include core contract costs, such as program management, systems engineering, and incentive fee. It does not include target development costs which have been captured in the Target Development line. This effort also continues 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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

D. Acquisition Strategy

Project 1030 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 program develops capability-based target systems utilizing both existing GFE and new target systems that meet target specifications detailed in BMD system and technical requirements documents. Current development of targets (to include LRALT, SRALT, and a short-range Liquid Fuel Booster), countermeasures, instrumentation, and characterization are executed under contracts at the Missile Defense Targets Joint Program Office (MDTJPO), the United States Air Force Space Missile Center (USAF/SMC), and the Missile Defense Agency (MDA). Beginning in 4Q/FY 2003, BMDS target systems will be developed and acquired utilizing a targets prime contract for all future target booster development activities, BMDS design and development of payloads and countermeasures, and all advanced target development. The prime contractor will also provide systems level management and perform systems engineering across the portfolio of BMDS targets. The government will maintain system responsibility and will ensure successful management of BMDS targets execution. Current, ongoing target development contracts will either be completed under the current contract structure, or will be transitioned to the prime contractor, depending on the status of the contract and maturity of the target system being developed.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	4800	17408							22208	
Long Range Air Launch Target	C/CPIF	Coleman Aerospace Corp/Orlando, FL	18554	4907							23461	
Short Rng Liquid Fuel Booster	C/CPFF	TRW / Orbital Sciences Corp/CA / AZ	12500	15600							28100	TBD
FMA/Mobile Launch Platform	C	Lockheed Martin/Huntsville, AL	6815	2576	1Q						9391	
Medium Range Target	C	TBD	0	15800	2Q						15800	
Advanced Development	C/Various	TBD	3519	3056							6575	
Payload Development												
Fly Along Sensor Package	C/FFRDC	MIT/LL/Boston, MA	3800	7105							10905	
CM Design, Develop, Charact	C/Various	Various	3349	8350	1/4Q						11699	
HARDFAC	C/FFRDC	AFRL/Albuquerque, NM	3441	4000							7441	
SLO	C/FFRDC	SNL/Albuquerque, NM	0	4000	1/4Q						4000	
Subtotal Product Development			56778	82802		0		0			139580	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	5825	6413							12238	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

SMC Support	C/Various	Various/Kirtland AFB, NM	0	300							300	
Prime Contract	C/Other	TBD	0	5009							5009	
Systems Engineering	C/Other	JHU/APL/Laurel, MD	1613	1285							2898	
Subtotal Support Costs			7438	13007		0		0			20445	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 Range Targets	Various	Various	0	2725	1Q						2725	
Various Booster Management	Various	various	13571	13455							27026	
Subtotal Test and Evaluation			13571	16180		0		0			29751	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	Other	Govt Agency - MDTJPO/Huntsville, AL	2671	4630							7301	
Targets Mgt Support	C/Various	Various/Washington, DC	3111	3026							6137	
Core & Mission	C/Various	Various	3661	2272							5933	
Government Travel	C/Various	various	200	170							370	
Program Mgt	C/Various	Gov Agency/Alb, NM	1900	638							2538	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

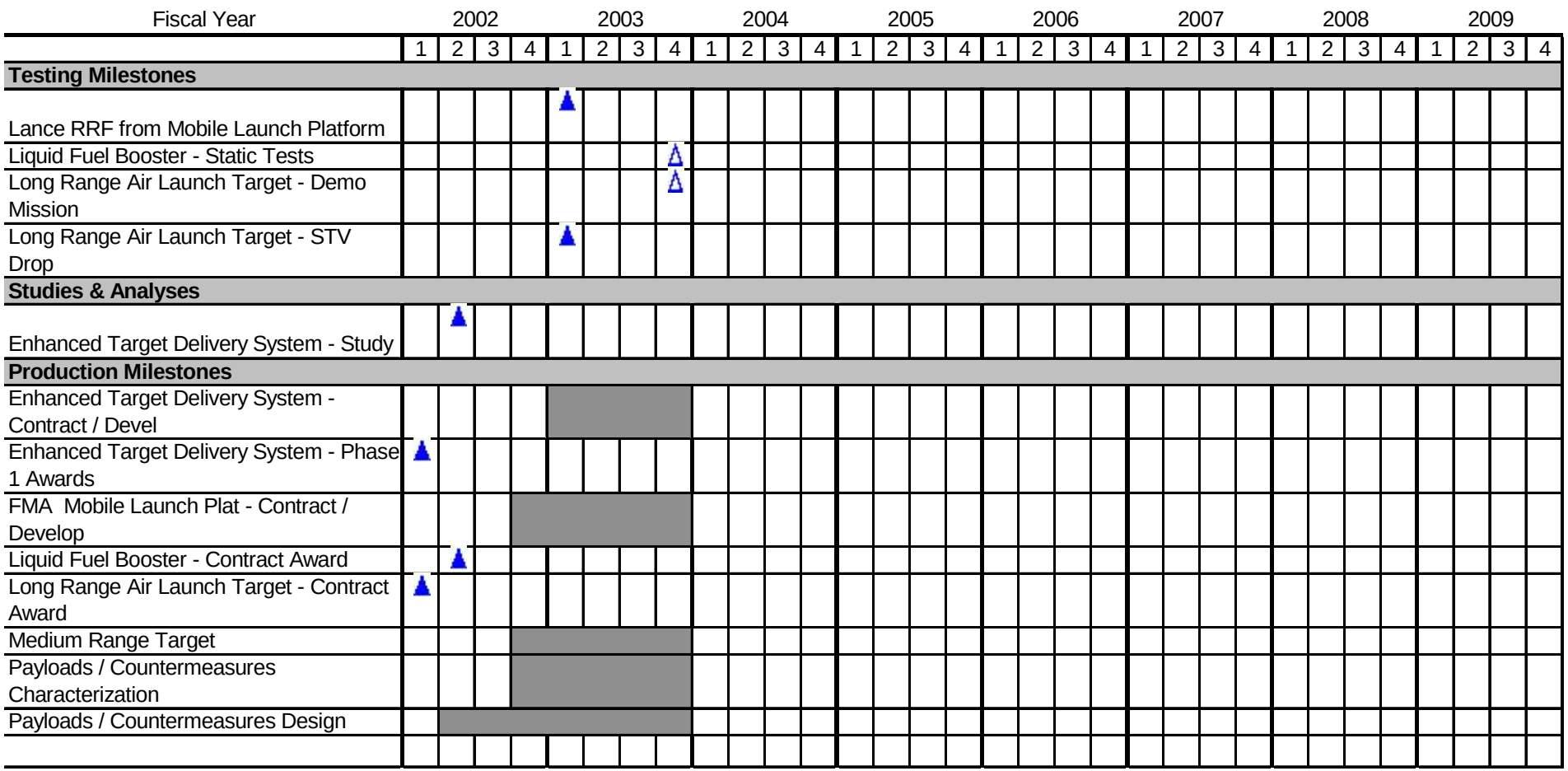
Various Support	C/Various	Various/TBD	1613	2285							3898	
Subtotal Management Services			13156	13021		0		0			26177	

Remarks

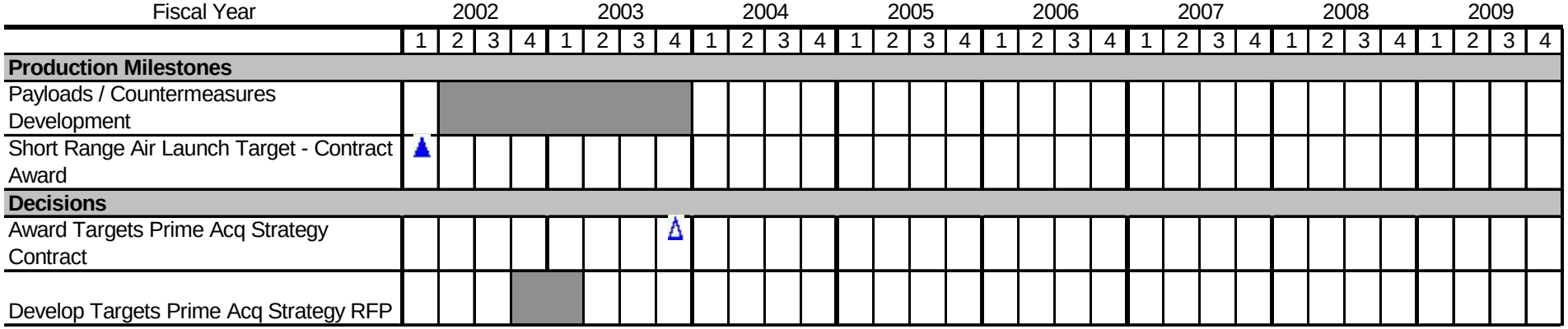
Project Total Cost			90943	125010		0		0			215953	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Lance RRF from Mobile Launch Platform		1Q						
Liquid Fuel Booster - Static Tests		4Q						
Long Range Air Launch Target - Demo Mission		4Q						
Long Range Air Launch Target - STV Drop		1Q						
Studies & Analyses								
Enhanced Target Delivery System - Study	2Q							
Production Milestones								
Enhanced Target Delivery System - Contract / Devel		1Q-4Q						
Enhanced Target Delivery System - Phase 1 Awards	1Q							
FMA Mobile Launch Plat - Contract / Develop	4Q	1Q-4Q						
Liquid Fuel Booster - Contract Award	2Q							
Long Range Air Launch Target - Contract Award	1Q							
Medium Range Target	4Q	1Q-4Q						
Payloads / Countermeasures Characterization	4Q	1Q-4Q						
Payloads / Countermeasures Design	2Q-4Q	1Q-4Q						
Payloads / Countermeasures Development	2Q-4Q	1Q-4Q						
Short Range Air Launch Target - Contract Award	1Q							
Decisions								
Award Targets Prime Acq Strategy Contract		4Q						
Develop Targets Prime Acq Strategy RFP	4Q	1Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1050 Systems Engineering & Integration	221857	368977	0	0	0	0	0	0
RDT&E Articles Qty	5	10	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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 SPACECOM/NORTHCOM 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 as the field-operating agency of MDA and maintains a world-class research, development, test and evaluation and rapid protoyping center. The center consists of a highly secure consolidated research and development building and a support building totaling almost a million square feet. It provides MDA with a high performance computing capability with a worldwide secure communications connectivity throughout the missile defense knowledge and extensive experience. The JNIC is a premier modeling and simulation and software development center for missile defense.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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 2002	FY 2003	FY 2004	FY 2005
SE&A/TSE	72013	187403		
RDT&E Articles (Quantity)				

Beginning in FY 2004, the System Engineering efforts will reside in the new Ballistic Missile Defense SE&I Program Element (0603887C).

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 2002
- Delivered the Technical Objectives and Goals (TOG) that lists a set of time-phased technical goals and objectives to guide the design and development of evolutionary capabilities for the BMDS.
- Delivered the Adversary Capability Document (ACD) that parametrically describes threat capabilities.
- Reviewed and approved Block program definition
- Delivered initial Black Team countermeasure concept
- Delivered Blue Team counter-countermeasure concepts to initial Black Team countermeasure

FY 2003
- Produce the System Evolution Plan (SEP) that describes the content of the BMDS development program.
- Produce 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.
- Produce 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.
- Deliver 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.
- Deliver 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).
- Deliver Red Team countermeasure conceptual design
- Deliver Black Team countermeasure conceptual design
- Deliver Blue Team counter-countermeasure plan against Red and Black Team countermeasures

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

BLOCK 2006:
FY 2002
- Conducted initial review providing insight to Block architecture
- Developed initial specifications for potential Forward Based Radar

FY 2003
- Deliver Block SCS
- Deliver Block ECS/CCS
- Deliver Block ICS
- Finalize specifications for Forward Based Radar
- Review multiple candidates for Block architecture
- Compete alternatives for BMDS Block architecture
- Review and approve Block program definition
- Update the TOG
- Update the ACD
- Update the SEP
- Deliver Red Team countermeasure conceptual design
- Deliver Black Team countermeasure conceptual design
- Deliver Blue Team counter-countermeasure plan against Red and Black Team countermeasures

BLOCK 2008:
FY 2002
- Developed Concept for Kinetic Energy (KE) Boost Capability

FY 2003
- Complete conceptual design for Block and BMDS elements
- Develop specifications for KE Boost Interceptor
- Update the TOG
- Update the ACD
- Update the SEP

BLOCK 2008+:
FY 2003
- Update the TOG
- Update the ACD
- Update the SEP

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Advanced Systems	53990	84597		
RDT&E Articles (Quantity)	5	10		

PROJECT HERCULES:
Beginning in FY 2004, funding for the Hercules Project will reside in the new BMDS Products Program Element (0603889C), Project 1010 (BMC2).

- 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

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.

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.

- 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.

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.

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.

- 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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Intelligence Systems Threat	12149	12292		
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding for the Intelligence Systems Threat effort will reside in the Ballistic Missile Defense SE&I Program Element (0603887C).

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:

Database include
- --Characteristics
- --Performance
- --IOC & service life
- -- Payloads
- --Countermeasures
- --Force levels
- --Proliferation
- --Radar and infrared signatures

SCENARIOS
2002 Accomplishments:
- --GMD Block 2006 threat suites
- --GMD Block 2008 threat suites
- --ACD Intel-Based Threat Data
- --ACD Conceptual Systems 3, 4, 10
- --MDSE Build 3.4 Threat Trajectories
- --MDEx threat support
- --GMD Sim 02A threat support
- --BPEx 02-1 threat support

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

--BPEx 02-2 threat support
--HWILT 02a threat support
--HWILT 02b threat support
--BMDS Wargame threat support

2003 Planned:
--ACD Conceptual Threat Systems, Intel-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

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Warfighter Support	18264	15980		
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 2002 Accomplishments:
Provided BMD expertise to the Combatant Commanders, bringing joint/combined/coalition lessons learned to the developer, coordinated block contingency deployment plans, engaged Combatant Commanders in Command and Control development, facilitated intra/inter theater CONOPS developments, facilitated program transition to services, maintained interaction with the transitioned programs, and supported Commanders in Chief BMD exercises, wargames, and tabletops.

Block 2004:
- Develop preliminary IMD CONOPS for the BMDS.
- Develop TTP and ROE to integrate BMDS elements into Operational Community.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

- Develop and coordinate deployment of BMDS initial defensive operations.
- Interface and coordinate BMDS issues with Services, Joint Staff and Allied Forces.
- Explore emerging BMDS and BMC2 concepts/options through studies, seminars, SWARFS, workshops, tabletops, wargames and exercises using the JNIC as the hub.
- Manage Board of Directors process to support Service integration and transition.
- Construct BMDS curriculum to build knowledge base with Combatant Commanders senior warfighters.

	FY 2002	FY 2003	FY 2004	FY 2005
Joint National Integration Center	47423	46900		
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding for this effort will reside in the BMDS Products Program Element (0603889C), Project 1010, BM/C2.

The FY 2002 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, Test Bed 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 will allow the JNIC to continue maintaining these programs at the level of FY 2002 and again with limited modernization.

	FY 2002	FY 2003	FY 2004	FY 2005
Cooperative Program and Allied Support	937	1399		
RDT&E Articles (Quantity)				

Provide 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 include 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 include but are not limited to bilateral, unilateral and multi-lateral examinations of U.S. and foreign assets in extended air defense scenarios. Provide the basis for developing potential foreign military sales opportunities.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Information Management System	17081	20406		
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding for this effort will reside in the new Ballistic Missile Defense SE&I Program Element (0603887C), Project 1080, BMD Information Management Systems.

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 2002, accomplishments included the following: Developed WIN 2000 enterprise implementation strategy; Designed WIN 2000 enterprise; Upgraded Virtual Data Center (VDC) circuits and host servers to accommodate associative neuro-networking technology; Began the establishment of a Single BMD Web portal; Made Corporate Board process on line; Awarded contract extension to expand BMD Information Resource Center (BIRC) to improve Automated Information Systems, begin scanning documents and linking to card catalog database, link library systems to BMDONet web portal for remote access; Selected Portal S/W for integrated BMD Data Centers card catalog; Began Information Management / Knowledge Management (IM/KM) System Planning; Established Groupware HW/SW Requirements; Developed Web Portal Version 2.0; Began the expansion of Data Center's integrated card catalog to link NWAS.

In FY 2003, efforts will include, but will not be 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 NWAS 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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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/ONR	30506	49501	1Q					CONT.	80007	
Subtotal Product Development			30506	49501		0		0			80007	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	11757	113318	1/2Q					CONT.	125075	
Corporate Lethality Prgm	Various	Various	7600	6700	1/3Q					CONT.	14300	
CM/CCM	Various	Various	1600		1/3Q					CONT.	1600	
SETA Support	CPFF	Sparta/VA	6485	20200	2Q					CONT.	26685	
SETA Support	CPFF	CSC/VA	5792	13885	2Q					CONT.	19677	
SETA Support	Various	VRI/VA	1515	800	1Q					CONT.	2315	
SETA Support	CPFF	SAIC/VA		200	1Q						200	
Advanced Systems												
Advanced Systems	Various	Various	20000	25000	1Q						45000	
Intelligence Systems Threat												
Army Intel Support	MIPR	NGIC, SMDC	1788	2823	2Q						4611	
Air Force Intel Support	Other	NAIC	870	885	2Q						1755	
Program Support	Other	SMDC/AL	4380	3199	2Q						7579	
App Support	Other	SPC/CO	2580	2867	2Q						5447	
Scenario Pro	Other	MDA/VA	2231	2118	2Q						4349	
Wargaming Support	Other	SPC/CO	300	400	2/4Q						700	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

Information Management System												
Enterprise Info Mgt	MIPR	AMSC/AL	1851	2664	2Q						4515	
Enterprise Info Mgt	MIPR	MDDC/AL	3920	4306	2Q						8226	
Enterprise Info Mgt	MIPR	JNIC/CO	878	2071	2Q						2949	
Enterprise Info Mgt	BPA	FEDSIM/VA	3260	1570	2Q						4830	
Enterprise Info Mgt	CPFF	DRC/VA	1239	1579	2Q						2818	
Enterprise Architecture & Eng	BPA	SRA/VA		4303	2Q						4303	
Enterprise Architecture & Eng	MIPR	DISA/VA	782	800	2Q						1582	
Enterprise Info Mgt	Various	Various	2128	618	2Q						2746	
Enterprise Architecture & Eng	Various	Various	426								426	
Joint National Integration Center												
JNIC	Other	50 Space Wing/CO		906	1Q						906	
Subtotal Support Costs			81382	211212		0		0			292594	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	15175	13980	2/4Q					CONT.	29155	
Joint National Integration Center												
JNIC	C/CPAF	Northrop Grumman/CO	36261	35909	2Q					CONT.	72170	
Advanced Systems												
Advanced Systems	Various	SMDC/AL		5096	1/3Q						5096	
Subtotal Test and Evaluation			51436	54985		0		0			106421	

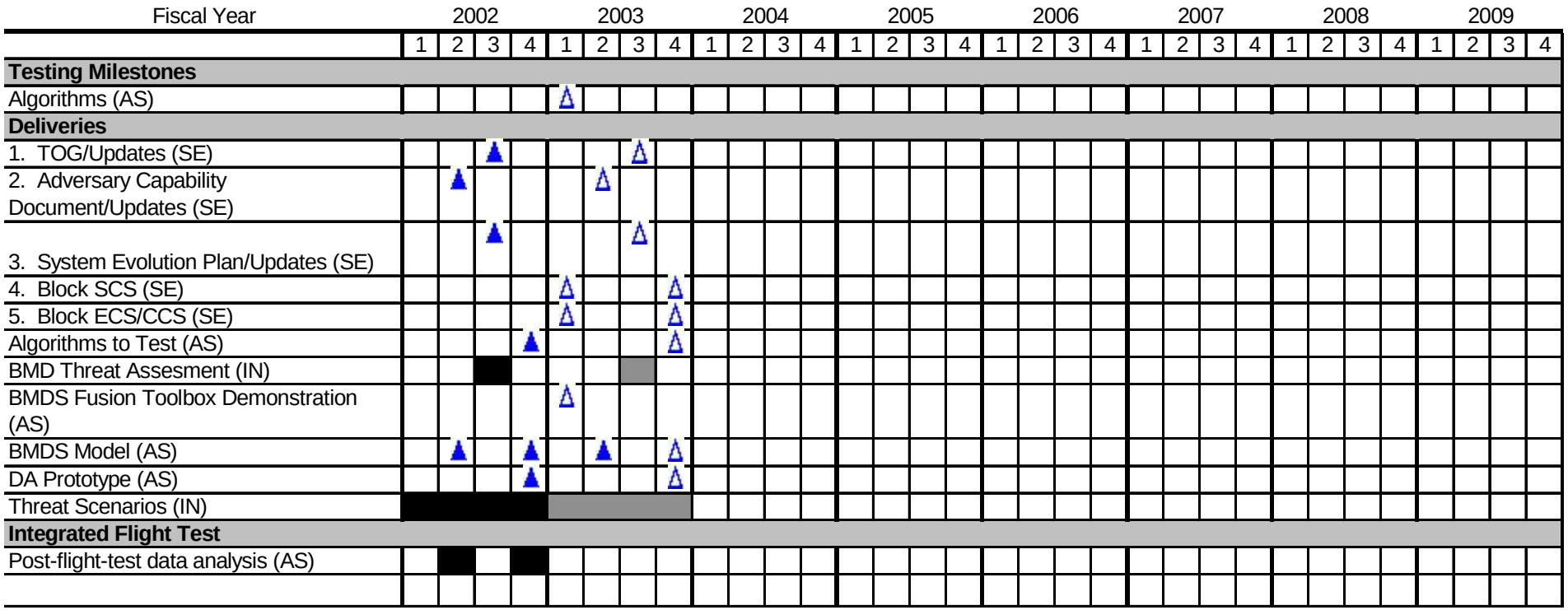
Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

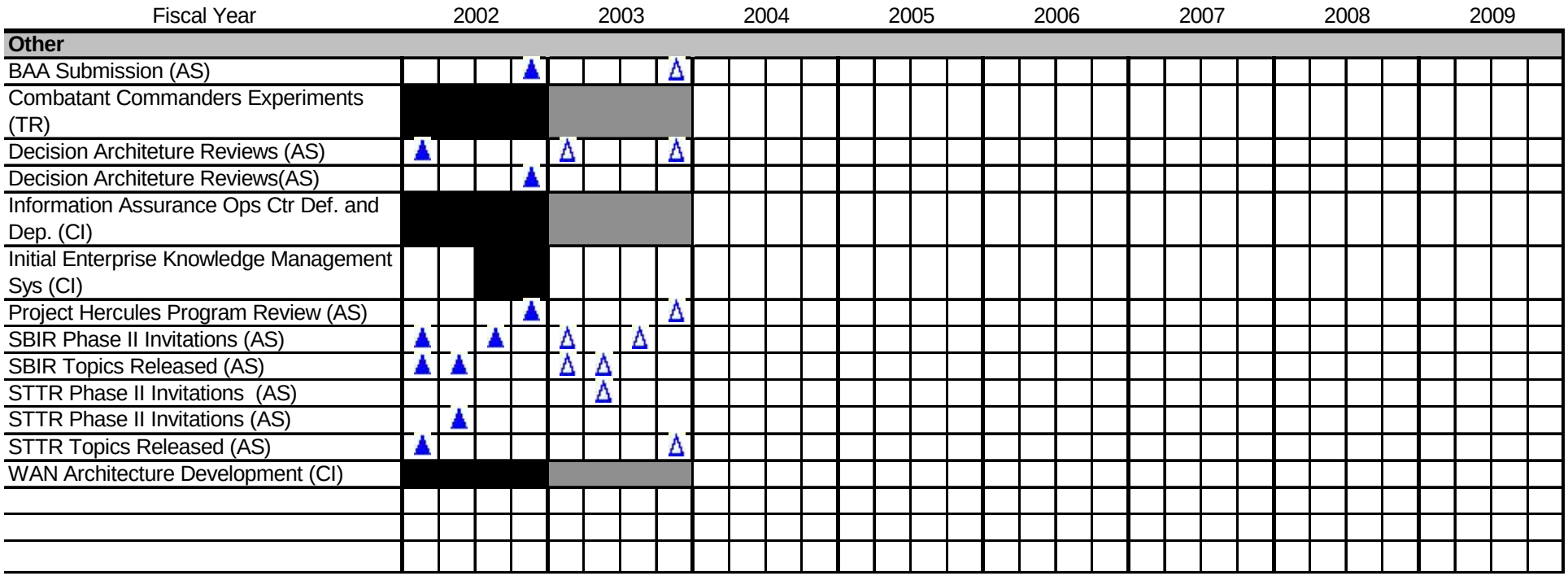
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	26595	27500	2Q					CONT.	54095	
Government Personnel Spt	Other	WHS/Washington, DC	10100	4200	2Q					CONT.	14300	
Travel	Other	Various	700	600	2Q					CONT.	1300	
Advanced Systems												
Advanced Systems	Other	CSC/SMDC	3484	5000	1Q					CONT.	8484	
Joint Warfighter Support												
Support Contracts	MIPR	CSC, Vanguard, Sparta/VA	3170	2000	2Q					CONT.	5170	
Joint National Integration Center												
JNIC	Other	JNIC/CO	3794	3305	1/4Q					CONT.	7099	
JNIC	Other	USN/NRL, MD	900	926	1/4Q					CONT.	1826	
JNIC	CPAF	ARINC/CO	4111	4197	1Q					CONT.	8308	
JNIC	MIPR	FFRDC/Various	2357	1657	1Q					CONT.	4014	
Cooperative Program and Allied Support												
CF Program Support	CPFF	Sparta/Various	937	1399	2Q					CONT.	2336	
Information Management System												
Ent. Plans Policies & Analyses	CPFF	EMC/CA	2355	2295	1/2Q					CONT.	4650	
Ent. Plans Policies & Analyses	CPFF	Gartner/VA	242	200	2Q						442	
Subtotal Management Services			58745	53279		0		0			112024	
Remarks												
Project Total Cost			222069	368977		0		0			591046	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Algorithms (AS)	1Q,4Q	1Q,4Q						
Deliveries								
1. TOG/Updates (SE)	3Q	3Q						
2. Adversary Capability Document/Updates (SE)	2Q	2Q						
3. System Evolution Plan/Updates (SE)	3Q	3Q						
4. Block SCS (SE)		1Q,4Q						
5. Block ECS/CCS (SE)		1Q,4Q						
Algorithms to Test (AS)	1Q,4Q	1Q,4Q						
BMD Threat Assessment (IN)	3Q	3Q						
BMDS Fusion Toolbox Demonstration (AS)		1Q						
BMDS Model (AS)	2Q,4Q	2Q,4Q						
DA Prototype (AS)	4Q	4Q						
Government Verification Management Plan (SE)		1Q						
Reviewed and approved Block program definition (SE		4Q						
Specifications for KE Boost Interceptor (SE)		3Q						
System Design Review (SE)	4Q	1Q,3Q						
Threat Scenarios (IN)	1Q-4Q	1Q-4Q						
Studies & Analyses								
Initial review of Block 06 architecture (SE)	3Q							
Decisions								
Reviewed and approved Block program definition (SE	4Q							
Integrated Flight Test								
Post-flight-test data analysis (AS)	2Q,4Q							
Other								
ACIC Concept Evaluation (AS)	1Q-4Q							
Algorithm Handover Meetings (AS)	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q						
BAA Submission (AS)	4Q	4Q						
Combatant Commanders Experiments (TR)	1Q-4Q	1Q-4Q						
Decision Architecture Reviews (AS)	1Q	1Q,4Q						

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Decision Architecture Reviews(AS)	4Q							
Information Assurance Ops Ctr Def. and Dep. (CI)	1Q-4Q	1Q-4Q						
Initial Enterprise Knowledge Management Sys (CI)	3Q-4Q							
Project Hercules Program Review (AS)	4Q	4Q						
SBIR Phase II Invitations (AS)	1Q,3Q	1Q,3Q						
SBIR Topics Released (AS)	1Q,2Q	1Q,2Q						
STTR Phase II Invitations (AS)		2Q						
STTR Phase II Invitations (AS)	2Q							
STTR Topics Released (AS)	1Q	4Q						
WAN Architecture Development (CI)	1Q-4Q	1Q-4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1060 Test & Evaluation	390986	372352	0	0	0	0	0	0
RDT&E Articles Qty	0	12	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Beginning in FY 2004, 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).

The Test & Evaluation (T&E) Project consolidates all System-wide T&E resources. This allows for the more cohesive facilitation, management and execution of these test activities for a single, integrated 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. Specific T&E costs are captured in the respective BMDS element.

MDA's testing needs are quickly expanding beyond those of the individual BMDS elements. To address these needs, the System Test & Assessment Program provides 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); the Missile Defense Integrated Exercises (MDIEs), and the Missile Defense Wargames. The BMDS Test Program provides for characterization of BMDS performance as input to block assessments. Program objectives can be accomplished through dedicated test events or through overlays on other test exercises. 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. To support the BMDS Test Program development, program objectives, and performance characterization, MDA T&E provides resources to support the activities of the Optical Data Analysis (ODA), Radar Data Analysis (RDA), and Radar Data Exploitation (RDE) 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 BMDS testing. These tests directly improve threat system representation in the system core models.

The BMDS Measurements Program is an integrated test program designed to provide an understanding of the phenomenology associated with discrimination (with and without countermeasures), lethality and kill assessment. This program consists of the Critical Measurements Program (CMP), Countermeasure/Counter-countermeasure (CM/CCM) Program, Aerial Dispersion Experiment (ADE), Lethality and Kill Assessment Programs. The CMP tests collect data for all elements and the BMDS to support Systems Engineering assessments, ground effects analysis and to characterize specific CMs and CCMs to augment the CM/CCM Program. As the CMP progresses it will become more CM/CCM centric and will be merged with the CM/CCM Program (after FY 2003). Future flight tests occurring after FY 2003 will be designated Critical Measurements and Countermeasures (CMCM) flight tests. The CM/CCM Program has two principal efforts: Advanced Systems Flight Tests (ASFT) and the CM/CCM Test effort. The ASFT objectives are: CM characterization including signatures and phenomenology to support discrimination algorithm development and model validation and development and assessment of feasibility and efficacy of CMs. The CM/CCM Test effort encompasses: developing and executing tests to address CM characterization, element/system degradation and CCM mitigation assessment. The Aerial Dispersion Experiment (ADE) test is 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, facilitate development of real time decision tools to support tactics and engagement doctrines.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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 currently includes support at

BMD-unique ground test facilities:
- 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

.

BMD-unique range assets at various DoD test ranges:
- 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 Launch Complex
- Naval Air Warfare Center, Weapons Division, Pt Mugu, CA

Airborne sensors, data collection assets, and special test equipment include:
- 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

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. Recommended test infrastructure improvements resulting from the FY 2002 Test Bed Infrastructure Study and the on-going Target Requirements Study are also implemented through the Test Resources Program. The Test Resources effort also supports the development of target requirements and the certification that targets satisfy test objectives.

The core Modeling and Simulations (M&S) Program provides 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 include 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 support MDIE Exercises for engineering, development, and test of BMDS integration and interoperability. Operator in the loop tools support 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 provide 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 funds 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 supports over 15 international initiatives including the Israel Arrow Program. Programs such as a Russian Cooperative Modeling and Simulation program are also resourced within this project.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

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 Environmental Safety and Occupational Health (ESOH) Programs, including the Environmental Assessment and Environmental Impact Statement process, environmental compliance, pollution prevention, and other environmental efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
System Test & Assessment	129932	139287		
RDT&E Articles (Quantity)	0	8		

FY 2003 RDT&E Articles: Two (2) Castor IVB boosters with threat-like RVs for CMP-4, Two (2) Black Brant XI missiles for ASFT, Four (4) liquid propelled rockets for ADE

FY 2002 Accomplishments

The BMDS Test Program completed the following efforts:
- Executed a highly successful System Integration Test which included demonstration and data collection on threat representative targets, and demonstration of a BMDS interoperability event in which Patriot was successfully cued by Aegis.
- Conducted Wargame 02 employing MDWARs which focused on development and refinement of operational concepts and characterized the effect of C2BMC operator involvement and information exchange needs which support the 2004 and 2006 BMDS Capability Assessments.
- Completed Missile Defense Integration Exercises.
- Supported the PATRIOT IOT&E Interoperability Demonstration employing MDSE and EADTB accredited by ATEC.
- Performed SIT II/Coral Talon III Risk Reduction and ARROW System Improvement Program Interoperability testing support by MDSE-ARROW.
- Supported data collects by Observation Island and Gray Star missions, supported data planning, collection, and analysis of optical and radar data, and explored phenomenology for critical BMDS mission areas that support enhancements to SSGM and development of the Battlespace Environments and Signatures Toolkit (BEST).

The BMDS Measurements Program conducted the following efforts:
- Conducted test planning, sensor planning, material development, range integration efforts, and design reviews in support of measurement flight test programs scheduled for FY 2003. These efforts include: Critical Measurements Program 4 (CMP-4), Advanced Systems Flight Test (ASFT), and Aerial Dispersion Experiment (ADE).
- Re-established Kill Assessment Program and performed analysis/comparison on historic data sets and recent IFT impact data sets to survey phenomenology which may provide a method for identifying warhead related materials.
- Continued monitoring of the lethality Ground and Live Fire Test and Evaluation activities associated with various programs elements, and designing flight test experiments which leverage BMD intercepts for the collection of lethality ground effect data that support improvements to PEGEM, KIDD and PEELS.

FY 2003 Planned Program:

The planned BMDS Test Program includes Missile Defense Integrated Exercises (MDIEs), the System Integrated Flight Tests (SIFTs), and the Missile Defense Wargames.
- The MDIE will perform Block 2004 Testing to support SIFTs (with initial looks at Block 2006).
- Expand MDSE to Block 2004 System Elements.
- Conduct Testing using SIT II data, Model Validation, and Flight Test Risk Reduction testing.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

- Continue US-Israeli interoperability testing and development of a US/Russian Federation Cooperative M&S Initiative.
- Execute the Block 2004 Midterm Program and Block 2004 GRADEX using SIFTs to overlay system level objectives on to currently planned elements tests.
- The MDWAR will support at least two Wargame events per year in FY 2003 to explore operational concepts with a focus on collaborative planning and crisis action re-planning for the 2004 and 2006 architectures, and at least two Wargame events per year in FY 2004-FY 2005 to explore operational concepts, tactics, techniques, and procedures, and C2BMC to support assessment of the 2006 and 2008 architectures.

The planned BMDS Measurements Program includes:
- Critical Measurements Program 4 (CMP-4), Advanced Systems Flight Test (ASFT), and the Aerial Dispersion Program (ADE). As the complete Measurements Program test requirements definition process unfolds, MDA T&E will combine CMP, ASFT and SE CM/CCM campaigns to reduce costs, leverage assets and compress time schedules.
- MDA T&E will conduct test planning and test execution for future BMDS Measurements Program flight test campaigns to incorporate 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.
- 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 Aegis BMD FM2 and FM3 impact 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.

	FY 2002	FY 2003	FY 2004	FY 2005
Test Resources	169296	127294		
RDT&E Articles (Quantity)	0	4		

FY 2003 RDT&E Articles: Two (2) Lance Targets for use in MLP Demonstration; complete Development of HALO-II; WASP IOC

FY 2002 Accomplishments

- Continued to maintain the core test infrastructure (Ground Test Facilities, Airborne Sensors, Test Ranges).
- Conducted a 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.
- Began development of a transportable Telemetry/Range Safety system that will support world wide test data collection for all BMDS element and system tests.
- Continued development of the Wide-body Airborne Sensor Platform (WASP) and the High Altitude Observatory - (HALO) II airborne sensor system. (WASP and HALO II support IR data collection on BMDS system and element-level testing).
- Initiated a common range safety standardization program designed to lower test execution risks and cost while leveraging on the experience of the BMD test community.
- Initiated preparations for a proof-of-principle demonstration of a rudimentary mobile launch platform (MLP).

FY 2003 Planned Program

- Provide for operations, sustainment, and modernization of the core corporate test and evaluation infrastructure components of the BMDS Test Bed including ranges/instrumentation, airborne sensors, and ground test facilities to support element- and system-level testing.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

- Provide level-of-effort funding to ranges/instrumentation to maintain MDA-unique test facilities for MDA tests. For example, at the Reagan test site Meck Island will be maintained for GMD testing.
- Provide sustainment funding to maintain the current airborne assets, HALO-I and the Airborne Surveillance test bed (AST).
- Provide investment funding to complete development and sustain the next generation, state-of-the-art airborne instrumentation platforms, HALO-II and WASP that will replace HALO-I and AST.
- Provide level-of-effort funding to maintain MDA-unique ground test facilities, including wind tunnels, space chambers, light gas guns, the high speed test track, 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.
- Conduct a MLP demonstration in early FY 2003.
- Implement recommendations from the Test Bed Infrastructure Study to improve the test infrastructure in terms of capability and quantity. These improvements 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 Reagan Test Site, improve Meck Island test infrastructure including the power grid to support GMD testing and upgrades existing ground based sensors (millimeter wave - MMW) to expand the testing envelope through an increase in range and sensitivity.
- 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 scheduled for completion by 2Q/04.

	FY 2002	FY 2003	FY 2004	FY 2005
Modeling & Simulation	88203	98956		
RDT&E Articles (Quantity)				

FY 2002 Accomplishments

- Developed and maintained a validated set of 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 cooperative international coalition efforts.
- Competed and awarded the Battlespace Environments and Signatures Toolkit (BEST) contract to incorporate and upgrade legacy environment and signatures software codes to current software practices.
- Started lethality M&S development upgrade in concert with the Corporate Lethality Program (CLP) and international collaborative M&S initiatives to expand current capability.

FY 2003 Planned Program

- Develop and maintain a validated set of System Core models and simulations (M&S) and M&S support activities
- Maintain 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.
- Continue to mature legacy environment and signature software codes for BEST.
- Continue the Lethality M&S development upgrade in concert with the CLP.
- Expand International collaborative M&S initiatives with international cooperative agreements.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Facilities, Siting & Environmental	3555	6815		
RDT&E Articles (Quantity)				

FY 2002 Accomplishments

- Provided environmental program guidance, compliance, planning and NEPA support, real property facility, acquisition, facility operations, and maintenance/repair support for the BMDS.
- Planned, programmed, budgeted, and provided oversight to facility acquisition through the Military Construction (MILCON) and RDT&E construction programs.

FY 2003 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.
- Ensure 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.

C. Other Program Funding Summary

	FY 2002	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	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

D. Acquisition Strategy

Test & Evaluation Program will support 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.

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.

Test programs will be executed utilizing a consolidated targets development, test resource, facilities, siting and environmental, and system-wide test program strategy. BMD management requirements will be met through MDA and other DoD agency personnel. BMD technical and program management services will be competitively procured from industry to provide the required infrastructure, engineering, programmatic, test and evaluation, and system specific expertise required to develop BMDS programs.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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	13997	16702	1Q						30699	
Critical Measurements Program	Various	Various	24496	29475	1Q						53971	
Missile Def Integ Exercises	Various	Various	7811	10412	1Q						18223	
Special Program Tests	Various	USASMDC/Huntsville, AL	18935	7760	1Q						26695	
Radar Exploitation	Various	USASMDC/Huntsville, AL	2346	2555	1Q						4901	
Corporate Data Collect & Analy	Various	Redstone Ars, Quantico/AL, VA	1560	5186	1Q						6746	
Optical Data Analysis	Various	Various	5911	5303	1Q						11214	
Radar Data Analysis	Various	Various	3443	3391	1Q						6834	
CM/CCM Support	Various	Various	27225	27997	1Q						55222	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

BMDS Wargames	Various	JNIC/Colorado Springs, CO	1406	1719	1Q						3125	
Lethality	Various	Various	814	2945	1Q						3759	
Kill Assessment	Various	USASMDC/Huntsville, AL	1833	2620	1Q						4453	
Arrow-MDSE	Various	Various	1879	2456	1Q						4335	
International Programs	Various	Various	5731	825	1Q						6556	
Test Planning	MIPR	Various/NJ, Wash D.C., TN	795	787	1Q						1582	
IFT-10 Pre/Post Analy & Exec	Various	Navy	0	3109	1Q						3109	
Tactical S&T MK99 CWI X-Band	Various	Navy	0	1155							1155	
Test Resources												
Ground Test Facilities	Various	Army & Air Force/NY, AL, FL, MD, TN, CA, NM	20982	20949	1Q						41931	
Test Ranges	Various	Various/HI, NM, Marshall Is	28451	54770	1Q						83221	
Airborne Sensors	C/Various	Raytheon, Aeromet, Boeing/CA, OK, WA	71486	35782	1Q						107268	
Targets Cert & Reqt`s	Various	USASMDC, POET/HSV AL, Wash D.C.	637	1343	1Q						1980	
RDT&E Construction		TBD		962							962	
Congressional Adds	Various	Various /HI	33957								33957	
Modeling & Simulation												
International Coop M&S	Various	Various	8940	8030	1Q						16970	
BMD System Core M&S	Various	Army, JNIC et al/AL, CO	34941	34872	1Q						69813	
BMD Eng/Leth M&S	Various	Army, Air Force, Navy	22382	28847	1Q						51229	
System Model Program Support	Various	Army	3277	6865	1Q						10142	
Adv. Res Ctr & Sim Ctr	Various	USASMDC/Huntsville, AL	12000	11789	1Q						23789	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

Facilities, Siting & Environmental												
Facilities & Siting	Various	Various	88	233	1Q						321	
Environmental Compliance	Various	Various	197	287	1Q						484	
RDT&E Construction	Other	DOT/Fed Hwy Admin/Alaska	1700		1Q						1700	
BMD Prog. EIS	Other			2646	1Q						2646	
Subtotal Test and Evaluation			357220	331772		0		0			688992	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	Other	USASMDC/Huntsville	2417	3054	1Q						5471	
Support Contracts	C/FFP	SPARTA, TASC/CA, MA	8654	11304	1Q						19958	
TE Travel	Other	MDA/Wash D.C.	679	532	1Q						1211	
Test Resources												
SMDC Govt Personnel	Other	USASMDC/Hunstville, AL	1646	2544	1Q						4190	
SETA Support	C/FFP	TASC, SPARTA/MA, CA	8231	9365	1Q						17596	
Test Ranges Support	SS/MIPR	POET/Arlington, VA	1480	1579	1Q						3059	
OSD Withhold		OSD Withhold	726		1Q						726	
Modeling & Simulation												
Gov`t Project Personnel	Other	USASMDC/Huntsville, AL	1555	1614	1Q						3169	

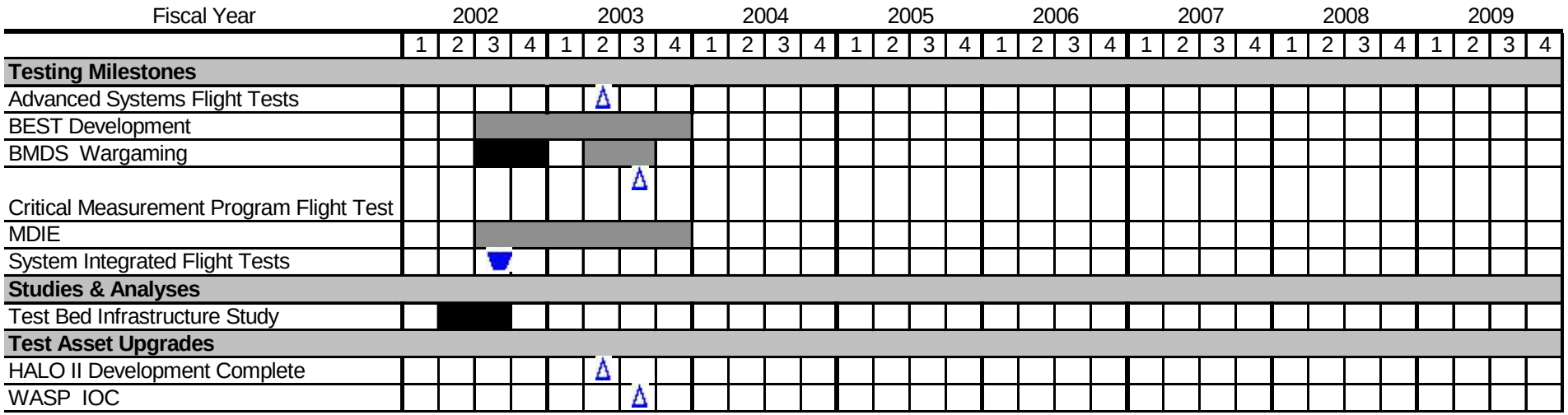
MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Support Contract	FFP	Booz Allen Hamilton et al/CA	5108	6939	1Q						12047	
Facilities, Siting & Environmental												
Support Contracts	C/FFP	ICF, SciComm/VA, MD	3270	3649	1Q						6919	
Subtotal Management Services			33766	40580		0		0			74346	
Remarks												
Project Total Cost			390986	372352		0		0			763338	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	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	3Q-4Q	1Q-4Q						
BMDS Wargaming	3Q-4Q	2Q-3Q						
Blue Velvet Testing		1Q						
Critical Measurement Program Flight Test		3Q						
LRALT Characterization		4Q						
MDIE	3Q-4Q	1Q-4Q						
Measurements Programs	3Q-4Q	1Q-4Q						
Mobile Launch Platform Demonstration		1Q						
System Integrated Flight Tests	3Q							
Studies & Analyses								
BMDS Supplement. Programmatic Env Impact Statement		1Q-4Q						
Gap Analysis	3Q-4Q							
Target Roadmap Study	4Q	1Q-2Q						
Test Bed Infrastructure Study	2Q-3Q							
Test Asset Upgrades								
HALO II Development Complete		2Q						
Range Safety Standardization Program	3Q-4Q	1Q-4Q						
WASP IOC		3Q						
Other								
Transfer of Wake Island to Air Force		1Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1070 Producibility & Manufacturing Technology	14083	21360	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Beginning in FY 2004, funding for this effort will reside in the new Ballistic Missile Defense SE&I Program Element (0603889C).

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 2002	FY 2003	FY 2004	FY 2005
Producibility	9526	14103		
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 2002:
AARI LADAR - Perform operational testing at White Sands Missile range using a representative target missile/Provide operational data to verify target acquisition, tracking, IR hand-off and target discrimination in a representative combined IR/LADAR system.

AOP - Complete the development of the 1GHz AOP/Test in representative Radar Systems at MIT/LL and at KMR to image, discriminate, and track simulated and real targets/Verify the capability of the 1GHz AOP that will provide high fidelity range compressed and range-doppler imaging.

VLWIRFPA - Complete the scale up of a producible 192X192 FPAs for characterization testing/Produce five Lots of FPAs to verify lot-to-lot repeatability of the process.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Two Color IRFPA - Complete the initial pilot production to verify repeatability of the production process/Provide an insertion point with hardware to BMDS elements.

Composite Canister - Focus on full-scale prototype manufacturing for testing by PAC3 and MEADS/Accomplish modeling and simulation for canister producibility analysis and produce sub-scale parts for optimization of processes/Target THAAD canister components for sub-scale prototyping.

FY 2003:
AARI LADAR - Develop a flight worthy package to be integrated with a passive IR seeker/Flight test a combined package on a representative interceptor to demonstrate actual IR to LADAR hand-off, target discrimination and aim-point selection from launch through HTK.

AOP - Insertion point for the 1GHz AOP into the BMD radars.

VLWIRFPA - Test integrated FPAs with ROICs that meet Radiation Hardening requirements for program elements/Test three lots of integrated parts to assure repeatability of process.

Composite Canister - Develop manufacturing processes for the common canister along with evaluating and optimizing the production process through use of lean manufacturing techniques/Conduct testing of hardware produced under operational conditions.

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

	FY 2002	FY 2003	FY 2004	FY 2005
Manufacturing Technology	4557	7257		
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:
DACS - Assess and identify producibility and manufacturing technologies associated with developing and producing propulsion components (nozzles, gas generators, injectors and flight controllers etc.) to support the risk reduction development of a DACS for missile defense interceptors/Integrate components into a flight testable unit for hot fire test/Initiate pilot production of SiC/SiC nozzles and components.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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	Other	SMDC/AL	2513	3700	2Q					CONT.	6213	CONT.
2ColorIRFPA	Other	Navy/PA	2100	2600	2Q					CONT.	4700	CONT.
VLWIRFPA	Other	SAF/AQ/NM	2000	1600	2Q					CONT.	3600	CONT.
LADAR	MIPR	Fibertek, Inc/VA	1000	1500	2Q					CONT.	2500	CONT.
Composites/Canisters	Various	Various/Various	548	1850	1Q					CONT.	2398	CONT.
Producibility	Various	Services/TBD	309	1702	1/2Q					CONT.	2011	CONT.
Manufacturing Technology												
DACS	Other	Aerojet/CA	2695	2500	2Q					CONT.	5195	CONT.
Subtotal Support Costs			11165	15452		0		0			26617	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	500	2Q					CONT.	500	
Man Tech	Various	Various/Various	806	2922	1/2Q					CONT.	3728	
Subtotal Test and Evaluation			806	3422		0		0			4228	

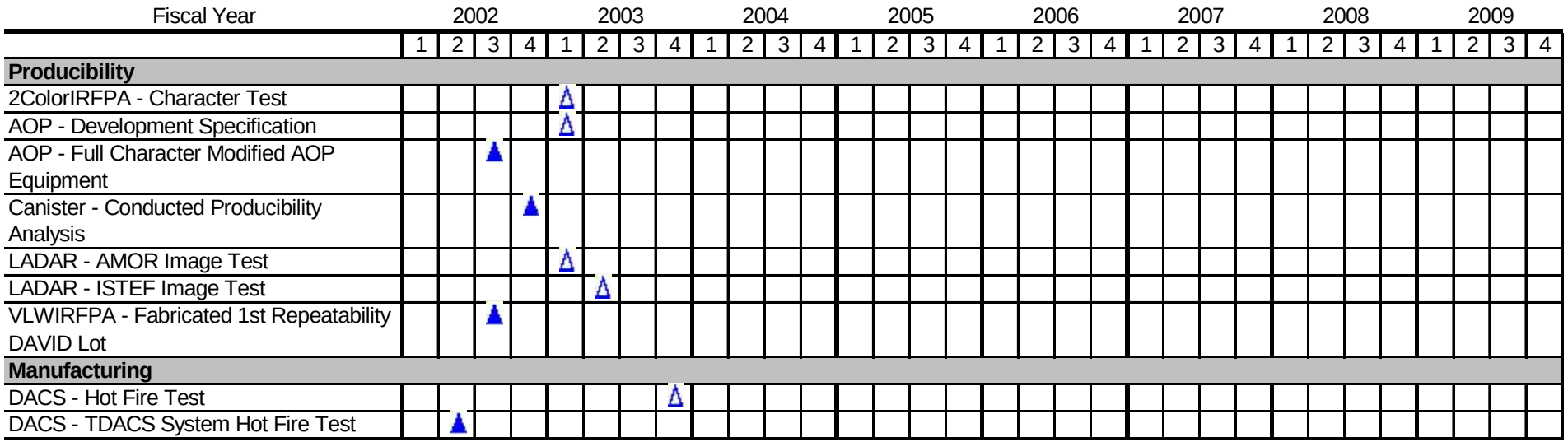
Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	1000	1150	2Q					CONT.	2150	CONT.
Management Services	Various	Various/Various	112	185	1/2Q					CONT.	297	CONT.
Producibility												
SETA	Various	Sparta, Andrulis/VA	1000	1151	2Q					CONT.	2151	CONT.
Subtotal Management Services			2112	2486		0		0			4598	
Remarks												
Project Total Cost			14083	21360		0		0			35443	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Producibility								
2ColorIRFPA - Build 1st FPA on new ROIC		1Q						
2ColorIRFPA - Character Test		1Q						
2ColorIRFPA - Completed Design 256X256 ROIC	2Q							
AOP - Development Specification		1Q						
AOP - Full Character Modified AOP Equipment	3Q							
Canister - Conducted Producibility Analysis	4Q							
Canister - Developed Concepts Targeted MDA Prog	4Q							
Canister - Engr Anaysis Alt Design/Matls	3Q							
Canister - MANTECH Program for Selected Prototypes		2Q						
LADAR - AMOR Image Test		1Q						
LADAR - Completion of Tx/Rx Character	4Q							
LADAR - ISTEF Image Test		2Q						
VLWIRFPA - Fabricated 1st Repeatability DAVID Lot	3Q							
Manufacturing								
DACS - Hot Fire Test		4Q						
DACS - Initiate Composite Case for Gas Generator		1Q						
DACS - Insertion Polan for Braided C-Sic		3Q						
DACS - TDACS System Hot Fire Test	2Q							

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
1090 Program Operations	32131	37350	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	0	6834		
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603880C Ballistic Missile Defense System Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	14947	15404		
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	2263	1940		
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
IM/IT Operations	14921	13172		
RDT&E Articles (Quantity)				

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 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603880C Ballistic Missile Defense System Segment**

PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	195800	136399	810440	924356	985514	805785	558071	371649
0707 Theater High Altitude Area Defense (THAAD) Block 2004	0	0	621790	635101	64790	0	0	0
0807 Theater High Altitude Area Defense (THAAD) Block 2006	0	0	108781	207964	597783	497533	113220	0
0907 Theater High Altitude Area Defense (THAAD) Block 2008	0	0	0	0	237472	227395	369306	299754
2016/0401 Israeli Arrow Program	126395	132271	64803	64628	64499	64412	64363	64296
2015 Medium Extended Air Defense (MEADS)	64338	0	0	0	0	0	0	0
2090/0602 Program Operations	5067	4128	15066	16663	20970	16445	11182	7599

A. Mission Description and Budget Item Justification

[THAAD is included in Program Element (PE) 0604861C for FY 2002 and FY 2003 and transitions to this Terminal Defense Segment (TDS) PE for FY 2004 and out. MEADS, included in this TDS PE in FY 2002, moves to the MEADS PE (PE 0603869C) for FY 2003 and transitions to the Army in FY 2004.]

Based on Presidential direction, the Missile Defense Agency (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 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 a 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), Medium Extended Air Defense System (MEADS), 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 within its own PE. 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-courses of trajectory. Upon direction of the Ballistic Missile Defense System (BMDS) Command and Control/Battle Management (C2BM), the THAAD, AEGIS, 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 system contributes in it's ability to engage and negate ballistic missiles 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. 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 the Missile Defense National Team efforts in Command & Control/Battle Management (C2BM) and Systems Engineering & Integration will guide the integration of the TDS into the BMD System and the BMDS C2BM architecture.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Consistent with the MDA block management framework, the THAAD system element consists of Blocks 2004, 2006, and 2008:

The THAAD Block 2004 represents the design and development of a significant, fundamental THAAD capability against short and medium range ballistic missiles and demonstration of exo and high endo capability against unitary and separating targets in limited battlespace. The Block 2004 THAAD element will have a radar discrimination and missile infra-red discrimination capability and consists of a Test Missile configuration and C2BM with interactive defense planning and limited interoperability. Flight testing for Block 2004 begins in the 4th quarter, FY 2004, and continues through the 4th quarter, FY 2005 with a total of four (4) flight tests.

The THAAD Block 2006 represents the incremental capability delivered as part of THAAD's evolutionary acquisition strategy. This block builds on the core, near-term missile defense capability provided by THAAD Block 2004. This block 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 C2BM embedded training, automated defense planning, and extensive interoperability. Block 2006 flight testing begins in the 3rd quarter, FY 2006 and continues through the 1st quarter, FY 2008 with a total of five (5) flight tests.

The THAAD Block 2008 represents the incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block builds on the core, missile defense capability provided 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 the 2nd quarter, FY 2008 and ends in the 2nd quarter, FY 2009 with a total of seven (7) flight tests. Operational assessment testing begins in the 3rd quarter, FY 2009 and completes in the 1st quarter, FY 2010.

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:

The Arrow Deployability Program (ADP) supports Israel's acquisition of a third Arrow battery, development of Arrow co-manufacturing capability, and Arrow's interoperability with U.S theater missile defense systems (TMD) 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 activities include 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.

Technologies cooperatively developed under the Arrow programs are transitioned to U.S. TMD developmental programs for their use or to provide risk reduction and lessons learned.

The Medium Extended Air Defense System (MEADS) is one of the TDS' mission area investments. It is an objective force system. It is an international cooperative program essential to fulfill the requirements of the U.S. Army and the U.S. Marine Corps for a low-medium air defense system in the 21st century. MEADS will offer a significant improvement in 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 and other air-breathing threats throughout all phases of tactical operations. MEADS will operate both in an enclave with upper-tier systems in areas of debarkation and assembly and provide continuous coverage alone or with Short-Range Air Defense Systems (SHORAD) in the division area 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 and modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, cruise missiles, unmanned-aerial-vehicles, tactical air to surface missiles, rotary-wing and fixed-wing threats. Per Congressional direction, MEADS is assigned its own PE for FY 2003 (PE 0603869C MEADS). MEADS is programmed to transfer to the Army beginning with FY 2004 and is thus not budgeted within MDA.

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;

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	200119	169974	200171	234318
Current President's Budget (FY 2004 PB)	195800	136399	810440	924356
Total Adjustments	-4319	-33575	610269	690038
Congressional Specific Program Adjustments	0	-30000	0	0
Congressional Undistributed Adjustments	-1617	-2398	0	0
Reprogrammings	1766	-1177	610269	690038
SBIR/STTR Transfer	-4468	0	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.

MEADS transfers to the MEADS MDA PE 0603869C in FY 2003 and transfers to the Army beginning in FY 2004.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0707 Theater High Altitude Area Defense (THAAD) Block 2004	0	0	621790	635101	64790	0	0	0
RDT&E Articles Qty	0	0	27	14	8	0	0	0

A. Mission Description and Budget Item Justification

FY 2002 and FY 2003 funding for this activity was in PE 0604861C.

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 phase of trajectory. THAAD contributes to the Missile Defense Agency's Terminal Defense System in its ability to engage and negate ballistic missiles in both the lower mid-course and terminal phases of their trajectory. THAAD's ability to defend against short to medium-range ballistic missiles 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.

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.

Block 2004: Block 2004 represents the design and development of a significant, fundamental THAAD capability against short and medium range Ballistic Missiles (BMs) and demonstration of exo and high endo capability against unitary and separating targets in limited battlespace. The Block 2004 THAAD element will have a radar discrimination and missile infra-red discrimination capability and consists of a Test Missile configuration and C2BM with interactive defense planning and limited interoperability. Flight testing for Block 2004 begins in 4th quarter, FY 2004, and continues through 4th quarter, FY 2005 with a total of 4 flight tests.

RDT&E Articles for Development Tests (DT):

- FY 2004 (Delivery Schedule): 1 Full-up Missile; 3 Engineering Development Unit (EDU) Missiles; 4 Ground Test Units (GTU) Missiles; 16 Missile Mass Property Simulators; one Launcher w/Missile Round Pallet (MRP); and 2 MRPs (reload) for a total of 27 RDT&E articles.
- FY 2004 (Buy Schedule): 2 Full-up Missiles; 2 EDU Missiles; 4 Launchers w/MRP; one MRP (reload); 3 C2BM Tactical Support Groups (TSG) for a total of 12 RDT&E articles.

- FY 2005 (Delivery Schedule): 3 Full-up Missiles and 2 EDU Missiles; one Radar; 4 Launchers w/MRPs; 1 MRP (reload); and 3 C2BM TSGs for a total of 14 RDT&E articles.
- FY 2005 (Buy Schedule): 1 Full-up Missile; 2 Launchers w/MRPs; 2 MRPs (reloads); and one C2BM TSG for a total of 6 RDT&E articles.

- FY 2006 (Delivery Schedule): 2 Full-up Missiles; one Radar; 2 Launchers w/MRPs; 2 MRPs (reloads); and one C2BM TSG for a total of 8 RDT&E articles

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Missile)			157560	136700
RDT&E Articles (Quantity)			24	5

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

RDT&E Articles for Developmental Test (DT):

- FY 2004 (Delivery Schedule): 1 Full-up Missile; 3 Engineering Development Unit (EDU) Missiles; 4 Ground Test Units (GTU) Missiles; and 16 Missile Mass Property Simulators for a total of 24 RDT&E articles.
- FY 2004 (Buy Schedule): 2 Full-up Missiles and 2 EDU Missiles for a total of 4 RDT&E articles.

- Support completion of Block 2004 Element CDR.
- Complete Missile hardware and software development for first flight.
- Initiate System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) activities for Missile.
- Deliver Missile software for first flight (Build 4.0 for FT-1).
- Support first missile test at White Sands Missile Range (WSMR).

FY 2005 Planned Program:

RDT&E Articles for DT:

- FY 2005 (Delivery Schedule): 3 Full-up Missiles and 2 EDU Missiles for a total of 5 RDT&E articles.
- FY 2005 (Buy Schedule): 1 Full-up Missile.

- Continue SIL Hardware-In-Loop activities for Missile.
- Deliver Missile software for first intercept (Build 6.0 for FT-2).
- Support first intercept of a Hera target with autonomous THAAD system at WSMR.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Radar)			152384	171338
RDT&E Articles (Quantity)			0	1

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY 2004 Planned Program:

- Support completion of Block 2004 Element CDR.
- Complete 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 SIL Hardware-In-Loop activities for Radar.
- Complete Radar antenna #1.
- Deliver Radar software for 1st intercept (Build 4.1 for FT-2)
- Support first intercept of a Hera target with autonomous THAAD system at WSMR.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Launcher)			23283	7885
RDT&E Articles (Quantity)			3	5

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

RDT&E Articles for Developmental Test (DT):

- FY 2004 (Delivery Schedule): One Launcher w/Missile Round Pallet (MRP) and 2 THAAD MRPs (reload) for a total of 3 RDT&E articles.
- FY 2004 (Buy Schedule): 4 Launchers w/MRP; 1 MRP (reload) for a total of 5 RDT&E articles.

- Support completion of Block 2004 Element CDR.
- Complete Launcher hardware and software development.
- Initiate SIL Hardware-In-Loop activities for Launcher.
- Support first missile test at White Sands Missile Range (WSMR).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY 2005 Planned Program:

RDT&E Articles for Developmental Test (DT):

- FY 2005 (Delivery Schedule): 4 Launchers w/MRPs; and one MRP (reload) for a total of 5 RDT&E articles.
- FY 2005 (Buy Schedule): 2 Launchers w/MRPs and 2 MRPs (reload) for a total of 4 RDT&E articles.

- Continue SIL Hardware-In-Loop activities for Launcher.
- Deliver Launcher software for 1st intercept (Build 3.0 for FT-2)
- Support first intercept of a Hera target with autonomous THAAD system at WSMR.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (C2BM)			40801	36351
RDT&E Articles (Quantity)			0	3

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

RDT&E Articles for Developmental Test (DT):

- FY 2004 (Buy Schedule): 3 C2BM Tactical Support Groups (TSG)

- Support completion of Element CDR.
- Complete C2BM hardware and software development for 1st intercept.
- Initiate SIL Hardware-In-Loop activities for C2BM.

FY 2005 Planned Program:

RDT&E Articles for Developmental Test (DT):

- FY 2005 (Delivery Schedule): 3 C2BM TSGs
- FY 2005 (Buy Schedule): One C2BM TSG

- Continue SIL Hardware-In-Loop activities for C2BM.
- Deliver C2BM software for 1st intercept (Build 4.0 for FT-2).
- Support first intercept of a Hera target with autonomous THAAD system at WSMR.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (ILS)			15163	12258
RDT&E Articles (Quantity)			0	0

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Maintain an Integrated Logistics Support program.
- Conduct supportability analysis.
- Develop support strategy, support documentation, and training materiel.
- 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:

- Maintain an Integrated Logistics Support program.
- Conduct supportability analysis.
- Develop support strategy, support documentation, and training materiel.
- Develop and procure training devices and Peculiar Support Equipment.
- Conduct training to support soldier participation in the Block 2004 Flight Test program.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Sys Level Prog Mgmt)			26795	20949
RDT&E Articles (Quantity)			0	0

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Oversee and participate in conduct of Block 2004 Element CDR.
- Support and lead first missile flight test at WSMR.
- Provide leadership and direction to program.

FY 2005 Planned Program:

- Conduct first intercept at White Sands Missile Range.
- Continue to provide guidance and management to program.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Weapon Sys Engr & Integ Team)			36537	28980
RDT&E Articles (Quantity)			0	0

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Support Block 2004 Element CDR.
- Assess THAAD Block 2004 capability using comprehensive, end-to-end, digital simulation.
- Support Controlled Test Flight (CTF)-1 at WSMR.
- Bring System Integration Lab (SIL) Hardware-in-the-Loop online to support flight testing.
- Participate in wargames, exercises and interoperability demonstrations.

FY 2005 Planned Program:

- Continue SIL HWIL integration of all THAAD components.
- Support first intercept of a Hera target with autonomous THAAD system at WSMR.
- Participate in wargames, exercises and interoperability demonstrations.
- Update assessment of THAAD Block 2004 capability using comprehensive, end-to-end, digital simulation.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Ground and Flight Test Support)			25550	28546
RDT&E Articles (Quantity)			0	0

FY 2002 Accomplishments/FY 203 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Support first Missile test at White Sands Missile Range (WSMR).

FY 2005 Planned Program:

- Support THAAD seeker characterization flight with Hera targets at WSMR.
- Support first intercept of Hera Target at WSMR.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 Government Support Costs			89780	119862
RDT&E Articles (Quantity)				

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Support Contracts - Continue software independent verification and validation. Perform program management support and technical analyses.

- Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Continue THAAD range operations at WSMR and Ballistic Missile Defense Test Bed (BTB) at PMRF and continue system Hardware-In-The-Loop development efforts. Continue C2BM interoperability and simulation efforts. Continue threat vulnerability assessment. Maintain integrated logistics and product assurance efforts. Perform quality and manufacturing technology tasks.

- In-house support - Fund government salaries, benefits, travel, and training.

FY 2005 Planned Program:

- Support Contracts - Continue software independent verification and validation. Perform program management support and technical analyses.

- Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Continue THAAD range operations at WSMR and BTB at PMRF and continue system Hardware-In-The-Loop development efforts. Continue C2BM interoperability and simulation efforts. Continue threat vulnerability assessment. Maintain integrated logistics and product assurance efforts. Perform quality and manufacturing technology tasks.

- In-house support - Fund government salaries, benefits, travel, and training.

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2004 Government Test & Evaluation			37800	59000
RDT&E Articles (Quantity)				

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- Flight Test Planning - Continue integration into WSMR and PMRF. Support first test at WSMR (controlled test flight without target).
- Ground Test Planning - Continue planning for Production Qualification Test (PQT).
- Conduct operational assessment of Block 2004 capability; continue planning.
- Lethality - Support sled test program at Holloman AFB, and planning for light gas gun test program.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY 2005 Planned Program:

- Flight Test Planning - Continue integration into WSMR, and PMRF. Support test flights at WSMR.
- Ground Test Planning - Continue planning for Production Qualification Testing (PQT).
- Conduct operational assessment of Block 2004 capability; continue planning.
- Lethality - Conduct sled tests and initiate light gas gun test (Development Tests).

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2004 Government Management Svcs			3000	3000
RDT&E Articles (Quantity)				

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004 Planned Program:

- FFRDC technical support from MITRE.

FY 2005 Planned Program:

- FFRDC technical support from MITRE.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2004 ACD&P Prime (Engr Spt Svcs)			13137	10232
RDT&E Articles (Quantity)				

FY 2002 Accomplishments/FY 2003 Planned Program is shown in PE 0604861C.

FY 2004/Planned Program:

- Provide specialized test results services.
- Provide specialized engineering support services.

FY 2005 Planned Program:

- Provide specialized test results services.
- Provide specialized engineering support services.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

C. Other Program Funding Summary

	FY 2002	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	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603881C Ballistic Missile Defense Terminal Defense Segment**

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 98-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 34% complete. Current development activities supporting THAAD Block 2004 could be used to provide a limited capability to protect deployed U. S. and allied forces, or selected U.S. sites. Should a decision to procure hardware for possible contingency deployment be made in the Block 2004 timeframe, the separate procurement contract vehicle would likely be a Cost Plus Incentive Fee contract, sole-sourced to LMSSC.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 Prime(Missile)												
	SS/CPAF	LMSSC/Various				157560		136700			294260	CONT.
THAAD Block 2004 ACD&P Prime (Radar)												
	SS/CPAF	LMSSC/Various				152384		171338			323722	CONT.
THAAD Block 2004 ACD&P Prime (Launcher)												
	SS/CPAF	LMSSC/Various				23283		7885			31168	CONT.
THAAD Block 2004 ACD&P Prime (C2BM)												
	SS/CPAF	LMSSC/Various				40801		36351			77152	CONT.
THAAD Block 2004 ACD&P Prime (ILS)												
	SS/CPAF	LMSSC/Various				15163		12258			27421	CONT.
THAAD Block 2004 ACD&P Prime (Sys Level Prog Mgmt)												
	SS/CPAF	LMSSC/Various				26795		20949			47744	CONT.
THAAD Block 2004 ACD&P Prime (Weapon Sys Engr & Integ Team)												
	SS/CPAF	LMSSC/Various				36537		28980			65517	CONT.
THAAD Block 2004 ACD&P Prime (Engr Spt Svcs)												
	SS/CPAF	LMSSC/Various				13137		10232			23369	CONT.
THAAD Block 2004 ACD&P Prime (Ground and Flight Test Support)												
	SS/CPAF	LMSSC/Various				25550		28546			54096	
Subtotal Product Development			0	0		491210		453239			944449	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 GOVERNMENT SUPPORT COSTS												
IV&V/THAAD Eval CPR	C/CPAF	COLSA/HSV,AL				9860		9860			19720	CONT.
SPT K/TECH SPT	C/FFP	Various/HSV, AL				18708		38200			56908	CONT.
OGA SPT	MIPR	AMCOM/HSV,AL				23300		34500			57800	CONT.
SALARIES/TRAVEL/TRAINING/OTHER	Various	TPO/HSV,AL				28412		27802			56214	CONT.
GFE	MIPR	Various/Various				9500		9500			19000	CONT.
Subtotal Support Costs			0	0		89780		119862			209642	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	Various/Various				37800		59000			96800	CONT.
Subtotal Test and Evaluation			0	0		37800		59000			96800	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 MANAGEMENT SVCS												
MITRE	MIPR	FT.MONMOUTH/ NJ				3000		3000			6000	CONT.
Subtotal Management Services			0	0		3000		3000			6000	
Remarks												
Project Total Cost			0	0		621790		635101			1256891	

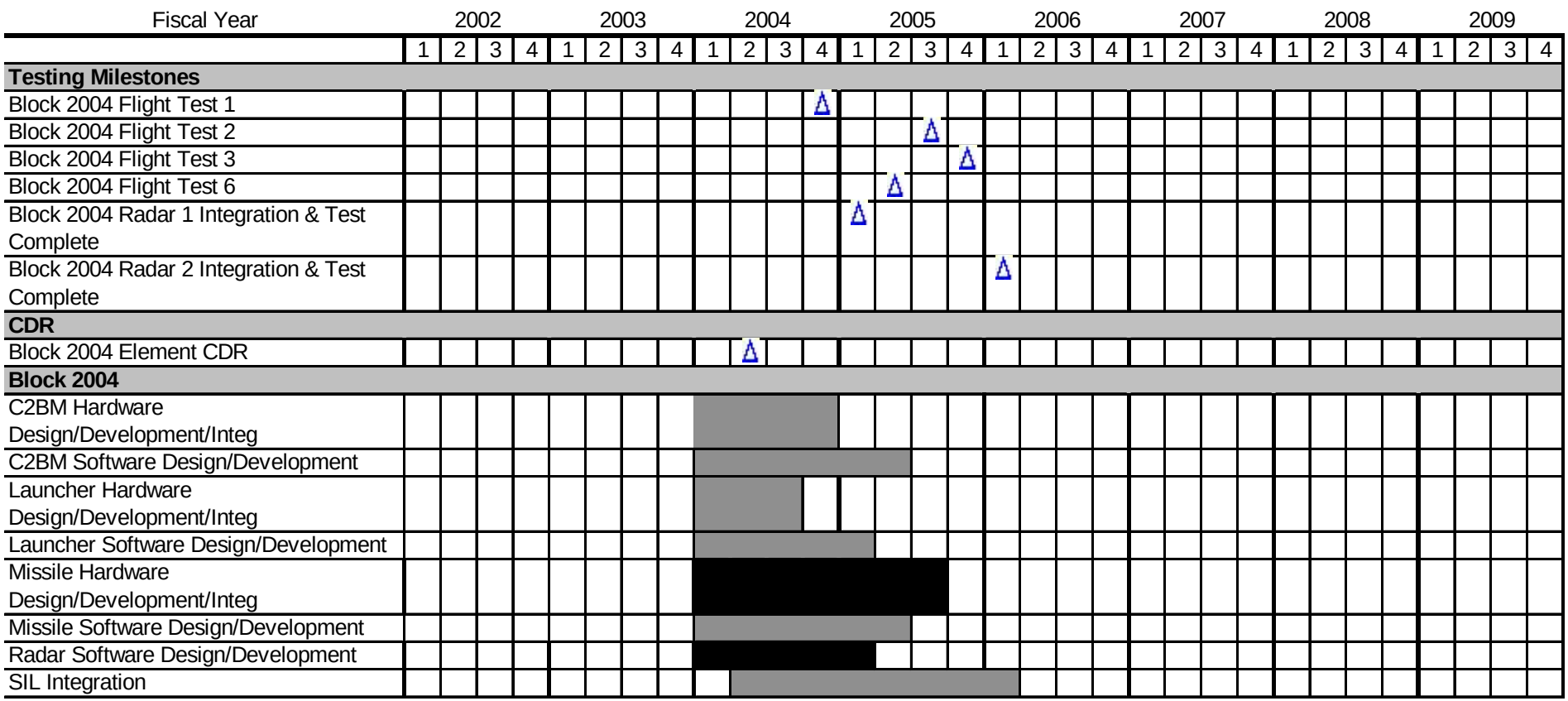
Remarks

MDA Exhibit R-4 Schedule Profile

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Block 2004 Flight Test 1			4Q					
Block 2004 Flight Test 2				3Q				
Block 2004 Flight Test 3				4Q				
Block 2004 Flight Test 6				2Q				
Block 2004 Radar 1 Integration & Test Complete				1Q				
Block 2004 Radar 2 Integration & Test Complete					1Q			
CDR								
Block 2004 Element CDR			2Q					
Block 2004								
C2BM Hardware Design/Development/Integration			1Q-4Q					
C2BM Software Design/Development			1Q-4Q	1Q-2Q				
Launcher Hardware Design/Development/Integration			1Q-3Q					
Launcher Software Design/Development			1Q-4Q	1Q				
Missile Hardware Design/Development/Integration			1Q-4Q	1Q-3Q				
Missile Software Design/Development			1Q-4Q	1Q				
Radar Software Design/Development			1Q-4Q	1Q				
SIL Integration			2Q-4Q	1Q-4Q	1Q			

Note: For schedule prior to FY 2004, refer to PE 0604861C.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0807 Theater High Altitude Area Defense (THAAD) Block 2006	0	0	108781	207964	597783	497533	113220	0
RDT&E Articles Qty	0	0	0	0	0	6	0	0

A. Mission Description and Budget Item Justification

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 in its ability to engage and negate ballistic missiles in both the lower mid-course and terminal phases of their trajectory. THAAD's ability to defend against short to medium-range ballistic missiles 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 layered Terminal Defense System that further reduces leakage of ballistic missiles.

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 capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

Block 2006: Block 2006 represents the incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block builds on the core, near-term missile defense capability provided by THAAD Block 2004. This block 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 C2BM embedded training, automated defense planning, and extensive interoperability. 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): 3 Full-up Missiles.

- FY 2006 (Buy Schedule): 8 Full-up Missiles and 2 C2BM Tactical Shelter Groups (TSGs) for a total of 10 RDT&E articles.

- FY 2007 (Delivery Schedule): 4 Full-up Missiles and 2 C2BM TSGs, for a total of 6 RDT&E articles.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Missile)			63688	86787
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Initiate upgrades to the Missile software.
- Begin fabrication, assembly, and test of Missile hardware in preparation for first Block 2006 flight test.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY 2005 Planned Program:

RDT&E Articles for Developmental Test (DT):
- FY 2005 (Buy Schedule): 3 Full-up Missiles.

- Continue upgrades to the Missile software.
- Conduct SIL Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing.
- Continue fabrication, assembly, and test of Missile hardware in preparation for Block 2006 flight testing and missile rounds required for Missile Production Qualification Testing (PQT).

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Radar)			5936	32755
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Initiate upgrades to the Radar software.

FY 2005 Planned Program:

- Continue upgrades to the Radar software.
- Conduct SIL Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Launcher)			6175	5178
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:
- Begin fabrication, assembly, and test of Launcher hardware in preparation for first Block 2006 flight testing.

FY 2005 Planned Program:
- Complete fabrication, assembly, and test of Launcher hardware for Block 2006 Flight Testing and Production Qualification Testing (PQT).
- Conduct SIL Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing.
- Initiate upgrade to Launcher software.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime Integrated Logistics Support (ILS)			3324	6839
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Maintain an Integrated Logistics Support program.
- Conduct supportability demonstrations on Launcher and C2BM.
- Continue development of support documentation and training for Soldier in the Loop.
- Continue development and procurement of additional training devices and Peculiar Support Equipment.
- Conduct training to support the Block 2006 Flight Test program.

FY 2005 Planned Program:

- Maintain an Integrated Logistics support program.
- Conduct supportability demonstrations on Radar.
- Continue development of support documentation and conduct training for Staff Planners and other Military Occupational Specialty (MOS) Training.
- Continue development and procurement of additional training devices and Peculiar Support Equipment.
- Conduct training to support the Block 2006 Flight Test program and Ground Test Program.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Sys Level Prog Mgmt)			2709	10200
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- 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.

FY 2005 Planned Program:

- 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Weapon Sys Engr & Integ Team)			3532	14311
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Conduct System Integration Lab (SIL) Hardware-in-the-Loop Block 2006 integration.

FY 2005 Planned Program:

- Conduct System Integration Lab (SIL) Hardware-in-the-Loop Block 2006 integration.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Engr Spt Svcs)			532	802
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Provide specialized test results services.
- Provide specialized engineering support services.

FY 2005 Planned Program:

- Provide specialized test results services.
- Provide specialized engineering support services.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (Ground and Flight Test Support)			3239	15119
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:

- Support Production Qualification Testing (PQT) planning.
- Conduct PMRF planning and integration.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY 2005 Planned Program:

- Support Production Qualification Testing (PQT) planning.
- Conduct PMRF planning and integration.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 ACD&P Prime (C2BM)			19646	26768
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program:
- Initiate upgrades to the C2BM software.
- Begin fabrication, assembly, and test of C2BM hardware.

FY 2005 Planned Program:
- Continue upgrades to the C2BM software.
- Conduct SIL Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing.
- Continue fabrication, assembly, and test of C2BM hardware.

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD Block 2006 GOVERNMENT TEST AND EVALUATION				9205
RDT&E Articles (Quantity)				

FY 2005 Planned Program:

- Continue THAAD Range Operations at WSMR and BTB at Pacific Missile Range Facility, Barking Sands, Kauai, HI (PMRF).
- Acquire targets for Flight Test Program.
- Plan for Operational Assessment for Block 2006.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment			
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

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 2006 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 98-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 34% 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. Should a decision to procure hardware for possible contingency deployment be made in the Block 2006 timeframe, the separate procurement contract vehicle would likely be a Cost Plus Incentive Fee contract, with a different share ratio from Block 2004.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 Prime (Missile)												
	SS/CPAF	LMSSC/Various				63688		86787			150475	CONT.
THAAD Block 2006 ACD&P Prime (Radar)												
	SS/CPAF	LMSSC/Various				5936		32755			38691	CONT.
THAAD Block 2006 ACD&P Prime (Launcher)												
	SS/CPAF	LMSSC/Various				6175		5178			11353	CONT.
THAAD Block 2006 ACD&P Prime (C2BM)												
	SS/CPAF	LMSSC/Various				19646		26768			46414	CONT.
THAAD Block 2006 ACD&P Prime (ILS)												
	SS/CPAF	LMSSC/Various				3324		6839			10163	CONT.
THAAD Block 2006 ACD&P Prime (Sys Level Prog Mgmt)												
	SS/CPAF	LMSSC/Various				2709		10200			12909	CONT.
THAAD Block 2006 ACD&P Prime (Weapon Sys Engr & Integ Team)												
	SS/CPAF	LMSSC/Various				3532		14311			17843	CONT.
THAAD Block 2006 ACD&P Prime (Engr Spt Svcs)												
	SS/CPAF	LMSSC/Various				532		802			1334	CONT.
THAAD Block 2006 ACD&P Prime (Ground and Flight Test Support)												
	SS/CPAF	LMSSC/Various				3239		15119			18358	
Subtotal Product Development			0	0		108781		198759			307540	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 GOVERNMENT TEST AND EVALUATION												
Test Planning	MIPR	Various/Various						9205			9205	
Subtotal Test and Evaluation			0	0		0		9205			9205	

Remarks

IV. Management Services Cost ($ in Thousands)

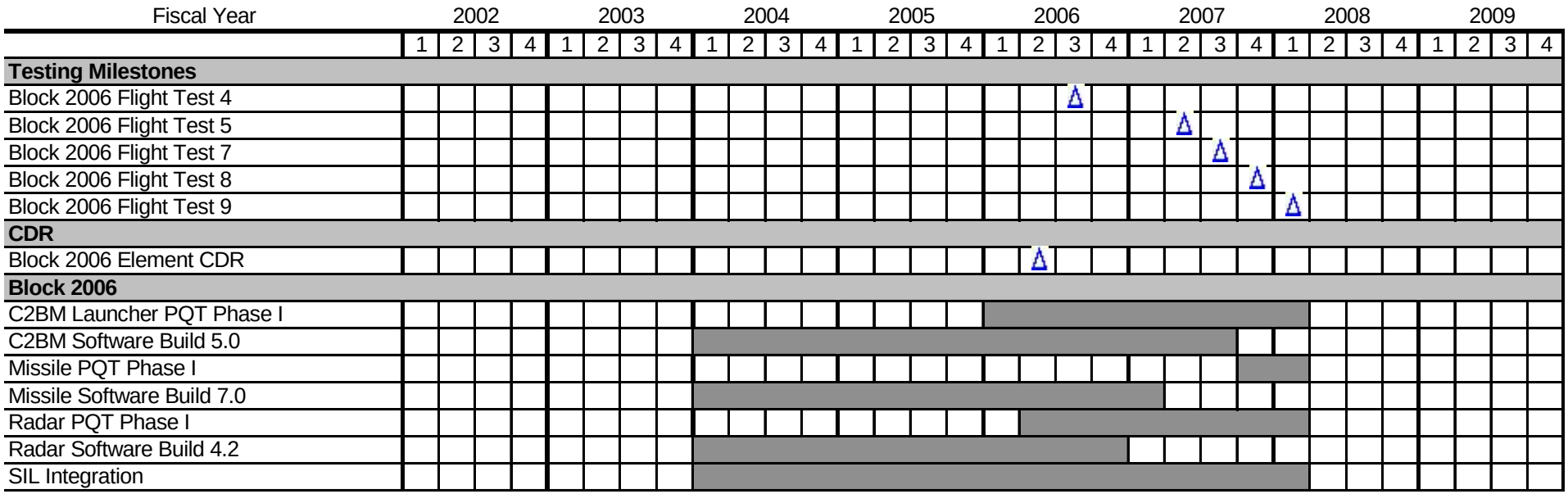
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		108781		207964			316745	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Block 2006 Flight Test 4					3Q			
Block 2006 Flight Test 5						2Q		
Block 2006 Flight Test 7						3Q		
Block 2006 Flight Test 8						4Q		
Block 2006 Flight Test 9							1Q	
CDR								
Block 2006 Element CDR					2Q			
Block 2006								
C2BM Launcher PQT Phase I					1Q-4Q	1Q-4Q	1Q	
C2BM Software Build 5.0			1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
Missile PQT Phase I						4Q	1Q	
Missile Software Build 7.0			1Q-4Q	1Q-4Q	1Q-4Q	1Q		
Radar PQT Phase I					2Q-4Q	1Q-4Q	1Q	
Radar Software Build 4.2			1Q-4Q	1Q-4Q	1Q-4Q			
SIL Integration			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q	

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2002	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	0	0	237472	227395	369306	299754
RDT&E Articles Qty	0	0	0	0	0	0	27	8

A. Mission Description and Budget Item Justification

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 in its ability to engage and negate ballistic missiles in both the lower mid-course and terminal phases of their trajectory. THAAD's ability to defend against short to medium-range ballistic missiles 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 layered Terminal Defense System that further reduces leakage of ballistic missiles.

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 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 incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This block builds on the core, missile defense capability provided 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 7 flight tests. Operational assessment testing begins in 2nd quarter, FY 2009 and completes in 1st quarter, FY 2010.

RDT&E Articles for Development Tests (DT):

- FY 2006 (Buy Schedule): 5 Full-up Missiles.
- FY 2007 (Buy Schedule): 7 Full-up Missiles.
- FY 2008 (Delivery Schedule): 13 Full-up Missiles.
- FY 2009 (Delivery Schedule): 7 Full-up Missiles.

RDT&E Articles for Operational Tests (OT):

- FY 2006 (Buy Schedule): 13 Full-up Missiles and one Radar.
- FY 2007 (Buy Schedule): 1 Full-up Missile.
- FY 2008 (Delivery Schedule): 13 Full-up Missiles, 1 Radar.
- FY 2009 (Delivery Schedule): 1 Full-up Missile.

B. Accomplishments/Planned Program

There is no funding or activity planned for Block 2008 prior to FY 2006.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

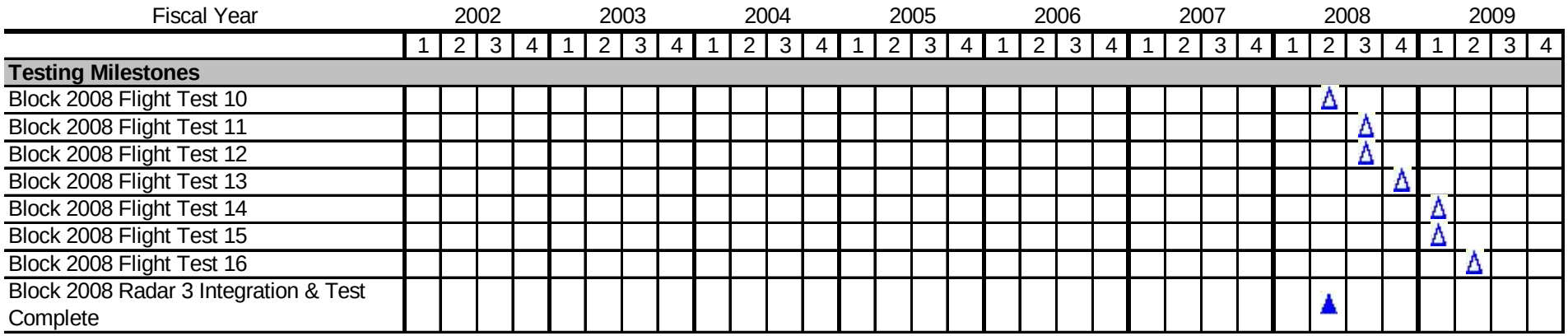
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

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 2008 program is already on contract with Lockheed Martin Space Systems Company (LMSSC), Sunnyvale, CA. The 98-month Cost Plus Award Fee contract was awarded effective August 4, 2000, and is 34% 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. Should a decision to procure hardware for possible contingency deployment be made in the Block 2008 timeframe, the separate procurement contract vehicle would likely be a Fixed Price Incentive, Firm Target contract, possibly transitioning into a Firm Fixed Price contract as further buys developed.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Block 2008 Flight Test 10							2Q	
Block 2008 Flight Test 11							3Q	
Block 2008 Flight Test 12							3Q	
Block 2008 Flight Test 13							4Q	
Block 2008 Flight Test 14								1Q
Block 2008 Flight Test 15								1Q
Block 2008 Flight Test 16								2Q
Block 2008 Radar 3 Integration & Test Completion							2Q	

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2016/0401 Israeli Arrow Program	126395	132271	64803	64628	64499	64412	64363	64296
RDT&E Articles Qty	16	42	6	2	0	0	0	0

A. Mission Description and Budget Item Justification

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. 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 develop future missile defense architectures to maintain pace with emerging threats.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Arrow Deployability Program (ADP)	34000			
RDT&E Articles (Quantity)	11			

FY 2002: Achieved initial operational capability for Arrow Block 2, which includes enhanced capability against longer range missiles and Link-16 interoperability capability. Completed funding third Arrow battery.

RDT&E Articles: Arrow II interceptor missiles (11) dual-qualified for operational or test use.

	FY 2002	FY 2003	FY 2004	FY 2005
Arrow System Improvement Program (ASIP)	47000	55000	58727	58473
RDT&E Articles (Quantity)	5	2	6	2

FY 2002: Initiated Phase II of the Arrow System Improvement Program that included technology development, enhanced interoperability, preparatory activities for flight tests of the baseline AWS at a U.S. test range. Developed and tested enhanced interoperability capability.

FY 2003: 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 tests in Israel. Continue enhancing and testing Arrow interoperability capability.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY 2004: Conduct Arrow testing in the U.S. against representative regional TBM threats. Continue ASIP Phase II to develop and test technologies to improve Arrow Weapon System performance to defend Israel for emerging TBM threats. Continue enhancing Arrow interoperability. Obtain Joint Interoperability Test Command certification of interoperability enhancements.

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. Continue enhancing Arrow interoperability development and validation to include engagement coordination.

RDT&E Articles: Two Arrow II test missiles, three Arrow short burn-time test missiles, two Black Sparrow Air Launched Targets.

	FY 2002	FY 2003	FY 2004	FY 2005
Arrow Enhanced Component Production	37384	1271		
RDT&E Articles (Quantity)				

FY 2002: Initiated development of capability in the U.S. to produce Arrow components to accelerate Israeli acquisition of Arrow interceptors.

FY 2003: Complete development of Arrow component production capability.

	FY 2002	FY 2003	FY 2004	FY 2005
Israeli Test Bed (ITB)	2500	3100	3100	3100
RDT&E Articles (Quantity)				

FY 2002: Conducted Israeli Test Bed (ITB) experiments to evaluate battle management concepts and to assess interoperability between the AWS and U.S. TMD systems. Provided support to U.S. European Command and Israeli Air Force (EUCOM/IAF) to conduct experiments to support the addition of the operational AWS into the combined Operations Plan (OPLAN) and Combined Standard Operating Procedures (CSOP).

FY 2003: Conduct ITB experiments to 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.

FY 2004: Conduct ITB experiments to support development of centralized battle management. Assess Arrow interoperability between Israeli and U.S. missile defense systems. Support EUCOM/IAF revisions to the combined OPLAN and CSOP and conduct experiments leading up to the EUCOM/IAF major field exercise. Conduct experiments of planned Arrow block upgrades to the AWS and assess their impacts on EUCOM/IAF combined operations.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Israeli Systems Architecture and Integration (ISA&I)	1511	1900	1976	2055
RDT&E Articles (Quantity)				

FY 2002: Initiated Israeli Systems Architecture and Integration (ISA&I) assessment to develop options for 2015 Israeli Missile Defense architectures.

FY 2003: Assess Arrow performance against emerging regional TBM threats and identify growth path refinements necessary for the Arrow missile defense system to remain an effective ballistic missile defense for the State of Israel. Conduct joint architecture studies to assess near-term U.S. missile defense systems and their impact on future Israeli missile defense architectures.

FY 2004: Develop initial Israeli Missile Defense System (IMDS) architecture and system level design.

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. Conduct joint architecture studies to assess near-term U.S. missile defense systems and their impact on future Israeli missile defense architectures.

	FY 2002	FY 2003	FY 2004	FY 2005
Program Support	4000	1000	1000	1000
RDT&E Articles (Quantity)				

FY 2002: Completed Program Executive Office (PEO) Air and Missile Defense Technical Integration Services. Developed hardware-in-the-loop test tools for assessment of interoperability. Developed security plans and classification guides.

FY 2003: Develop documentation of background/foreground data rights for ASIP, Arrow co-production, and ITB. Complete background/foreground documentation for Arrow Deployability Program (ADP). Develop and maintain security plans and classification guides. Modify Missile Defense System Exerciser (MDSE) to support interoperability assessment. Manage and support ITB modifications and experiments.

FY 2004: Complete initial 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.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Arrow Missile Production		70000		
RDT&E Articles (Quantity)		40		

FY 2003: 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.

RDT&E Articles: Forty Arrow II missiles.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date
February 2003

APPROPRIATION/BUDGET ACTIVITY
4. 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 2003 Cost	FY 2003 Award Date	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)	Other	IAI/Israel	47000	55000	1Q	58727	1Q	58473	1Q	TBD	219200	
Arrow Enhanced Component Production												
Arrow Enhanced Component Production	Other	Boeing/IAI/ Alabama/Israel	37384	1271	1Q						38655	
Israeli Test Bed (ITB)												
Israeli Test Bed (ITB)	FFP	Tadiran/Israel	2500	3100	1Q	3100	1Q	3100	1Q	TBD	11800	
Israeli Systems Architecture and Integration (ISA&I)												
Israeli Systems Architecture and Integration (ISA&I)	FFP	Wales, Ltd/Israel	1511	1900	1Q	1976	1Q	2055	1Q	TBD	7442	
Arrow Deployability Program (ADP)												
ADP	Various	IAI/Israel	34000								34000	
Arrow Missile Production												
Arrow Missile Prod	Various	Boeing/IAI/ Alabama/Israel		70000							70000	
Subtotal Product Development			122395	131271		63803		63628			381097	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	4000	1000	1Q	1000	1Q	1000	1Q	TBD	7000	
Subtotal Support Costs			4000	1000		1000		1000			7000	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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)

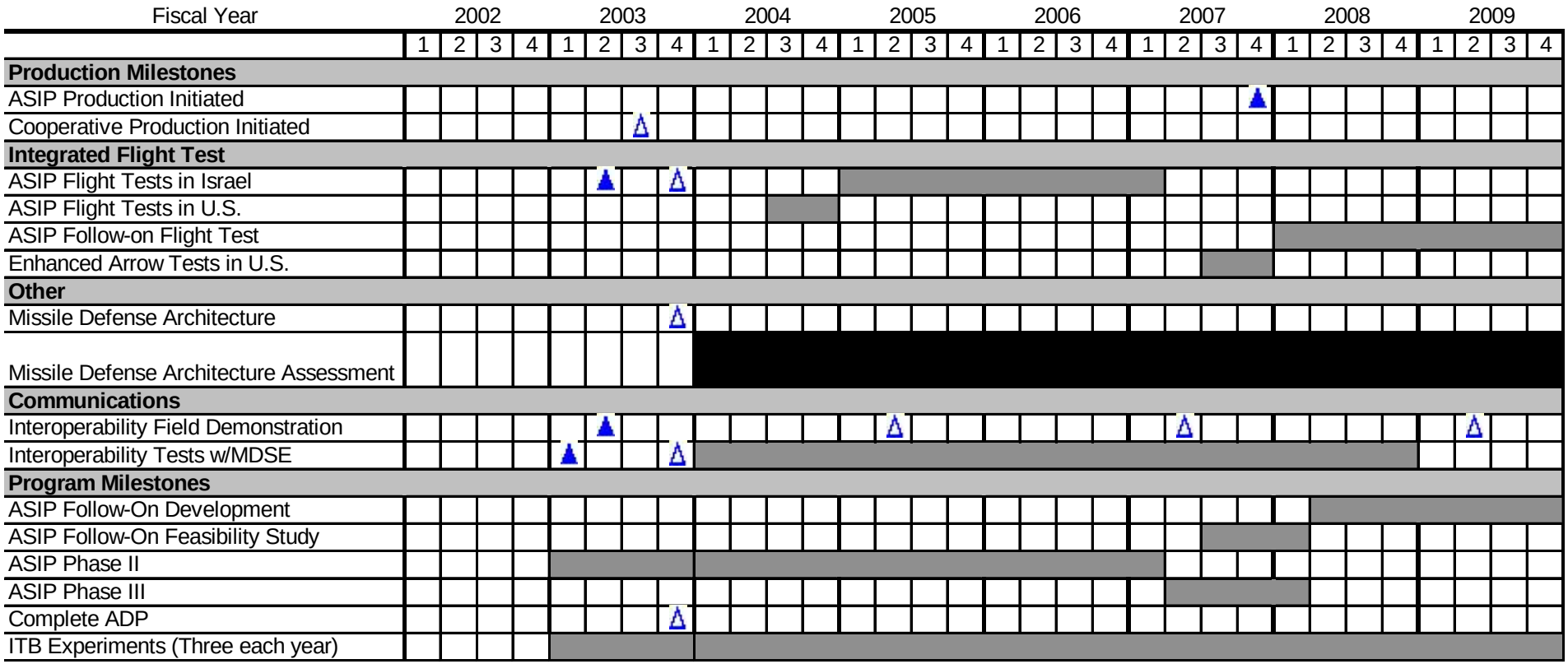
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			126395	132271		64803		64628			388097	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Production Milestones								
ASIP Production Initiated						4Q		
Cooperative Production Initiated		3Q						
Integrated Flight Test								
ASIP Flight Tests in Israel		2Q,4Q		1Q-4Q	1Q-4Q	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 Field Demonstration		2Q		2Q		2Q		2Q
Interoperability Tests w/MDSE		1Q,4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Program Milestones								
ASIP Follow-On Development							2Q-4Q	1Q-4Q
ASIP Follow-On Feasibility Study						3Q-4Q	1Q	
ASIP Phase II		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q		
ASIP Phase III						2Q-4Q	1Q	
Complete ADP		4Q						
ITB Experiments (Three each year)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2015 Medium Extended Air Defense (MEADS)	64338	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: MEADS was included as an element of the Terminal Defense Segment Program Element (PE) 0603881C in FY 2002. MEADS was programmed to transfer to the Army in FY 2003 but, per Congressional direction remained with MDA and was assigned its own MDA PE (0603869C MEADS) for FY 2003. MEADS is programmed to transfer to the Army in FY 2004.

The Medium Extended Air Defense System (MEADS) is an Objective Force system. As an international co-development program, MEADS is a Terminal Defense Segment Mission Area Investment that is 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 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 and other air-breathing threats throughout all phases of tactical operations. MEADS will operate with upper-tier systems in areas of debarkation and assembly and provide continuous coverage alone, or with Short-Range Air Defense Systems (SHORAD) systems in the division area 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 and modularly-configurable battle elements to provide a robust, 360-degree defense against short and medium range TBMs, cruise missiles, unmanned-aerial-vehicles, tactical air-to-surface missiles, rotary-wing and fixed-wing threats.

The MEADS program has been restructured to leverage the interceptor from the PATRIOT Advanced Capability-3 (PAC-3) program and to extend the Program Definition/Validation (PD/V) phase with a thirty two and half month Risk Reduction Effort (RRE) that focuses on developing the critical technologies required for maneuver force protection and overall risk reduction. U.S. funded bridging effort commenced on 14 August 2000 to begin work on the highest risk and long-lead items in the RRE Scope of Work. The International Memorandum of Understanding (MOU) was signed 27 June 2001, and the RRE contract was awarded 10 July 2001.

There remains a critical void in maneuver force defense against the current and future Air and Missile Defense (AMD) threat of short and medium range TBMs, cruise missiles, 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 lightweight launcher reloader, 360-degree multifunction fire control radar 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 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 2002	FY 2003	FY 2004	FY 2005
Risk Reduction Effort (RRE)	39316			
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, continue 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Program Integration	6057			
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 and U.S. only security.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Agencies and Support Contracts	7480			
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 conducting independent evaluations of contractor trades and analysis.

	FY 2002	FY 2003	FY 2004	FY 2005
Internal Operating	5350			
RDT&E Articles (Quantity)				

Continue MEADS program management, support and salaries for both the national and international program offices. Includes efforts to support US unique requirement for MEADS documentation plan.

	FY 2002	FY 2003	FY 2004	FY 2005
Multi-Spectra RF Datalink	6135			
RDT&E Articles (Quantity)				

Provides for the development of the Multi-Spectral Radio Frequency (RF) Datalink (MRFDL) in the PAC-3 Missile (Hardware Only).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

D. Acquisition Strategy

The MEADS acquisition strategy includes the 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 into 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 BMC4I 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 Secretary of 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).

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 Effort (RRE)												
Multi-Spectra RF Datalink												
Subtotal Product Development			0	0		0		0			0	

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 2003 Cost	FY 2003 Award Date	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												
Government Agencies and Support Contracts												
Subtotal Support Costs			0	0		0		0			0	

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.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Subtotal Management Services			0	0		0		0			0	

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.

Project Total Cost			0	0		0		0			0	

Remarks

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2090/0602 Program Operations	5067	4128	15066	16663	20970	16445	11182	7599
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 2090 and Fiscal Years 2004 and out are in Project 0602.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	2779	2403	6507	6159
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	900	1650	6087	7212
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	1388	75	2472	3292
RDT&E Articles (Quantity)				

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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment			
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923
3011 Block 2004 Test Bed	636357	451888	0	0	0	0	0	0
0708 Ground-Based Midcourse Defense (GMD) Test Bed Block 2004	0	0	1205431	867509	0	0	0	0
3012 Ground-Based Midcourse Defense (GMD) Development and Test Bed Upgrades	2437733	2108947	0	0	0	0	0	0
0808 Ground-Based Midcourse Defense (GMD) Test Bed Block 2006	0	0	1605368	1773621	1354462	1235116	0	0
0908 Ground-Based Midcourse Defense (GMD) Test Bed Block 2008	0	0	0	0	0	0	878477	877297
3020 Sea-Based Midcourse Defense (SMD)	446475	384312	0	0	0	0	0	0
0709 AEGIS Ballistic Missile Defense Block 2004	0	0	648306	893600	97725	0	0	0
0809 AEGIS Ballistic Missile Defense Block 2006	0	0	23859	72500	376828	299321	0	0
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	0	116282	186281	322353	470045	386358
0009 AEGIS Ballistic Missile Defense Block 2010	0	0	0	0	0	7808	104346	144568
0402 Japanese Cooperative Program	0	0	54000	73000	25000	0	0	0
3050 Segment Common Engineering and Integration	22408	94907	0	0	0	0	0	0
3090/0602 Program Operations	112116	63790	76302	44900	38226	43913	29521	29700

A. Mission Description and Budget Item Justification

Implementation of the Ballistic Missile Defense System (BMDS) requires the development of biennial block capabilities where the subsequent block capability will build on and be integrated into the predecessor blocks. Block capabilities are built by using the elements and their interchangeable 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, the Midcourse Defense Segment (MDS) Program Element (PE) funds the Midcourse-related element portions of Blocks 2004, 2006, and 2008 and other Midcourse-related mission area investment activities. The BMDS elements in this Midcourse Defense Segment (MDS) provide a hit-to-kill capability to counter ballistic missiles in the midcourse stage of flight. In this capacity, the MDS provides the midcourse defense layer of the overall Ballistic Missile Defense System (BMDS) via a ground-based system element (referred to as Ground-based Midcourse Defense (GMD)) and a sea-based system element (referred to as Aegis Ballistic Missile Defense (Aegis BMD) formerly referred to as Sea-based Midcourse Defense (SMD)).

Additionally, the MDS provides for the initial development and construction of a multi-part BMDS Test Bed, each part having independent ability to demonstrate midcourse capabilities. The Test Bed could also be used to test the capabilities of other defense layers (i.e., boost and terminal phases) as they develop and facilitate the integration of those layers in the BMDS.

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 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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

The MDS develops and demonstrates increasingly robust technologies and capabilities to enable incremental improvements and block upgrades to the BMDS over time, and incorporates:
1) Countermeasures resistance.
2) Use of a Combined Test Force (The CTF, under a single unified organization, integrates developmental and operational assessments, 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).
3) Expanded engagement conditions.
4) Multiple target and interceptor test launch sites.
5) Flexible engagement scenarios.
6) Expanded test range/engagement areas.
7) Improved test infrastructure.
8) Deployed ship-board radar sensors.
9) Other sensors.

Implementation of these improvements will enhance the realism in testing and evaluation of various BMDS technologies and systems.

Consistent with the MDA block management framework, the Ground-based Midcourse Defense (GMD) System Element of the MDS consists of Blocks 2004, 2006, and 2008:
1) The GMD Block 2004 represents the early development and construction of the initial GMD parts of the BMDS Test Bed also including the initial defensive operational capability (covered under Projects 3011 and 0708) as well as the sea-based X-band radar and an upgraded early warning radar at Beale AFB.
2) The GMD Block 2006 includes development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (covered under Projects 3012 and 0808). This could include exploring the acquisition of additional sensors such as an X-band radar.
3) The GMD Block 2008 includes continued development of GMD capabilities as well as integrated testing of the multi-layered BMDS components (covered under Project 0908).

The GMD element objectives include:
1) Developing and deploying (as directed) the capability to defeat Ballistic Missile Threats in the Midcourse phase of flight,
2) Constructing, operating and maintaining the GMD Test Bed,
3) Continue testing of development articles (ground and flight tests), and
4) Expanding GMD capability.

The Aegis Ballistic Missile Defense (Aegis BMD) element (formerly Sea-based Midcourse Defense (SMD)) 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.

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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603882C Ballistic Missile Defense Midcourse Defense Segment**

The Aegis BMD System element consists of five (5) major efforts:
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).

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 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 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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	3762250	3195104	3071581	3016343
Current President's Budget (FY 2004 PB)	3655089	3103844	3613266	3841412
Total Adjustments	-107161	-91260	541685	825069
Congressional Specific Program Adjustments	0	-9600	0	0
Congressional Undistributed Adjustments	-29972	-55125	0	0
Reprogrammings	2754	-26535	541685	825069
SBIR/STTR Transfer	-79943	0	0	0

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3011 Block 2004 Test Bed	636357	451888	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

The Ground-based Midcourse Defense (GMD) System Element of the Midcourse Defense Segment (MDS) consists of two (2) major efforts 1) development and construction of the initial GMD parts of the BMDS Test Bed (covered under Project 3011), and 2) development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (covered under Project 3012, GMD Development and Test Bed Upgrades).

Projects 3011, Block 2004 Test Bed, provides a Ballistic Missile Defense System (BMDS) Test Bed capability to add realism to test and evaluation efforts and improve demonstration capabilities. This multi-part Test Bed will use initial developmental hardware and software assets to validate the Ground-based Midcourse Defense (GMD) operational concept and to provide increased realism for GMD testing with various locations for flight-testing. Together, the initial GMD parts of the BMDS Test Bed will provide:

1) More realistic test and evaluation through geographically dispersed assets and an operationally representative environment to check out component hardware and software integration.
2) Distributed, integrated ground testing.
3) GMD Fire Control and Communications to support the Test Bed.
4) Sensor assets including the upgraded COBRA DANE radar in Shemya and development of a Sea-Based Test X-Band Radar (SBX).
5) Validation of construction, transportation, site activation, and logistics concepts supporting future deployment options.
6) Leveraging of ongoing basic development program activities in Project 3012.
7) Incorporation of Aegis Weapon System (AWS) radar to support GMD Integrated Flight Test Program as soon as practicable.
8) Full spectrum of testing to demonstrate system performance including Multiple Simultaneous Engagements (MSEs).
9) Common test infrastructure (for ground- and sea-based elements) that is expandable to boost and terminal segments.

Project 3012 will provide for the development, test conduct, and improve upon and expand the early BMDS Test Bed capabilities.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground-Based Interceptor (GBI)	156849	137027	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004 and 2005.

The Ground-Based Interceptor consists of an Exo-atmospheric Kill Vehicle (EKV) and a Launch Vehicle.
FY 2002 Accomplishments:
- Initiated acquisition of five (5) interceptors with spare boost vehicles for Ft. Greely.
- Initiated acquisition of six (6) common silos, launch site components for Ft. Greely.
- Initiated acquisition of Command Launch Equipment (CLE) and other support equipment for Ft. Greely.

FY 2003 Planned Accomplishments:
- Continues acquisition of five (5) interceptors with spare boost vehicles for Ft. Greely.
- Continues acquisition of six (6) common silos, launch site components for Ft. Greely.
- Continues acquisition of command launch equipment and other support equipment for Ft. Greely.

	FY 2002	FY 2003	FY 2004	FY 2005
Cobra Dane Upgrade	11600	47500	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004 and 2005.

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.

FY 2002 Accomplishments:
- Initiated hardware design.
- Initiated hardware build.
- Initiated facility modification design.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2003 Planned Accomplishments:
- Initiate hardware installation.
- Complete software build.
- Complete facility modification.

	FY 2002	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	51190	45689	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004 and 2005.

The GMD Fire Control and Communications (FC/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).

FY 2002 Accomplishments:
- Initiated studies for Test Bed In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) for Mid-Pacific, Vandenberg Air Force Base (VAFB), and Kodiak.
- Initiated acquisition of IDTs for Shemya and Ft. Greely.
- Initiated External System Interface (ESI) acquisition for AEGIS.
- Initiated acquisition of GMD Fire Control and Communications Node equipment.
- Initiated acquisition of Test Exerciser.
- Initiated acquisition of GMD Communications Network (GCN), communication equipment, and network for CONUS Ring and other Test Bed sites.
- Initiated acquisition of GMD Fire Control and Communications Remote Work Stations.

FY 2003 Planned Accomplishments:
- Completes IFICS fabrication.
- Completes Test Exerciser.
- Continues acquisition of IDTs for Shemya and Ft. Greely.
- Continues External System Interface (ESI) hardware procurement for AEGIS.
- Continues acquisition of GCN communication equipment and network for CONUS Ring and other Test Bed sites.
- Continues acquisition of GMD Fire Control and Communications Remote Work Stations.
- Continues acquisition of GMD Fire Control and Communications Node equipment.
- Initiates acquisition of relocatable Test Bed IDT.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Element Engineering and Integration	47812	42077	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004 and 2005.

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 an initial defensive operational capability. Continues the integration of component/element systems and sustains the planning effort for future deployment options. Continues to complement the BMDS Systems Engineering capability by providing detailed insight and analysis into component technical and design-specific issues.

FY 2002 Accomplishments:
- Initiated Test Bed planning, design, and scheduling.
- Initiated planning for Test Bed sub-system checkout (SSCO) and system integration and checkout (SICO).
- Initiated acquisition of Embedded Test Node hardware.

FY 2003 Planned Accomplishments:
- Continue Test Bed planning, design, and scheduling.
- Continue planning for Test Bed sub-system checkout (SSCO) and system integration and checkout (SICO) at Fort Greely.
- Conduct Reagan Test Site SSCO.
- Continue acquisition of Embedded Test Node hardware.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Test & Evaluation (T&E)	17500	17635	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004 and 2005.

GMD Test and Evaluation provides critical risk reduction and measurement of system performance for all GMD element components. It consists 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.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2002 Accomplishments:
- Initiated systems/elements test planning, design, and scheduling.
- Initiated planning for sub-system checkout (SSCO), system integration and checkout (SICO), and Systems Test Readiness Review (STRR).
- Initiated acquisition of launch support and range safety equipment for Kodiak.

FY 2003 Planned Accomplishments:
- Continues systems/elements test planning, design, and scheduling.
- Conducts Test Bed Integrated Ground Test.
- Continues planning for sub-system checkout (SSCO), system integration and checkout (SICO), and Systems Test Readiness Review (STRR).
- Initiates acquisition of Mission Control Centers (flight and ground).

	FY 2002	FY 2003	FY 2004	FY 2005
RDT&E Test Bed Construction	281321	136658	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004.

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.

FY 2002 Accomplishments:
- Awarded construction contract.
- Completed Ft. Greely site preparation and drilling of two wells.
- Completed Ft. Greely perimeter fence.
- Completed drilling outer ring of holes for 6 silos; completed excavation of 6 silos at Ft. Greely.
- Initiated construction on major facilities (readiness & control station, entry control, missile assembly building, utility & water buildings, IDT, and interceptor storage igloo) at Ft. Greely.
- Initiated construction on site access, interior site roads and drainage system at Ft. Greely.
- Initiated construction on facilities [IDT, Defense Satellite Communications System (DSCS), and test support facilities] at Eareckson Air Station (Shemya).
- Initiated upgrade to power plant facilities at Eareckson Air Station (Shemya).

FY 2003 Planned Activities:
- Complete construction on major facilities (readiness & control station, entry control, missile assembly building, IDT, utility and water buildings and interceptor storage igloo).
- Initiate and complete construction on minor facilities including, EKV fuel storage buildings and security positions.
- Initiate and complete construction on Electronic Security System at Ft. Greely.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Continue construction of site access and interior site roads. Continue construction of the drainage system.
- Complete preparation of facilities for equipment installation at Ft. Greely.
- Continue construction of Eareckson Air Station (Shemya)facilities.
- Initiate COBRA DANE facility modification.

	FY 2002	FY 2003	FY 2004	FY 2005
Community Impacts	15800	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

-- Note: This effort will move to Project 0708 in FY 2004.

FY 2002 Accomplishments:
- Provided funding for mitigating community impacts. Efforts included an additional fire station, off post landfill, school assistance, and a communications/TV tower.

	FY 2002	FY 2003	FY 2004	FY 2005
Site Activation	54285	25302	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. Note: This effort will move to Project 0708 in FY 2004.

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

FY 2002 Accomplishments:
- Initiated site layout and facility requirements definition for Test Bed infrastructure.
- Initiated Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.

FY 2003 Planned Accomplishments:
- Continue to develop and verify site layout and facility requirements definition for Test Bed infrastructure.
- Continue Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Facility acceptance and equipment installation coordination.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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/CPAF	Boeing/Various	158889	137027	2Q	0		0		CONT.	295916	CONT.
Cobra Dane Upgrade												
	SS/CPAF	Boeing/Various	11600	47500	1/2Q	0		0		CONT.	59100	CONT.
GMD Fire Control & Comms												
	SS/CPAF	Boeing/Various	51190	45689	1/2Q	0		0		CONT.	96879	CONT.
Element Engineering and Integration												
	SS/CPAF	Boeing/Various	47812	42077	2Q	0		0		CONT.	89889	CONT.
Element Test & Evaluation (T&E)												
	SS/CPAF	Boeing/Various	17500	17635	2Q	0		0		CONT.	35135	CONT.
Subtotal Product Development			286991	289928		0		0			576919	

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 2003 Cost	FY 2003 Award Date	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	2278521	122758	2Q	0		0		CONT.	2401279	CONT.
Kodiak Construction	MIPR	COE/AK	2800	13900	2Q	0		0		CONT.	16700	CONT.
Community Impacts												
	C/CPAF	Various/AK	15800	0		0		0		CONT.	15800	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Site Activation												
	SS/CPFF	Boeing/AK	54285	25302	1/2Q	0		0		CONT.	79587	CONT.
Subtotal Support Costs			2351406	161960		0		0			2513366	

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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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												

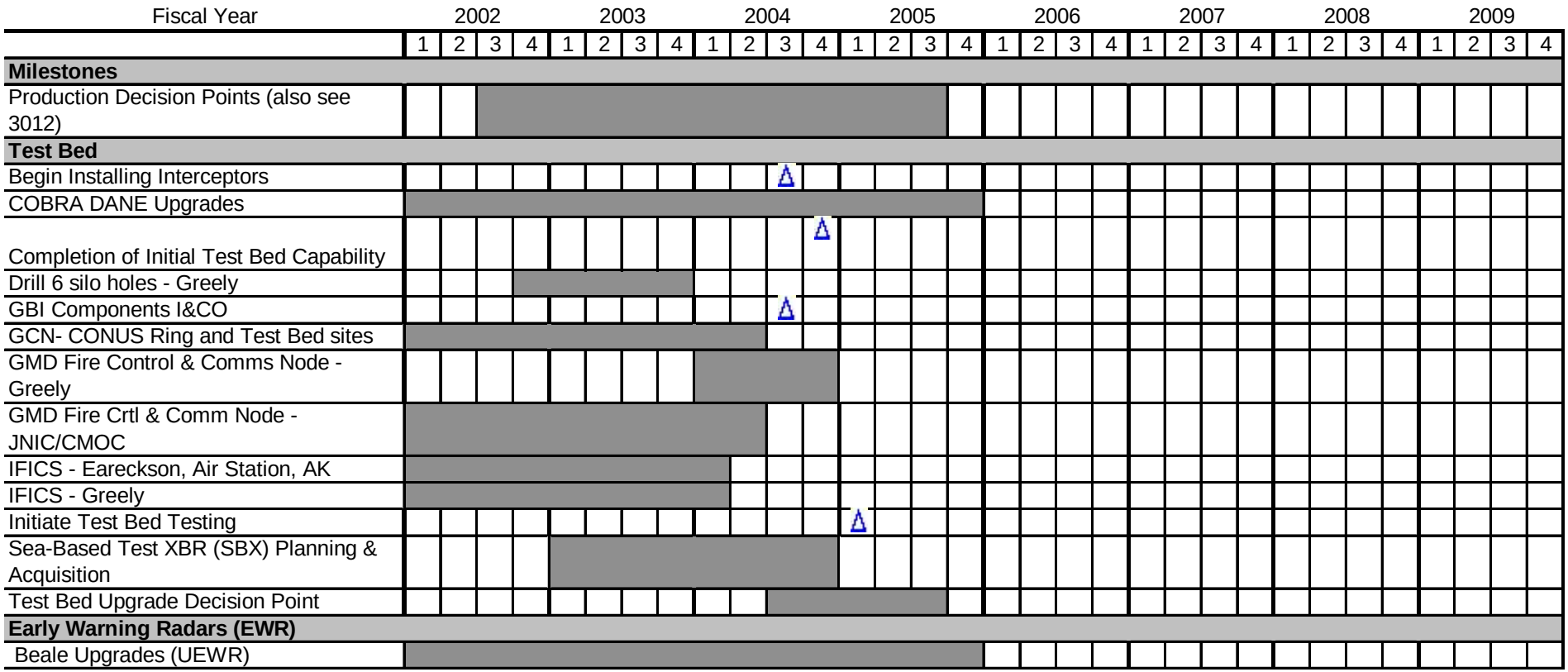
Remarks

Project Total Cost			2638397	451888		0		0			3090285	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones								
Decision Points (also see 3012)	3Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q				
Test Bed								
Begin Installing Interceptors			3Q					
COBRA DANE Upgrades	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Completion of Initial Test Bed Capability			4Q					
Drill 6 silo holes - Greely	4Q	1Q-4Q						
GBI Components I&CO			3Q					
GCN- CONUS Ring and Test Bed sites	1Q-4Q	1Q-4Q	1Q-2Q					
GMD Fire Control& Comms Node - Greely			1Q-4Q					
GMD Fire Ctrl & Comm Node - JNIC/CMOC	1Q-4Q	1Q-4Q	1Q-2Q					
IFICS - Eareckson, Air Station, AK	1Q-4Q	1Q-4Q	1Q					
IFICS - Greely	1Q-4Q	1Q-4Q	1Q					
Initiate Test Bed Testing				1Q				
Sea-Based Test XBR (SBX) Planning & Acquisition		1Q-4Q	1Q-4Q					
Test Bed Upgrade Decision Point			3Q-4Q	1Q-3Q				
Early Warning Radars (EWR)								
Beale Upgrades (UEWR)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0708 Ground-Based Midcourse Defense (GMD) Test Bed Block 2004	0	0	1205431	867509	0	0	0	0
RDT&E Articles Qty	0	0	29	24	0	0	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3011 in FY 2002 and 2003.

The Ground-based Midcourse Defense (GMD) System Element of the Midcourse Defense Segment (MDS) consists of a series of block development efforts supporting the midcourse phase of the BMDS. The Block 2004 (Project 0708) consists of the early development and construction of the initial GMD parts of the BMDS Test Bed (initiated under Project 3011) and, provides for fielding a ground-based midcourse capability beginning in FY 2004. Block 2006 (Project 0808) consists of the development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (initiated under Project 3012, GMD Development and Test Bed Upgrades). GMD development efforts continue with Block 2008 (Project 0908) and consist of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS Test Bed. These efforts will include block upgrades to GMD components.

Project 0708 and Project 3011, Block 2004 Test Bed, while providing an initial defensive operational capability will also provide a Ballistic Missile Defense System (BMDS) Test Bed capability to add realism to test and evaluation efforts. This multi-part Test Bed will use initial developmental hardware and software assets to validate the Ground-based Midcourse Defense (GMD) operational concept and to provide increased realism for GMD testing. The initial GMD parts of the BMDS Test Bed will provide:
1) More realistic test and evaluation through geographically dispersed assets and an operationally representative environment to check out component hardware and software integration.
2) Distributed, integrated ground testing.
3) GMD Fire Control and Communications to support the Test Bed.
4) Sensor assets including the upgraded COBRA DANE radar in Shemya and development of a Sea-Based Test X-Band Radar (SBX). Also includes exploring the acquisition of additional sensors such as an X-band radar.
5) Validation of construction, transportation, site activation, and logistics concepts supporting future deployment options.
6) Leveraging of ongoing basic development program activities in Projects 3012 and 0808.
7) Incorporation of Aegis Weapon System (AWS) radar to support GMD Integrated Flight Test Program as soon as practicable.
8) Full spectrum of testing to demonstrate system performance.
9) Common test infrastructure (for ground- and sea-based elements) that is expandable to boost and terminal segments.

As directed by the President, starting in FY 2004, the BMD Test Bed will include an initial defensive operations capability (IDO). This IDO capability will be expanded by:
1) Construction of a 2nd missile field at Fort Greely.
2) Acquisition of additional Interceptors (Boosters and EKVs).
3) Refurbishment of existing silos and installation of launch support components at VAFB.
4) Acquisition of an In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) with Communications Node Equipment (CNE) extensions at a NE CONUS location.
5) Acquisition of a UEWR at Fylingdales, U.K.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground-Based Interceptor (GBI)	0	0	224202	5653
RDT&E Articles (Quantity)	0	0	15	0

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

FY 2002 Accomplishments:(Funded in Project 3011)
- Initiated acquisition of five (5) interceptors with spare boost vehicles for Ft. Greely.
- Initiated acquisition of six (6) common silos, launch site components for Ft. Greely.
- Initiated acquisition of command launch equipment (CLE) and other support equipment for Ft. Greely.

FY 2003 Planned Accomplishments:(Funded in Project 3011)
- Continues acquisition of five (5) interceptors with spare boost vehicles for Ft. Greely.
- Continues acquisition of six (6) common silos, launch site components for Ft. Greely.
- Continues acquisition of command launch equipment and other support equipment for Ft. Greely.

FY 2004 Planned Accomplishments:

RDT&E Test Articles: Acquisition of five (5) EKVs and ten (10) boost vehicles, and associated launch support equipment was initiated in FY 2002 for delivery in FY 2004.

- Completes acquisition of five (5) interceptors with spare boost vehicles for Ft. Greely.
- Completes acquisition of six (6) common silos, launch site components for Ft. Greely.
- Completes acquisition of command launch equipment and other support equipment for Ft. Greely.
- Initiates component site installation and checkout.

FY 2005 Planned Accomplishments:
- Continues silo/interceptor/launch systems ground testing, system level simulation, and verification, validation, and accreditation activities.

	FY 2002	FY 2003	FY 2004	FY 2005
Cobra Dane Upgrade	0	0	34800	0
RDT&E Articles (Quantity)	0	0	1	0

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.

FY 2002 Accomplishments: (Funded in Project 3011)
- Initiated hardware design.
- Initiated hardware build.
- Initiated facility modification design.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2003 Planned Accomplishments: (Funded in Project 3011)
- Initiate hardware installation.
- Complete software build.
- Complete 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 with delivery in FY 2004.

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

	FY 2002	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	0	0	29063	7654
RDT&E Articles (Quantity)	0	0	7	0

DISCUSSION. The GMD Fire Control and Communications (FC/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).

FY 2002 Accomplishments: (Funded in Project 3011)
- Initiated studies for Test Bed In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) for Mid-Pacific, VAFB, and Kodiak.
- Initiated acquisition of IDTs for Shemya and Ft. Greely.
- Initiated External System Interface (ESI) acquisition for AEGIS.
- Initiated acquisition of GMD Fire Control and Communications Node equipment.
- Initiated acquisition of Test Exerciser.
- Initiated acquisition of GMD Communications Network (GCN), communication equipment, and network for CONUS Ring and other Test Bed sites.
- Initiated acquisition of GMD Fire Control and Communications Remote Work Stations.

FY 2003 Planned Accomplishments: (Funded in Project 3011)
- Completes IFICS fabrication.
- Completes Test Exerciser.
- Continues acquisition of IDTs for Shemya and Ft. Greely.
- Continues External System Interface (ESI) hardware procurement for AEGIS.
- Continues acquisition of GCN communication equipment and network for CONUS Ring and other Test Bed sites.
- Continues acquisition of GMD Fire Control and Communications Remote Work Stations.
- Continues acquisition of GMD Fire Control and Communications Node equipment.
- Initiates acquisition of relocatable Test Bed IDT.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Planned Accomplishments:

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 for a third IFICS Data Terminal (IDT) was initiated for either Mid-Pacific, Vandenberg AFB, or Kodiak 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 Ft. Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC) was initiated in FY 2002 for delivery in FY 2004. Acquisition of an Aegis External System Interface was initiated in FY 2003 for delivery in FY 2004.

- Completes installation and checkout at Ft. Greely.
- Completes acquisition of IDTs for Shemya and Ft. Greely.
- Completes initial IDT installation and checkout, Shemya and Ft. Greely.
- Completes External System Interface (ESI) acquisition, installation, and checkout for AEGIS.
- Completes acquisition of GCN communication equipment and network for CONUS Ring and other Test Bed sites.
- Completes acquisition of GMD Fire Control and Communications Remote Work Stations.
- Completes acquisition of GMD Fire Control and Communications Node equipment.
- Continues acquisition of relocatable Test Bed IDT.

FY 2005 Planned Accomplishments:
- Completes relocatable Test Bed IDT.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Engineering and Integration	0	0	42901	13351
RDT&E Articles (Quantity)	0	0	0	0

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 an initial defensive operational capability. Continues the integration of component/element systems and sustains the planning effort for future deployment options. Continues to complement the BMDS Systems Engineering capability by providing detailed insight and analysis into component technical and design-specific issues.

FY 2002 Accomplishments: (Funded in Project 3011)
- Initiated Test Bed planning, design, and scheduling.
- Initiated planning for Test Bed sub-system checkout (SSCO) and system integration and checkout (SICO).
- Initiated acquisition of Embedded Test Node hardware.

FY 2003 Planned Accomplishments: (Funded in Project 3011)
- Continue Test Bed planning, design, and scheduling.
- Continue planning for Test Bed sub-system checkout (SSCO) and system integration and checkout (SICO) at Fort Greely.
- Conduct Reagan Test Site SSCO.
- Continue acquisition of Embedded Test Node hardware.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Planned Accomplishments:
- Conduct sub-system checkout (SSCO) assessments for Shemya (Cobra Dane), Boulder, Buckley, Vandenberg Air Force Base (VAFB), ESI (AEGIS Weapon System Radar), Beale UEWR, Ft. Greely Interceptor site, and Test IDT capability.
- Conduct Test Bed systems integration and checkouts (SICO).
- Complete acquisition and installation of Embedded Test Node hardware.

FY 2005 Planned Accomplishments:
- Complete system integration test and checkout.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Test & Evaluation (T&E)	0	0	17136	3951
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. GMD Test and Evaluation provides critical risk reduction and measurement of system performance for all GMD element components. It consists 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. 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.

FY 2002 Accomplishments: (Funded in Project 3011)
- Initiated systems/elements test planning, design, and scheduling.
- Initiated planning for sub-system checkout (SSCO), system integration and checkout (SICO), and Systems Test Readiness Review (STRR).
- Initiated acquisition of launch support and range safety equipment for Kodiak.

FY 2003 Planned Accomplishments:(Funded in Project 3011)
- Continues systems/elements test planning, design, and scheduling.
- Conducts Test Bed Integrated Ground Test.
- Continues planning for sub-system checkout (SSCO), system integration and checkout (SICO), and Systems Test Readiness Review (STRR).
- Initiates acquisition of Mission Control Centers (flight and ground).

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, Ft. 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).

FY 2005 Planned Accomplishments:
- Completes Systems Test Readiness Review documentation.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
RDT&E Test Bed Construction	0	0	38135	0
RDT&E Articles (Quantity)	0	0	0	0

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.

FY 2002 Accomplishments: (Funded in Project 3011)
- Awarded construction contract.
- Completed Ft. Greely site preparation and drilling of two wells.
- Completed Ft. Greely perimeter fence.
- Completed drilling outer ring of holes for 6 silos; completed excavation of 6 silos at Ft. Greely.
- Initiated construction on major facilities (readiness & control station, entry control, missile assembly building, utility & water buildings, IDT, and interceptor storage igloo) at Ft. Greely.
- Initiated construction on site access and interior site roads and drainage system at Ft. Greely.
- Initiated construction on facilities [IDT, Defense Satellite Communications System (DSCS), and support facilities] at Eareckson Air Station (Shemya).
- Initiated upgrade power plant facilities at Eareckson Air Station (Shemya).

FY 2003 Planned Activities:(Funded in Project 3011)
- Complete construction on major facilities (readiness & control station, entry control, missile assembly building, IDT, utility and water buildings and interceptor storage igloo).
- Initiate and complete construction on minor facilities including, EKV fuel storage buildings and security positions.
- Initiate and complete construction on Electronic Security System at Ft. Greely.
- Continue construction of site access and interior site roads. Continue construction of the drainage system.
- Complete preparation of facilities for equipment installation at Ft. Greely.
- Continue construction of Eareckson Air Station (Shemya) facilities.
- Initiate COBRA DANE facility modification.

FY 2004 Planned Activities:
- Complete equipment installation for missile field, IDTs and DSCS at Ft. Greely.
- Complete construction on site access and interior site roads and drainage system.
- Complete construction on facilities (IDT, COBRA DANE, DSCS, and Test Support Facilities) at Eareckson Air Station (Shemya).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Community Impacts	0	0	6585	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.
FY 2002 Accomplishments: (Funded in Project 3011)
- Provided funding for mitigating community impacts. Efforts included an additional fire station, off post landfill, school assistance, and a communications/TV tower.

FY 2004 Planned Accomplishments:
- Completes community impact mitigation efforts including education programs, and social service grants.

	FY 2002	FY 2003	FY 2004	FY 2005
Sea-Based X-Band Radar (SBX)	0	0	370000	168800
RDT&E Articles (Quantity)	0	0	0	2

DISCUSSION.

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 Sea-Based Test X-Band Radar (SBX) is a Midcourse Defense sensor that will support 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 containerized 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.

FY 2002 Accomplishments: (Funded in Project 3012)
- Initiated design and engineering planning for radar, platform, and supporting facilities.
- Initiates acquisition of the sea-based platform.
- Initiated planning for necessary home-porting operations for the sea-based platform.

FY 2003 Planned Accomplishments: (Funded in Project 3012)
- Initiated acquisition of long-lead items associated with the radar.
- Initiates acquisition of main radar structure.
- Initiates acquisition of radar electronic components.
- Initiates construction of operations and support structures and facilities for platform.
- Initiates acquisition of operations and support equipment for platform.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Planned Accomplishments:
- Complete fabrication of main radar structure.
- Complete installation of radar structure.
- Complete acquisition and initiates installation of radar electronic components.
- Complete fabrication of operations and support structures and facilities for platform.
- Continue acquisition of operations and support equipment for platform.
- Initiate installation of radar electronic components.
- Initiate home port for the sea-based platform.

FY 2005 Planned Accomplishments:

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.

- Complete installation of radar electronic components.
- Complete acquisition of operations and support equipment for platform.
- Complete integration and checkout of Sea-based X-band Radar.
- Conduct home-porting operations for the sea-based platform.
- Completes radar array (half populated).

	FY 2002	FY 2003	FY 2004	FY 2005
Site Activation	0	0	13609	0
RDT&E Articles (Quantity)	0	0	0	0

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

FY 2002 Accomplishments: (Funded in Project 3011)
- Initiated site layout and facility requirements definition for Test Bed infrastructure.
- Initiated Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.

FY 2003 Planned Accomplishments:(Funded in Project 3011)
- Continue to develop and verify site layout and facility requirements definition for Test Bed infrastructure.
- Continue Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Facility acceptance and equipment installation coordination.

FY 2004 Planned Accomplishments:
- Complete development and verification of site layout and facility requirements definition for Test Bed infrastructure.
- Continue Environmental, Safety and Health (ESH) documentation and compliance, NEPA Analyses.
- Facility acceptance and equipment installation coordination.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Beale Early Warning Radar Upgrade			32000	20100
RDT&E Articles (Quantity)			1	0

DISCUSSION.
Note: This effort was initiated under Project 3012 in FY 2002 and 2003.

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 providing 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. This upgrade was initiated in Project 3012 in FY 2002 and 2003.

FY 2002 Accomplishments: (Funded in Project 3012)
- Continued flight and ground test support.
- Continued development and deployment of UEWR software builds.
- Initiated acquisition of Beale receiver-exciter and processors.
- Initiated Beale facility design.

FY 2003 Planned Accomplishments:(Funded in Project 3012)
- Continues flight and ground test support.
- Completes prototype string hardware.
- Completes Beale facility design.
- Completes Beale construction.
- Completes acquisition of Beale receiver-exciter and processors.
- Supports a Radar Certification Flight.

FY 2004 Planned Accomplishments:

RDT&E Test Articles: Acquisition of various upgrades to the Beale EWR was initiated in FY 2002 for delivery in FY 2004.
- Continues Flight and Ground Test support.
- Continues development and deployment of UEWR Software Builds.
- Completes Beale Integration and Test.
- Completes Beale Sub-system Checkout.
- Completes delivery of Beale Upgrade initial capability.
- Supports Radar Certification Flights.
- Initiate ITWAA integration and certification.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2005 Planned Accomplishments:
- Continues Flight and Ground Test support.
- Continues development and deployment of UEWR Software Builds.
- Supports Radar Certification Flights.
- Completes ITWAA integration and certification.

	FY 2002	FY 2003	FY 2004	FY 2005
Initial Defensive Operations Capability (Ground-Based Interceptors (GBI))	0	0	215263	426737
RDT&E Articles (Quantity)	0	0	5	20

DISCUSSION. The Ground-Based Interceptor consists of an Exo-atmospheric Kill Vehicle (EKV) and a Booster Vehicle. These Interceptors represents 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) by FY 2004. This effort will provide the United States with an enhanced Initial Defensive Operations capability (IDO) capability.

FY 2004 Planned Accomplishments:
- Acquire and install five EKVs (4 EKVs for VAFB and 1 for Fort Greely; boosters previously acquired).
- Initiate acquisition of ten (10) EKVs for Fort Greely.
- Initiate acquisition of ten (10) Boosters for Fort Greely.
- Initiate acquisition of common silos for Fort Greely.
- Refurbish three (3) silos at VAFB.

RDT&E Articles: Acquired 5 EKVs initiated in FY 2004 for delivery in FY 2004.

FY 2005 Planned Accomplishments:
- Complete acquisition and installation of 10 Boosters for Fort Greely.
- Complete acquisition and installation of 10 EKVs for Fort Greely.
- Complete acquisition and installation of common silos for Fort Greely.

RDT&E Articles: Acquired 10 EKVs and 10 Boosters initiated in FY 2004 for delivery in FY 2005.

	FY 2002	FY 2003	FY 2004	FY 2005
Initial Defensive Operations Capability (UEWR and IDT)			65300	42300
RDT&E Articles (Quantity)			0	2

DISCUSSION: The UEWR capabilities provide increased early warning capability for potential threat objects launched from north and east of CONUS. These processor upgrades, along with the associated GMD Communications Network (GCN) connectivity, are planned for full implementation at the Northeast site by FY 2005. The IDT provides the capability for midcourse communications with eastbound interceptors from existing Test Bed assets. The IDT shall be positioned on site in accordance with a siting analysis to provide favorable communications with launched interceptors.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Planned Accomplishments:

- Initiate acquisition of UEWR hardware.
- Initiate installation of UEWR hardware.
- Begin installation of UEWR software.
- Initiate IT/WAA integration and certification for the UEWR.
- Initiate acquisition of IDT.

RDT&E Articles: Acquisition of one (1) UEWR was initiated in FY 2004 for delivery in FY 2005. Acquisition of one (1) IDT was initiated in FY 2004 for delivery in FY 2005.

FY 2005 Planned Accomplishments:

- Complete acquisition of UEWR hardware.
- Complete installation of UEWR hardware.
- Complete installation of UEWR software.
- Complete Integrated Tactical Warning and Attack Assessment and certification for the UEWR.
- Complete acquisition of IDT.
- Complete installation of IDT.

	FY 2002	FY 2003	FY 2004	FY 2005
Initial Defensive Operations Capability (RDT&E Construction)	0	0	116437	178963
RDT&E Articles (Quantity)	0	0	0	0

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 enhanced Initial Defensive Operations Capability.

FY 2004 Planned Accomplishments:
- Initiate construction of 10 common silos and supporting facilities at Ft. Greely.
- Initiate and complete site facility designs for IDT [NE Region, CONUS] and UEWR [NE Tier].
- Initiate facilities construction for IDT [NE Region, CONUS] and UEWR [NE Tier].

FY 2005 Planned Accomplishments:
- Complete construction of 10 common silos and supporting facilities at Ft. Greely.
- Complete facilities construction for IDT [NE Region, CONUS] and UEWR [NE Tier].

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	0		224202	2Q	5653	2Q	CONT.	229855	CONT.
Cobra Dane Upgrade												
	SS/CPAF	Boeing/Various	0	0		34800	1/2Q	0		CONT.	34800	CONT.
GMD Fire Control & Comms												
GMD Fire Control & Comms	SS/CPAF	Boeing/Various	0	0		29063	1/2Q	7654	1/2Q	CONT.	36717	CONT.
Element Engineering and Integration												
	SS/CPAF	Boeing/Various	0	0		42901	2Q	13351	2Q	CONT.	56252	CONT.
Element Test & Evaluation (T&E)												
	SS/CPAF	Boeing/Various	0	0		17136	2Q	3951	2Q	CONT.	21087	CONT.
Sea-Based X-Band Radar (SBX)												
Sea-Based X-Band Radar (SBX)	SS/CPAF	Boeing/Various	0	0		370000	1/2Q	168800	1/2Q	CONT.	538800	CONT.
Beale Early Warning Radar Upgrade												
	SS/CPAF	Boeing/Various	0	0		32000	1/2Q	20100	1/2Q	CONT.	52100	CONT.
Initial Defensive Operations Capability (Ground-Based Interceptors (GBI))												
	SS/CPAF	Boeing/Various				215263	1Q	426737	1Q	CONT.	642000	CONT.
Initial Defensive Operations Capability (UEWR and IDT)												
	SS/CPAF	Boeing/Various	0	0		65300	1/2Q	42300	1/2Q	CONT.	107600	CONT.
Subtotal Product Development			0	0		1030665		688546			1719211	

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	0	0		17345	2Q	0		CONT.	17345	CONT.
Kodiak Construction	MIPR	COE/AK	0	0		20790	2Q	0		CONT.	20790	CONT.
Community Impacts												
	C/CPAF	Various/AK	0	0		6585	2Q	0		CONT.	6585	CONT.
Site Activation												
Site Activation	SS/CPFF	Boeing/Various	0	0		13609	1/2Q	0		CONT.	13609	CONT.
Initial Defensive Operations Capability (RDT&E Construction)												
	MIPR	COE/AK/CA	0	0		116437	1Q	178963	1Q	CONT.	295400	CONT.
Subtotal Support Costs			0	0		174766		178963			353729	

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 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												

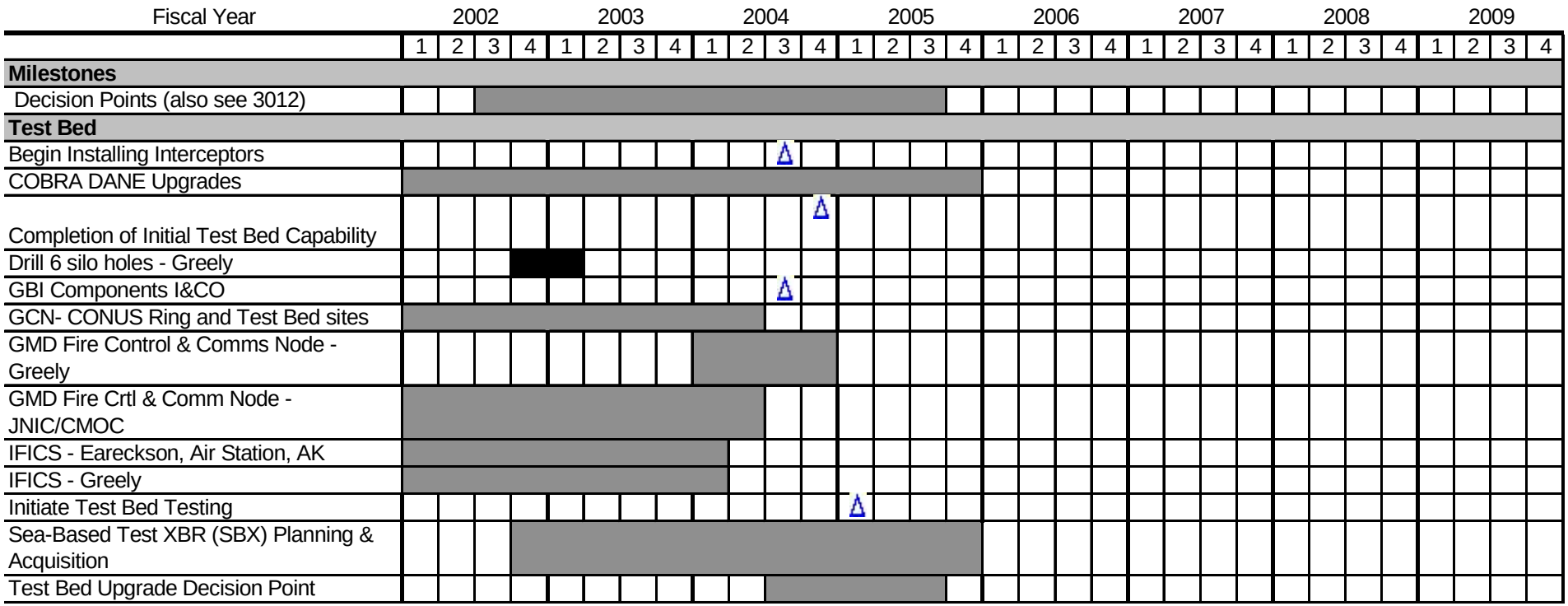
Remarks

Project Total Cost			0	0		1205431		867509			2072940	

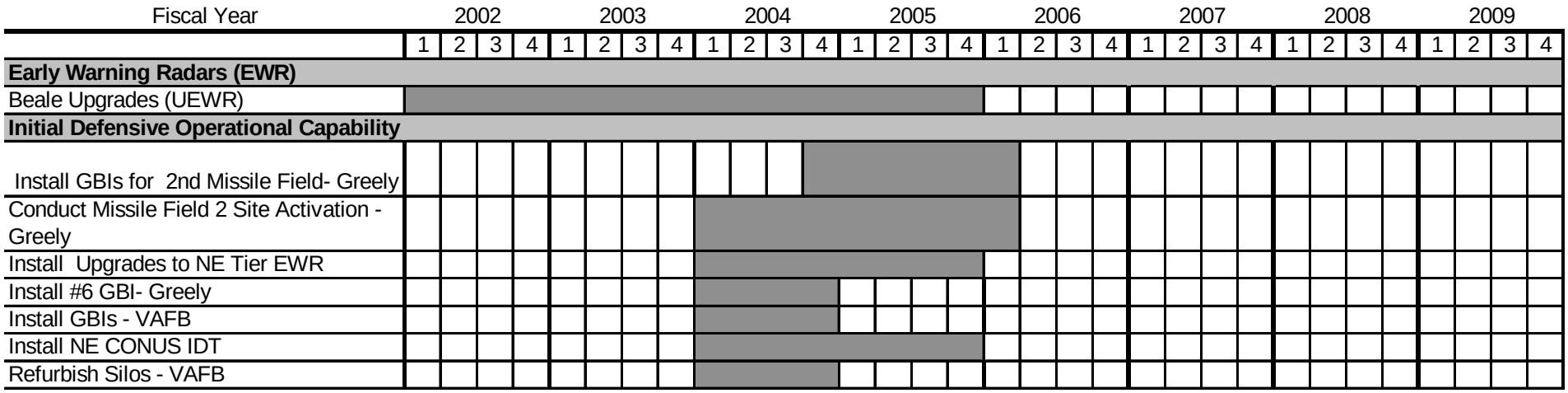
Remarks

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones								
Decision Points (also see 3012)	3Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q				
Test Bed								
Begin Installing Interceptors			3Q					
COBRA DANE Upgrades	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Completion of Initial Test Bed Capability			4Q					
Drill 6 silo holes - Greely	4Q	1Q						
GBI Components I&CO			3Q					
GCN- CONUS Ring and Test Bed sites	1Q-4Q	1Q-4Q	1Q-2Q					
GMD Fire Control & Comms Node - Greely			1Q-4Q					
GMD Fire Ctrl & Comm Node - JNIC/CMOC	1Q-4Q	1Q-4Q	1Q-2Q					
IFICS - Eareckson, Air Station, AK	1Q-4Q	1Q-4Q	1Q					
IFICS - Greely	1Q-4Q	1Q-4Q	1Q					
Initiate Test Bed Testing				1Q				
Sea-Based Test XBR (SBX) Planning & Acquisition	4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Test Bed Upgrade Decision Point			3Q-4Q	1Q-3Q				
Early Warning Radars (EWR)								
Beale Upgrades (UEWR)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Initial Defensive Operational Capability								
Install GBIs for 2nd Missile Field- Greely			4Q	1Q-4Q	1Q			
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 GBIs - VAFB			1Q-4Q					
Install NE CONUS IDT			1Q-4Q	1Q-4Q				
Refurbish Silos - VAFB			1Q-4Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3012 Ground-Based Midcourse Defense (GMD) Development and Test Bed Upgrades	2437733	2108947	0	0	0	0	0	0
RDT&E Articles Qty	7	10	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

The Ground-based Midcourse Defense (GMD) System Element of the Midcourse Defense Segment (MDS) consists of a series of block development efforts supporting the midcourse descent phase of the BMDS. The Block 2004 consists of the early development and construction of the initial GMD parts of the BMDS Test Bed (initiated under Project 3011). Block 2006 (Project 0808) consists of the development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (initiated under this Project (3012)). GMD development efforts continue with Block 2008 (Project 0908) and consist of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS Test Bed. These efforts will include Preplanned Product Improvements (P3I) to GMD components.

Projects 3012 and 0808, Ground-based Midcourse Defense (GMD) Block 2006, provide hardware, planning, mission support and execution of the GMD test program. It also provides a broad range of development activities and technologies and components for the ground-based element of Ballistic Missile Defense System (BMDS). This development effort will mature key technologies in logical stages to allow for an initial capability, 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 technologies supporting a ground-based "Hit-to-Kill" capability. This project requires infrastructure support for the GMD program at Redstone Arsenal, Alabama.

The GMD Development program provides an integrated development and test program of more capable interceptors (both launch and kill vehicles), targets, sensors, and GMD Fire Control Communications systems and infrastructure.

- The Objective Boost Vehicle (OBV) will be the launch vehicle for the Exo-atmospheric Kill Vehicle (EKV). The OBV is in development with booster verification flight tests planned in FY 2003. Until the initial OBV candidates have completed testing and are certified for use in the MDS flight test program, the Payload Launch Vehicle (PLV) has been used.
- 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 upgrades to the Early Warning Radar at Beale. 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. 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. It 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 an integrated system. This includes:
1. Various communications links (e.g., CONUS ring, Alaska leased lines and Satellite Communications (SATCOM) to Shemya, Ft. Greely, and In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs).
2. GMD Fire Control and Communications Nodes [Ft. Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC)]
3. In-Flight Interceptor Communications System Data Terminal (IDTs) at various locations.

Block development initiatives continue on these technologies and components meeting future block capability requirements. This effort will be developed to be consistent with the BMDS BMC/C2 architecture.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- The GMD Development program supports the requirements of the test program including Integrated Flight and Ground Tests. 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 test components include targets, launch vehicles, EKVs, launch infrastructure, sensors, test range assets, and other mission support. Additionally, the test program will incorporate Aegis Weapon System (AWS) radars to support GMD integrated flight test program as soon as practicable.
- Planning continues to provide a capability to respond to a future deployment order 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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Based Interceptor (GBI)	856518	619592	0	0
RDT&E Articles (Quantity)	5	8	0	0

DISCUSSION. The GBI development program has successfully demonstrated a hit-to-kill capability in four (4) consecutive flight tests.

FY 2002 Accomplishments:

RDT&E Test Articles: Acquired 2 GBIs (includes both EKV and boost vehicle) initiated in FY 2001 for delivery in FY 2002. Acquired 1 boost vehicle (Booster Verification Flight) in FY 2001 for delivery in FY 2002.

- Completed booster/EKV integration, ground/system tests, and successful flight test of Integrated Flight Test-8 (IFT8).
- Initiated acquisition of boosters for Booster Verification flights.
- Initiated acquisition of boosters for Integrated Flight Tests.
- Initiated Objective Booster development.
- Initiated common silo and common command launch equipment development.
- 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 support for IFTs and ground test.
- Continued modeling and simulation development.

FY 2003 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKVs 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.

- Conducts booster/EKV integration, ground/system tests, and Integrated Flight Tests.
- Completes acquisition of boosters for Booster Verification flights.
- Conducts Booster Verification flights.
- Continues Objective Booster development.
- Continues common silo and common command launch equipment development.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Initiates refurbishment 2 silos at VAFB and equip for flight test.
- 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.
- Continues modeling and simulation development.

	FY 2002	FY 2003	FY 2004	FY 2005
X Band Radar Technology Development	103094	86540	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. X-Band radar technologies provide high-resolution tracking and discrimination data to the Kill Vehicle 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 maximum power output and sensitivity.

FY 2002 Accomplishments
- Continued XBR systems integration into Test Bed architecture.
- Continued development of a systems design and ground testing program to measure systems effectiveness.
- Continued flight and ground test support.
- Initiated XBR Test Equipment design.
- Continued to develop and deploy XBR Software Builds.
- Continued operation and maintenance of GBR-P.

FY 2003 Planned Accomplishments
- Continues XBR systems integration into Test Bed Architecture.
- Continues development of a systems design and ground testing program to measure systems effectiveness.
- Completes XBR Receiver/Exciter, Beam Steering Group software testing.
- Continues to develop and deploy XBR Software Builds.
- Continues flight and ground test support.
- Supports Radar Certification Flight (RCF).
- Continues operation and maintenance of GBR-P.

	FY 2002	FY 2003	FY 2004	FY 2005
Upgraded Early Warning Radar (UEWR) Development	36397	36200	0	0
RDT&E Articles (Quantity)	0	0	0	0

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 to the location and trajectory of incoming targets. The planned upgrades provide the capability of not only detecting, but provides precise tracking early enough to significantly expand the battlespace for the ground based interceptors into the early stages of flight. This development program will provide development of enhanced EWR software.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2002 Accomplishments:
- Continued flight and ground test support.
- Continued planning for potential future UEWR sites.
- Continued the planning, assessment and evaluation of future software enhancements and technologies.

FY 2003 Planned Accomplishments:
- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.
- Supports radar certification flight.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Engineering & Integration	182098	174701	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integration of the functional components of the 2004 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 operational capability. Continues the integration of component/element systems and sustains the planning effort for future deployment options. Continues to complement the BMDS systems engineering capability by providing detailed insight and analysis into component technical and design-specific issues.

FY 2002 Accomplishments:
- Completed Integration Phase (IP) 1 and Integrated Assessment Review (IAR).
- 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 Planned Accomplishments:
- Completes Integration Phase (IP) 2 and Integrated Assessment Review (IAR).
- Completes IP-3 Integrated Technical Review (ITR).
- Completes IP-4 Integrated Design Review (IDR).
- Conducts software management and specialty engineering.
- Conducts software verification and validation.
- Conducts modeling and simulation development.
- Conducts system analyses, integration, and verification.
- Supports integrated ground tests and specialty testing.
- Conducts pre- and post-flight test analyses.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	422477	216695	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. The GMD Fire Control and Communications (GMD FC/C) 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 Systems (IFICS).

FY 2002 Accomplishments:
- Continued flight and ground test support.
- Continued development and installation of Ground-Based Missile Defense (GMD) software builds.
- Initiated ESI development.
- Initiated development and installation of Test Exercise software builds.
- Continued development and installation of IFICS software builds.

FY 2003 Planned Accomplishments:
- 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.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Test and Evaluation	286416	250834	0	0
RDT&E Articles (Quantity)	2	2	0	0

DISCUSSION. GMD Test and Evaluation consists of 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 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 2002 Accomplishments:

RDT&E Test Articles: Acquired 2 targets initiated in FY 2000 and delivered in FY 2002.

- Successfully conducted IFT7 and IFT8.
- Continued operation and maintenance of System Test Lab, Prime Consolidated Integration Laboratory (PCIL), and Integrated System Test Capability (ISTC).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Continued ground and flight test planning, design, and scheduling.
- Performed pre- and post-test analyses.
- Performed analyses to define target requirements.

FY 2003 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 targets initiated in 2001 for delivery in FY 2003.

- Successfully conducted IFT9.
- Continues operation and maintenance of System Test Lab, PCIL, and ISTC.
- 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.
- Establish Element Test Objectives.

	FY 2002	FY 2003	FY 2004	FY 2005
Site Activation	72710	53682	0	0
RDT&E Articles (Quantity)	0	0	0	0

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

FY 2002 Accomplishments:
- Initiated site operations at Block 2004 Test Bed sites.
- Developed Test Bed site activation plans.
- Performed siting, NEPA, and ESH analysis for Block 2004 Test Bed.
- Completed design of Test Bed facilities.

FY 2003 Planned Accomplishments:
- Continues Block 2004 Test Bed activation.
- Updates Test Bed site activation plans.
- Continues siting, NEPA, and ESH analysis for Block 2004 Test Bed.
- Initiates siting and Joint Spectrum Center (JSC) Electromagnetic Interference (EMI) analysis for SBX.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	FY 2002	FY 2003	FY 2004	FY 2005
Program Planning and Management	159336	129641	0	0
RDT&E Articles (Quantity)	0	0	0	0

FY 2002 Accomplishments:
- 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 hardware (H/W) and software (S/W) development including management of Independent Verification and Validation (IV&V) activities, test and evaluation planning and execution.
- Continued program management, subcontract management, quality assurance, and technical and testing oversight.

FY 2003 Planned Accomplishments:
- Provides 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.
- 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.
- Provides for GMDs Interface to the BMDS National Team.

	FY 2002	FY 2003	FY 2004	FY 2005
Logistics Planning, Production and Protection	168887	248162	0	0
RDT&E Articles (Quantity)	0	0	0	0

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 2002 Accomplishments:
- Continued to coordinate and provide GFX (over 700 lines items) to the prime contractor to support 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 Test Bed readiness reviews.
- Conduct quality assurance planning and implementation.
- Continued to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other program extended Test Bed sites as required.
- Continued to provide functional support for production, quality, configuration and change management.
- Conducted sustainment, deployment, siting, and facility planning.
- Conducted reliability and maintainability analyses.
- Continued to provide program protection to the Test Bed including physical security.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

FY 2003 Planned Accomplishments:
- Continues to coordinate and provide GFX (over 700 lines items) to the prime contractor to support Test Bed activations and GMD test program.
- Continues to provide management efforts to activate a logistics support system to include site support activations and validation, logistical support requirements, and Test Bed readiness reviews.
- Conducts quality assurance planning and implementation.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other program extended Test Bed sites as required.
- Continues to provide functional support for production, quality, configuration and change management.
- Conducts sustainment, deployment, siting, and facility planning.
- Conducts reliability and maintainability analyses.
- Continues to provide program protection to the Test Bed including physical security.

	FY 2002	FY 2003	FY 2004	FY 2005
Sea-Based X-Band Radar	41900	228000	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.
Note: This effort is 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 a Test XBR is ready to be integrated into the Ballistic Missile Defense System Test Bed in the fourth quarter of FY 2005.

The Sea-Based Test X-Band Radar (SBX) is a Midcourse Defense sensor that will support 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.

FY 2002 Accomplishments:

RDT&E Test Articles: Initiates acquisition of one (1) Sea-Based Test X-Band Radar (SBX) in FY 2002. Delivery is planned for FY 2005. Initiates acquisition of one (1) IFICS Data Terminal (IDT) for the SBX in FY 2002. Delivery is planned for FY 2005.

- Initiated design and engineering planning for radar, platform, and supporting facilities.
- Initiated acquisition of long-lead items associated with the radar.
- Initiated planning for necessary home-porting operations for the sea-based platform.

FY 2003 Planned Accomplishments:

- Initiates acquisition of the sea-based platform.
- Initiates acquisition of main radar structure.
- Initiates acquisition of radar electronic components.
- Initiates construction of operations and support structures and facilities for platform.
- Initiates acquisition of operations and support equipment for platform.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Beale Early Warning Radar Upgrade	107900	64900	0	0
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION.

Note: This effort will be moved to Project 0708 in FY 2004 and 2005.

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.

This effort will be moved to Project 3011 in FY 2004 and 2005.

FY 2002 Accomplishments:
- Continued flight and ground test support.
- Continued development and deployment of UEWR software builds.
- Initiated acquisition of Beale receiver-exciter and processors.
- Initiated Beale facility design.

FY 2003 Planned Accomplishments:
- Continues flight and ground test support.
- Completes prototype string hardware.
- Completes Beale facility Design.
- Completes Beale construction.
- Completes acquisition of Beale receiver-exciter and processors.
- Supports a Radar Certification Flight.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment			
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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/CPAF	Boeing/Various	833248	593788	2/3Q	0		0		CONT.	1440721	CONT.
X Band Radar Technology Development												
	SS/CPAF	Boeing/Various	87882	72382	1/2Q	0		0		CONT.	160264	CONT.
Upgraded Early Warning Radar (UEWR) Development												
	SS/CPAF	Boeing/Various	22408	22009	1/4Q	0		0		CONT.	44417	CONT.
Element Engineering & Integration												
	SS/CPAF	Boeing/Various	135498	136602	1/2Q	0		0		CONT.	272100	CONT.
GMD Fire Control & Comms												
	SS/CPAF	Boeing/Various	390660	199816	2Q	0		0		CONT.	590476	CONT.
Element Test and Evaluation												
	SS/CPAF	Boeing/Various	113210	102253	1/2Q	0		0		CONT.	215463	CONT.
Logistics Planning, Production and Protection												
	SS/CPAF	Boeing /Various	19600	15800	1/2Q	0		0		CONT.	35400	CONT.
Sea-Based X-Band Radar												
	SS/CPAF	Boeing/Various	41900	228000	2Q	0		0		CONT.	269900	CONT.
Beale Early Warning Radar Upgrade												
	SS/CPAF	Boeing/Various	107900	64900	1Q	0		0		CONT.	172800	CONT.
Subtotal Product Development			1752306	1435550		0		0			3201541	

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Element Engineering & Integration												
	MIPR	TSC/SMDC/AL	1100	1000	2Q	0		0		CONT.	2100	CONT.
	MIPR	NSWC/Dahlgren, VA	5795	4125	2Q	0		0		CONT.	9920	CONT.
	MIPR	DTRA/Dulles, VA	1360	1000	2Q	0		0		CONT.	2360	CONT.
	MIPR	NAIC/Wright Patterson, AFB	900	700	2Q	0		0		CONT.	1600	CONT.
	MIPR	SBIRS SPO/LA AFB, CA	2900	1800	2Q	0		0		CONT.	4700	CONT.
	MIPR	DTD/GMD/Huntsville, AL	2200	1870	2Q	0		0		CONT.	4070	CONT.
	MIPR	GME Engineering Analysis/Huntsville, AL	3190	1980	2Q	0		0		CONT.	5170	CONT.
	MIPR	GMD Studies & Analysis/Huntsville, AL	1900	1700	2Q	0		0		CONT.	3600	CONT.
	SS/CPFF	CSC/Arlington, VA	18288	16901	2Q	0		0		CONT.	35189	CONT.
	MIPR	MIT Lincoln Labs/Cambridge, MA	973	815	2Q	0		0		CONT.	1788	CONT.
	MIPR	Photon Labs/Arlington, VA	1334	700	2Q	0		0		CONT.	2034	CONT.
	SS/CPAF	IDA/Arlington, VA	230	250	2Q	0		0		CONT.	480	CONT.
	C/CPAF	Miltec/Huntsville, AL	0	600	2Q	0		0		CONT.	600	CONT.
	MIPR	Aerospace Corp./Los Angeles, CA	550	0		0		0		TBD	550	TBD
	C/CPAF	Various	400	0		0		0		CONT.	400	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	MIPR	JNIC/Colorado Springs, CO	5480	4658	2Q	0		0		CONT.	10138	CONT.
Upgraded Early Warning Radar (UEWR) Development												
	MIPR	Xontech/Boston, MA	2700	0		0		0		TBD	2700	TBD
	C/CPAF	TRW/JNIC	338	0		0		0		TBD	338	TBD
	C/CPFF	AFRL/ESC, Hanscom AFB	120	0		0		0		TBD	120	TBD
X Band Radar Technology Development										TBD		TBD
	C/FP	TBE	1440	0		0		0		TBD	1440	TBD
	C/FP	CSC	552	0		0		0		TBD	552	TBD
	SS/CPAF	Ga. Tech	1730	1220	2Q	0		0		CONT.	2950	CONT.
	C/FP	Mevatech	7578	9273	2Q	0		0		CONT.	16851	CONT.
	MIPR	AMCOM	1667	1620	2Q	0		0		CONT.	3287	CONT.
	C/CPFF	Xontech	780	780	2Q	0		0		CONT.	1560	CONT.
Ground Based Interceptor (GBI)												
	SS/FP	Davidson/AL	564	1157	2Q	0		0		CONT.	1721	CONT.
	SS/FP	Mevatec/AL	7282	7673	2Q	0		0		CONT.	14955	CONT.
	SS/FP	TSI/AL	5794	6782	2Q	0		0		CONT.	12576	CONT.
	C/CPFF	Sparta/AL	1730	1353	2Q	0		0		CONT.	3083	CONT.
	MIPR	AMCOM/AL	437	344	1/2Q	0		0		CONT.	781	CONT.
	MIPR	USASMDC/AL	337	380	2Q	0		0		CONT.	717	CONT.
	MIPR	DOT/ITOP/DC	487	224	2Q	0		0		CONT.	711	CONT.
	MIPR	Mitre/AL	131	283	2Q	0		0		CONT.	414	CONT.
	MIPR	Misc/Various	214	62	2Q	0		0		CONT.	276	CONT.
	Various	Misc/Various	1651	0		0		0		CONT.	1651	CONT.
	SS/FP	CSC/AL	7245	6600	2Q	0		0		CONT.	13845	CONT.
	MIPR	SMC/CA	8649	946	2Q	0		0		TBD	9595	TBD
Site Activation												
	C/CPFF	CSC/AL	2217	2350	2Q	0		0		CONT.	4567	CONT.
	MIPR	Various	2917	1604	2Q	0		0		CONT.	4521	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	MIPR	USACE/Huntsville, AL	6928	4422	2Q	0		0		CONT.	11350	CONT.
	C/CPFF	CSC/AL	2888	2420	2Q	0		0		CONT.	5308	CONT.
	C/CPFF	L3 Communications/AL	1789	1499	2Q	0		0		CONT.	3288	CONT.
	MIPR	U.S. Army War College/PA	1440	1207	2Q	0		0		CONT.	2647	CONT.
		Various	3050	2119	2Q	0		0		CONT.	5169	CONT.
	C/CPFF	Mevatech/AL	1817	3652	2Q	0		0		CONT.	5469	CONT.
	C/CPFF	CSC/AL	1078	1573	2Q	0		0		CONT.	2651	CONT.
	C/CPFF	CSC/AL	6413	4577	2Q	0		0		CONT.	10990	CONT.
	C/CPFF	Colsa/AL	225	301	2Q	0		0		CONT.	526	CONT.
	MIPR	USACE/Huntsville, AL	1000	1336	2Q	0		0		CONT.	2336	CONT.
	C/CPFF	CSC/AL	1898	2024	2Q	0		0		CONT.	3922	CONT.
	C/CPFF	L3 Communications/AL	1291	1377	2Q	0		0		CONT.	2668	CONT.
	MIPR	USASMDC/AL	4765	2659	2Q	0		0		CONT.	7424	CONT.
	MIPR	USARAK/AK	12691	3813	2Q	0		0		CONT.	16504	CONT.
		Various	920	982	2Q	0		0		CONT.	1902	CONT.
	SS/CPAF	Boeing/Various	19383	15767	1/2Q	0		0		TBD	35150	TBD
Program Planning and Management												
SPT DC	C/CPAF	CSC/DC	94875	86862	1/2Q	0		0		CONT.	181737	CONT.
SPT HSV	C/CPAF	CSC/AL	43325	26910	1/2Q	0		0		CONT.	70235	CONT.
TRADOC System Manager	MIPR	SMDC/AL	21136	15869	1/2Q	0		0		CONT.	37005	CONT.
Logistics Planning, Production and Protection												
Logistic/GFX	C/CPFF	CSC/SY Tech	709	0		0		0		TBD	709	TBD
	C/CPFF	CSC/AL	612	1072	3Q	0		0		CONT.	1684	CONT.
	C/CPFF	L3 Communications/AL	1018	2584	3Q	0		0		CONT.	3602	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis												Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)										R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment		
	C/CPFF	Mevatech/AL	862	902	3Q	0		0		CONT.	1764	CONT.
	C/CPFF	TSI/AL	450	910	3Q	0		0		CONT.	1360	CONT.
	C/CPFF	MSAIC	48	96	3Q	0		0		CONT.	144	CONT.
	MIPR	AMCOM/IMMC	690	1625	2/3Q	0		0		CONT.	2315	CONT.
	MIPR	AMCOM/OGA	0	3618	2/3Q	0		0		CONT.	3618	CONT.
	C/CPFF	Mevatech/AL	425	1201	2/3Q	0		0		CONT.	1626	CONT.
	C/CPFF	CSC	100	0		0		0		TBD	100	TBD
	C/CPFF	SY Tech	2100	3349	2/3Q	0		0		CONT.	5449	CONT.
	MIPR	Colsa/AL	65	65	2/3Q	0		0		CONT.	130	CONT.
	MIPR	COE	40922	29705	2/3Q	0		0		CONT.	70627	CONT.
	MIPR	DTRA/VA	275	275	2/3Q	0		0		CONT.	550	CONT.
	MIPR	NSA/VA	6	6	2/3Q	0		0		CONT.	12	CONT.
	MIPR	USACE/AL	5353	5353	2/3Q	0		0		CONT.	10706	CONT.
	MIPR	USASMDC/AL	500	500	2/3Q	0		0		CONT.	1000	CONT.
	MIPR	USAF MET&CAL	609	609	2/3Q	0		0		CONT.	1218	CONT.
	MIPR	Schriever AFB	400	400	2/3Q	0		0		CONT.	800	CONT.
	MIPR	NSA	21	21	2/3Q	0		0		CONT.	42	CONT.
	MIPR	Schriever AFB	59	59	2/3Q	0		0		CONT.	118	CONT.
	MIPR	CST	150	150	2/3Q	0		0		CONT.	300	CONT.
	MIPR	USASMDC/AL	1376	1376	2/3Q	0		0		CONT.	2752	CONT.
	C/CPFF	CSC/AL	384	0		0		0		TBD	384	TBD
	C/CPFF	Sparta/AL	384	0		0		0		TBD	384	TBD
	MIPR	AMCOM/AL	906	0		0		0		TBD	906	TBD
	MIPR	OGA	446	0		0		0		TBD	446	TBD
		USACE/AL	2000	0		0		0		TBD	2000	TBD
Program Protection	C/CPAF	TRW/DC/AL	4300	2750	2/3Q	0		0		TBD	7050	TBD
	MIPR	USASMDC/AL/AL	2380	2750	2/3Q	0		0		TBD	5130	TBD
	Other	Various	800	2312	2Q	0		0		CONT.	3112	CONT.
Production	MIPR	AMRDEC/AL	1600	3300	2/3Q	0		0		CONT.	4900	CONT.
	C/CPFF	Various/AL	3472	3274	2/3Q	0		0		CONT.	6746	CONT.
Govt Furnished Information	MIPR	USASMDC/AL	75865	98900	1Q	0		0		TBD	174765	TBD
Base Support and Real Property	MIPR	USASMDC/AL	0	65200	1Q	0		0		CONT.	65200	CONT.
Subtotal Support Costs			479359	492481		0		0			971840	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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 2003 Cost	FY 2003 Award Date	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	7527	6021	2Q	0		0		CONT.	13548	CONT.
	C/CPIF	ASGI/AL	507	406	2Q	0		0		CONT.	913	CONT.
	SS/CPAF	Boeing/Various	2250	1800	2Q	0		0		CONT.	4050	CONT.
	MIPR	Kirtland AFB/NM	225	180	2Q	0		0		CONT.	405	CONT.
	MIPR	USAKA/AK	22578	18095	2Q	0		0		CONT.	40673	CONT.
	MIPR	Sandia/NM	125	100	2Q	0		0		CONT.	225	CONT.
	MIPR	USASMDC/AL	3081	2465	2Q	0		0		CONT.	5546	CONT.
	C/TM	JNTF/CO	1861	1489	2Q	0		0		CONT.	3350	CONT.
	MIPR	Nichols/AL	1119	895	2Q	0		0		CONT.	2014	CONT.
	C/TM	Mevatech/AL	5412	4329	2Q	0		0		CONT.	9741	CONT.
	C/TM	CSC/AL	2226	1781	2Q	0		0		CONT.	4007	CONT.
	C/CPIF	Aeromet/Various	1153	922	2Q	0		0		CONT.	2075	CONT.
	MIPR	SBIRS SPO	610	488	2Q	0		0		CONT.	1098	CONT.
	MIPR	AMCOM/AL	1728	1382	2Q	0		0		CONT.	3110	CONT.
	MIPR	USARSPACE/AL	137	110	2Q	0		0		CONT.	247	CONT.
	MIPR	Eglin AAFB/FL	150	120	2Q	0		0		CONT.	270	CONT.
	MIPR	Peterson AFB/CO	348	278	2Q	0		0		CONT.	626	CONT.
	MIPR	OGA`s/Various	612	488	2Q	0		0		CONT.	1100	CONT.
	C/CPFF	IEC Electronics/Various	3069	2455	2Q	0		0		CONT.	5524	CONT.
	C/TM	CAS/Various	1100	880	2Q	0		0		CONT.	1980	CONT.
	MIPR	MIT LLNL/MA	4944	3955	2Q	0		0		CONT.	8899	CONT.
	C/CPFF	ITT/Various	2480	1984	2Q	0		0		CONT.	4464	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	MIPR	AEDC/TN	25	20	2Q	0		0		CONT.	45	CONT.
	MIPR	Sandia/NM	3566	2853	2Q	0		0		CONT.	6419	CONT.
	C/Other	Mevatech/AL	100	80	2Q	0		0		CONT.	180	CONT.
	MIPR	HAFB/MA	1120	896	2Q	0		0		CONT.	2016	CONT.
	MIPR	SMDC/AL	93	74	2Q	0		0		CONT.	167	CONT.
	Other	TSI/AL	1005	804	2Q	0		0		CONT.	1809	CONT.
	C/CPFF	VRC/AL	2953	2362	2Q	0		0		CONT.	5315	CONT.
	C/CPFF	Colsa/AL	420	336	2Q	0		0		CONT.	756	CONT.
	MIPR	SLAD/AL	175	140	2Q	0		0		CONT.	315	CONT.
	C/CPFF	CEI/AL	647	518	2Q	0		0		CONT.	1165	CONT.
	C/CPFF	TRW/AL	2333	1866	2Q	0		0		CONT.	4199	CONT.
	MIPR	Various OGA`s	1361	1089	2Q	0		0		CONT.	2450	CONT.
	C/CPFF	SAIC/Various	945	756	2Q	0		0		CONT.	1701	CONT.
	MIPR	AEC/Various	788	630	2Q	0		0		CONT.	1418	CONT.
	MIPR	Sandia/NM	29195	33518	2Q	0		0		CONT.	62713	CONT.
	MIPR	USASMDC/AL	8814	7051	2Q	0		0		CONT.	15865	CONT.
	C/CPFF	SY Tech/AL	2370	1896	2Q	0		0		CONT.	4266	CONT.
	MIPR	SMC/AL	36116	28891	2Q	0		0		CONT.	65007	CONT.
	MIPR	OGA`s/Various	5425	4340	2Q	0		0		CONT.	9765	CONT.
	MIPR	Vandenberg AFB/CA	3457	2765	2Q	0		0		CONT.	6222	CONT.
TTEC	C/CPFF	SY Tech/AL	5907	3012	1/2Q	0		0		CONT.	8919	CONT.
	MIPR	SED/AL	1050	671	2Q	0		0		CONT.	1721	CONT.
TTEC	MIPR	STRICOM/FL	1078	488	2Q	0		0		CONT.	1566	CONT.
	Various	Various/Various	1021	2902	2Q	0		0		CONT.	3923	CONT.
Subtotal Test and Evaluation			173206	148581		0		0			321787	

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
GMD Fire Control & Comms												
	MIPR	NSWC/MD	4605	3315	2Q	0		0		CONT.	7920	CONT.
	C/CPAF	TRW/MA	8287	3911	2Q	0		0		CONT.	12198	CONT.
	FFRDC	Mitre/IDA/Various	1545	1147	2Q	0		0		CONT.	2692	CONT.
	C/CPAF	Sparta/AL	3548	3053	2Q	0		0		CONT.	6601	CONT.
	C/CPAF	NRC/Various	714	688	2Q	0		0		CONT.	1402	CONT.
	C/BPA	QRI/Various	959	874	2Q	0		0		CONT.	1833	CONT.
	C/CPAF	CSC/AL	1852	1767	2Q	0		0		CONT.	3619	CONT.
	C/CPAF	Vanguard Research/AL	171	84	2Q	0		0		CONT.	255	CONT.
	BPA	Tecolote/Various	582	0		0		0		TBD	582	TBD
	MIPR	USAF ESC/MA	84	69	2Q	0		0		CONT.	153	CONT.
	MIPR	ARL/CA	300	247	2Q	0		0		CONT.	547	CONT.
	MIPR	DISA-GFX/Various	5531	0		0		0		TBD	5531	TBD
	C/CPAF	Mevatech/AL	836	668	2Q	0		0		CONT.	1504	CONT.
	C/CPAF	TBD	885	707	2Q	0		0		CONT.	1592	CONT.
	C/CPAF	TSI	252	201	2Q	0		0		CONT.	453	CONT.
	MIPR	NSA/MD	500	0		0		0		TBD	500	TBD
	MIPR	Argonne NL	195	140	2Q	0		0		CONT.	335	CONT.
	Various	Miscellaneous	971	8	2Q	0		0		CONT.	979	CONT.
X Band Radar Technology Development												
	FFRDC	MIT Lincoln Lab/MA	1765	1265	2Q	0		0		CONT.	3030	CONT.
Upgraded Early Warning Radar (UEWR) Development												
	FFRDC	MIT Lincoln Lab/MA	600	228	2Q	0		0		CONT.	828	CONT.
	FFRDC	Mitre/Various	5763	9274	1/3Q	0		0		CONT.	15037	CONT.
	C/CPFF	SEMCOM/Various	3654	3864	1/3Q	0		0		CONT.	7518	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	C/CPFF	Tecolote/Various	264	264	1/3Q	0		0		CONT.	528	CONT.
	C/CPFF	ESC/Hanscom/Various	550	561	1/4Q	0		0		CONT.	1111	CONT.
Subtotal Management Services			44413	32335		0		0			76748	

Remarks

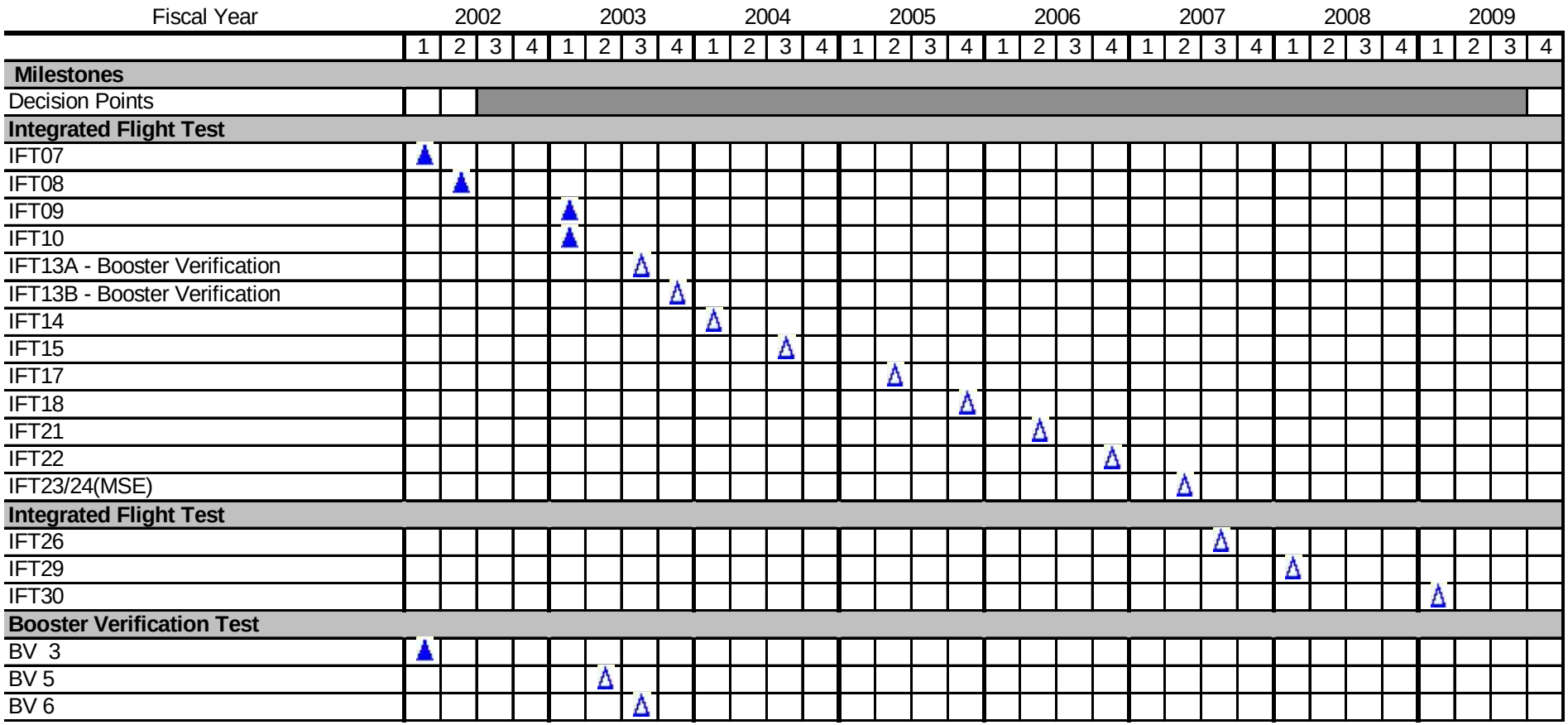
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Project Total Cost			2449284	2108947		0		0			4571916	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones								
Decision Points	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
Integrated Flight Test								
IFT07	1Q							
IFT08	2Q							
IFT09		1Q						
IFT10		1Q						
IFT13A - Booster Verification		3Q						
IFT13B - Booster Verification		4Q						
IFT14			1Q					
IFT15			3Q					
IFT17				2Q				
IFT18				4Q				
IFT21					2Q			
IFT22					4Q			
IFT23/24 Multiple Simultaneous Engagements						2Q		
IFT26						3Q		
IFT29							1Q	
IFT30								1Q
Booster Verification Test								
BV 3	1Q							
BV 5		2Q						
BV 6		3Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0808 Ground-Based Midcourse Defense (GMD) Test Bed Block 2006	0	0	1605368	1773621	1354462	1235116	0	0
RDT&E Articles Qty	0	0	6	6	6	9	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3012 in FY 2002 and 2003.

The Ground-based Midcourse Defense (GMD) System Element of the Midcourse Defense Segment (MDS) consists of a series of block development efforts supporting the midcourse phase of the BMDS. The Block 2004 consists of the early development and construction of the initial GMD parts of the BMDS Test Bed (initiated under Project 3011). Block 2006 (Project 0808) consists of the development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (initiated under Project 3012, GMD Development and Test Bed Upgrades). GMD development efforts continue with Block 2008 (Project 0908) and consist of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS Test Bed. These efforts will include block upgrades to GMD components.

Project 3012 and 0808, Ground-based Midcourse Defense (GMD) Block 2006, provides hardware, planning, mission support and execution of the GMD test program. It also provides a broad range of development activities and technologies and components for the ground-based element of Ballistic Missile Defense System (BMDS). This development effort will mature key technologies in logical stages to allow for an initial capability, 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 technologies supporting a ground-based "Hit-to-Kill" capability. This could also require exploring the acquisition of additional sensors such as an X-band radar. This project requires infrastructure support for the GMD program at Redstone Arsenal, Alabama.

The GMD Development program provides an integrated development and test program of more capable interceptors (both boost and kill vehicles), targets, sensors, and Battle Management, Fire Control, Communications systems and infrastructure.

- The Objective Boost Vehicle (OBV) will be the launch vehicle for the Exo-atmospheric Kill Vehicle (EKV). The OBV is in development with booster verification flight tests planned in FY 2003. Until the initial OBV candidates have completed testing and are certified for use in the MDS flight test program, the Payload Launch Vehicle (PLV) has been used.
- 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 upgrades to the Early Warning Radar at Beale. 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. 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. It 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 an integrated system. This includes:
1. Various communications links (e.g., CONUS ring, Alaska leased lines and Satellite Communications (SATCOM) to Shemya, Ft. Greely, and In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs).
2. GMD Fire Control and Communications Nodes [Ft. Greely and Joint National Integration Center (JNIC) with remote operator workstations at Cheyenne Mountain Operations Center (CMOC)]
3. In-Flight Interceptor Communications System Data Terminal (IDTs) at various locations.

Block development initiatives continue on these technologies and components meeting future block capability requirements. This effort will be developed to be consistent with the BMDS BMC/C2 architecture.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- The GMD Development program supports the requirements of the test program including Integrated Flight and Ground Tests. 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 test components include targets, launch vehicles, EKVs, launch infrastructure, sensors, test range assets, and other mission support. Additionally, the test program will incorporate Aegis Weapon System (AWS) radars to support GMD integrated flight test program as soon as practicable.
- Planning continues to provide a capability to respond to a future deployment order 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.

Note: This Project has been restructured beginning in FY 2004 to continue Project 3012. This restructure represents MDA's Block development and management framework for the BMDS.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Based Interceptor (GBI)	0	0	483253	563725
RDT&E Articles (Quantity)	0	0	4	4

DISCUSSION. The GBI development program has successfully demonstrated a hit-to-kill capability in four (4) consecutive flight tests.

FY 2004 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKVs and boost vehicles) was initiated in FY 2002 for delivery in FY 2004.

- Completes refurbishment of 2 silos at VAFB and equip for flight test.
- Continues interceptor integration, ground/system tests, and Integrated Flight Tests.
- Continues modeling and simulation development.
- Continues common silo and common command launch equipment 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.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 GBIs (includes both EKVs and boost vehicles) was initiated in FY 2003 for delivery in FY 2005.

- 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 command launch equipment development.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
X Band Radar Technology Development	0	0	71088	68006
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. X-Band radar technologies provide high-resolution tracking and discrimination data to the Kill Vehicle 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 maximum power output and sensitivity.

FY 2004 Planned Accomplishments

- Continues to develop and deploy 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).

FY 2005 Planned Accomplishments:
- Continues to develop and deploy XBR Software Builds.
- Continues flight and ground test support.
- Supports Radar Certification Flights (RCF).
- Continues operation and maintenance of GBR-P.
- Continues the planning, assessment and evaluation of future X- Band technologies, including technology insertion (Project Hercules).

	FY 2002	FY 2003	FY 2004	FY 2005
Upgraded Early Warning Radar (UEWR) Development	0	0	35876	84486
RDT&E Articles (Quantity)	0	0	0	0

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 to the location and trajectory of incoming targets. The planned upgrades provide the capability of not only detecting, but provides precise tracking early enough to significantly expand the battlespace for the ground-based interceptors into the early stages of flight. This program will provide for the development of enhanced EWR software.

FY 2004 Planned Accomplishments:
- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.

FY 2005 Planned Accomplishments:
- Continues flight and ground test support.
- Continues planning for potential future UEWR sites.
- Supports radar certification flights.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Element Engineering & Integration	0	0	182084	183114
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. GMD Element Engineering provides engineering and analysis support for building and integration of the functional components of the 2004 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 operational capability. Continues the integration of component/element systems and sustains the planning effort for future deployment 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:
- Completes IP-4 Integrated Technical Review (ITR).
- Completes 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:
- Completes 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.

	FY 2002	FY 2003	FY 2004	FY 2005
GMD Fire Control & Communications	0	0	217968	221236
RDT&E Articles (Quantity)	0	0	0	0

DISCUSSION. The GMD Fire Control and Communications (FC/C) 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 Systems (IFICS).

FY 2004 Planned Accomplishments:
- Continues flight and ground test support.
- Continues development and installation of ESI software builds.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- 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 FC/C software and technologies enhancements.

FY 2005 Planned Accomplishments:
- 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 FC/C software and technologies enhancements.
- Note: Continues software development/upgrades begun in Project 0708.

	FY 2002	FY 2003	FY 2004	FY 2005
Element Test and Evaluation	0	0	203017	207407
RDT&E Articles (Quantity)	0	0	2	2

DISCUSSION. GMD Test and Evaluation consists of 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 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 2004 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 targets initiated in 2002 for delivery in FY 2004.

- Continues operation and maintenance of System Test Lab, PCIL, and ISTC.
- 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.
- Establish Element Test Objectives.

FY 2005 Planned Accomplishments:

RDT&E Test Articles: Acquisition of 2 targets initiated in 2003 for delivery in FY 2005.

- Continues operation and maintenance of System Test Lab, PCIL, and ISTC.
- Continues ground and flight test planning, design, and scheduling.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

- Conducts Development Integrated Ground Test.
- Conducts Distributed Ground Test (DGT).
- Conducts Integrated Flight Tests.
- Performs pre- and post-test analyses.
- Performs analyses to define target requirements.
- Establish Element Test Objectives.

	FY 2002	FY 2003	FY 2004	FY 2005
Site Activation	0	0	38572	36655
RDT&E Articles (Quantity)	0	0	0	0

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

FY 2004 Planned Accomplishments:
- 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 is planned to begin in FY 2006.
- Continues Block 2004 Test Bed activation.
- Updates Test Bed site activation plans.
- Continues siting, NEPA, and ESH analysis for Block 2004 Test Bed.
- Completes siting and Joint Spectrum Center Electromagnetic Interference analysis for SBX.

FY 2005 Planned Accomplishments:
- 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 is planned to begin in FY 2006.
- Initiates Planning and Design of upgrades to existing airfield facilities at Allen Army Airfield to provide the BMDS Test Bed with improved runway capabilities to enable the safe transport of GBI interceptors and other critical equipment to Fort Greely. Construction is planned to begin in FY 2007.
- Continues Test Bed support.
- Updates Test Bed site activation plans.
- Continues siting, NEPA, and ESH analysis for Block 2004 Test Bed.

	FY 2002	FY 2003	FY 2004	FY 2005
Program Planning and Management	0	0	138306	131653
RDT&E Articles (Quantity)	0	0	0	0

FY 2004 Planned Accomplishments:
- Provides government program office staff and infrastructure for the management of the GMD Program.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- 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.
- Provides for GMD's interface to the BMDS National Team.

FY 2005 Planned Accomplishments:
- 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.
- Provides for GMD's interface to the BMDS National Team.

	FY 2002	FY 2003	FY 2004	FY 2005
Logistics Planning, Production and Protection	0	0	235204	277339
RDT&E Articles (Quantity)	0	0	0	0

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 2004 Planned Accomplishments:
- Continues to coordinate 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 Test Bed site support activation and validation, logistical support requirements, and Test Bed readiness reviews.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other program extended 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, deployment, siting, and facility planning.
- Continues to provide program protection to the Test Bed including physical security.
- Conducts reliability and maintainability analyses.

FY 2005 Planned Accomplishments:
- Continues to coordinate 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 Test Bed site support activations and validation, logistical support requirements, and Test Bed readiness reviews.
- Continues to provide comprehensive on-site logistics support to the Site Activation Command (SAC) Alaska and other program extended Test Bed sites as required.
- Continues to provide functional support for production, quality, configuration and change management.
- Conducts sustainment, deployment, siting, and facility planning.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Conducts reliability and maintainability analyses.
- Continues to provide program protection to the Test Bed including physical security.

C. Other Program Funding Summary

	FY 2002	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	790535	1046652	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	0		456985	1/2Q	538770	1/2Q	CONT.	995755	CONT.
X Band Radar Technology Development												
X Band Radar Technology Development	SS/CPAF	Boeing/Various	0	0		56716	1/2Q	54352	1/2Q	CONT.	111068	CONT.
Upgraded Early Warning Radar (UEWR) Development												
Upgraded Early Warning Radar (UEWR) Development	SS/CPAF	Boeing/Various	0	0		21430	1/4Q	70762	1/4Q	CONT.	92192	CONT.
Element Engineering & Integration												
	SS/CPAF	Boeing/Various	0	0		143198	1/2Q	146173	1/2Q	CONT.	289371	CONT.
GMD Fire Control & Comms												
	SS/CPAF	Boeing/Various	0	0		200760	2Q	204887	2Q	CONT.	405647	CONT.
Element Test and Evaluation												
	SS/CPAF	Boeing/Various	0	0		51796	1/2Q	63720	1/2Q	CONT.	115516	CONT.
Logistics Planning, Production and Protection												
Logistics Planning, Production and Protection	SS/CPAF	Boeing/Various	0	0		16100	1/2Q	16300	1/2Q	CONT.	32400	CONT.
Subtotal Product Development			0	0		946985		1094964			2041949	

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Element Engineering & Integration												
	MIPR	TSC/SMDC/AL	0	0		1000	1/2Q	1000	1/2Q	CONT.	2000	CONT.
	MIPR	NSWC/Dahlgren, VA	0	0		4125	1/2Q	4125	1/2Q	CONT.	8250	CONT.
	MIPR	DTRA/Dulles, VA	0	0		1000	1/2Q	1000	1/2Q	CONT.	2000	CONT.
	MIPR	NAIC/Wright Patterson, AFB	0	0		700	1/2Q	700	1/2Q	CONT.	1400	CONT.
	MIPR	SBIRS SPO/LA AFB, CA	0	0		1800	1/2Q	1800	1/2Q	CONT.	3600	CONT.
	MIPR	DTD/GMD /Huntsville, AL	0	0		1870	1/2Q	1870	1/2Q	CONT.	3740	CONT.
	MIPR	GME Engineering Analysis/Huntsville, AL	0	0		1980	1/2Q	1980	1/2Q	CONT.	3960	CONT.
	MIPR	GMD Studies & Analysis/Huntsville, AL	0	0		1700	1/2Q	1700	1/2Q	CONT.	3400	CONT.
	SS/CPFF	CSC/Arlington, VA	0	0		17688	1/2Q	15743	1/2Q	CONT.	33431	CONT.
	MIPR	MIT Lincoln Labs/Cambridge, MA	0	0		815	1/2Q	815	1/2Q	CONT.	1630	CONT.
	MIPR	Photon Labs/Arlington, VA	0	0		700	1/2Q	700	1/2Q	CONT.	1400	CONT.
	SS/CPAF	IDA/Arlington, VA	0	0		250	1/2Q	250	1/2Q	CONT.	500	CONT.
	C/CPAF	Miltec/Huntsville, AL	0	0		600	1/2Q	600	1/2Q	CONT.	1200	CONT.
	MIPR	JNIC/Colorado Springs, CO	0	0		4658	1/2Q	4658	1/2Q	CONT.	9316	CONT.
Upgraded Early Warning Radar (UEWR) Development												
	SS/CPAF	Ga. Tech	0	0		1220	1/2Q	1220	1/2Q	CONT.	2440	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis | Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

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

	C/FP	Mevatech	0	0		9487	1/2Q	8769	1/2Q	CONT.	18256	CONT.
	MIPR	AMCOM	0	0		1620	1/2Q	1620	1/2Q	CONT.	3240	CONT.
	C/CPFF	Xontech	0	0		780	1/2Q	780	1/2Q	CONT.	1560	CONT.
Ground Based Interceptor (GBI)												
	SS/FP	Davidson/AL	0	0		1192	1/2Q	1192	1/2Q	CONT.	2384	CONT.
	SS/FP	Mevatec/AL	0	0		7894	1/2Q	7894	1/2Q	CONT.	15788	CONT.
	SS/FP	TSI/AL	0	0		7449	1/2Q	6136	1/2Q	CONT.	13585	CONT.
	C/CPFF	Sparta/AL	0	0		1394	1/2Q	1394	1/2Q	CONT.	2788	CONT.
	MIPR	AMCOM/AL	0	0		354	1/2Q	354	1/2Q	CONT.	708	CONT.
	MIPR	USASMDC/AL	0	0		391	1/2Q	391	1/2Q	CONT.	782	CONT.
	MIPR	DOT/ITOP/AL	0	0		231	1/2Q	231	1/2Q	CONT.	462	CONT.
	MIPR	Mitre/DC	0	0		291	1/2Q	291	1/2Q	CONT.	582	CONT.
	MIPR	Misc/Various	0	0		100	1/2Q	125	1/2Q	CONT.	225	CONT.
	Various	Misc/Various	0	0		174	1/2Q	149	1/2Q	CONT.	323	CONT.
	SS/FP	CSC/AL	0	0		6798	1/2Q	6798	1/2Q	CONT.	13596	CONT.
Site Activation												
	C/CPFF	CSC/AL	0	0		2349	2Q	2350	2Q	CONT.	4699	CONT.
	MIPR	Various	0	0		3104	2Q	3104	2Q	CONT.	6208	CONT.
	MIPR	USACE/Huntsville, AL	0	0		3661	2Q	3661	2Q	CONT.	7322	CONT.
	C/CPFF	CSC/AL	0	0		2420	2Q	987	2Q	CONT.	3407	CONT.
	C/CPFF	L3 Communications/ AL	0	0		1499	2Q	946	2Q	CONT.	2445	CONT.
	MIPR	U.S. Army War College/PA	0	0		1207	2Q	874	2Q	CONT.	2081	CONT.
		Various	0	0		2119	2Q	789	2Q	CONT.	2908	CONT.
	C/CPFF	Mevatech/AL	0	0		822	2Q	822	2Q	CONT.	1644	CONT.
	C/CPFF	CSC/AL	0	0		1573	2Q	751	2Q	CONT.	2324	CONT.
	C/CPFF	CSC/AL	0	0		6472	2Q	7282	2Q	CONT.	13754	CONT.
	C/CPFF	Colsa/AL	0	0		301	2Q	301	2Q	CONT.	602	CONT.
	MIPR	USACE/Huntsville, AL	0	0		2019	2Q	1337	2Q	CONT.	3356	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis												Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)						R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment						
	C/CPFF	CSC/AL	0	0		610	2Q	610	2Q	CONT.	1220	CONT.
	C/CPFF	L3 Communications/ AL	0	0		1377	2Q	854	2Q	CONT.	2231	CONT.
	MIPR	USASMDC/AL	0	0		4244	2Q	3524	2Q	CONT.	7768	CONT.
	MIPR	USARAK/AK	0	0		3813	2Q	7481	2Q	CONT.	11294	CONT.
		Various	0	0		982	2Q	982	2Q	CONT.	1964	CONT.
Program Planning and Management												
SPT DC	C/CPAF	CSC/DC	0	0		94757	1Q	90254	1Q	CONT.	185011	CONT.
SPT HSV	C/CPAF	CSC/AL	0	0		27394	1/4Q	26052	1/4Q	CONT.	53446	CONT.
TRADOC System Manager	MIPR	SMDC/AL	0	0		16155	1/4Q	15347	1/4Q	CONT.	31502	CONT.
Logistics Planning, Production and Protection												
	C/CPFF	CSC/AL	0	0		1072	3Q	1072	3Q	CONT.	2144	CONT.
	C/CPFF	L3 Communications/ AL	0	0		2584	3Q	2584	3Q	CONT.	5168	CONT.
	C/CPFF	Mevatech/AL	0	0		902	3Q	902	3Q	CONT.	1804	CONT.
	C/CPFF	TSI/AL	0	0		910	3Q	910	3Q	CONT.	1820	CONT.
	C/CPFF	MSAIC	0	0		96	3Q	96	3Q	CONT.	192	CONT.
	MIPR	AMCOM/IMMC	0	0		1625	3Q	1625	3Q	CONT.	3250	CONT.
	MIPR	AMCOM/OGA	0	0		3618	3Q	3618	3Q	CONT.	7236	CONT.
	C/CPFF	Mevatech/AL	0	0		1201	3Q	1201	3Q	CONT.	2402	CONT.
	C/CPFF	SY Tech	0	0		3349	3Q	3349	3Q	CONT.	6698	CONT.
	MIPR	Colsa/AL	0	0		65	3Q	65	3Q	CONT.	130	CONT.
	MIPR	COE/VA	0	0		41187	3Q	26455	3Q	CONT.	67642	CONT.
	MIPR	DTRA/VA	0	0		275	3Q	275	3Q	CONT.	550	CONT.
	MIPR	NSA/AL	0	0		6	3Q	6	3Q	CONT.	12	CONT.
	MIPR	USACE/AL	0	0		5353	3Q	5353	3Q	CONT.	10706	CONT.
	MIPR	USASMDC/AL	0	0		500	3Q	500	3Q	CONT.	1000	CONT.
	MIPR	USASMDC	0	0		609	3Q	609	3Q	CONT.	1218	CONT.
	MIPR	Schriever AFB	0	0		400	3Q	400	3Q	CONT.	800	CONT.
	MIPR	NSA	0	0		21	3Q	21	3Q	CONT.	42	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	MIPR	Schriever AFB	0	0		59	3Q	59	3Q	CONT.	118	CONT.
	MIPR	CST	0	0		150	3Q	150	3Q	CONT.	300	CONT.
	MIPR	USASMDC/AL	0	0		1376	3Q	1376	3Q	CONT.	2752	CONT.
	Other	Various	0	0		2354	2Q	2236	2Q	CONT.	4590	CONT.
Production	MIPR	AMRDEC/AL	0	0		4028	2Q	3948	2Q	CONT.	7976	CONT.
	C/CPFF	Various/AL	0	0		2664	2Q	2410	2Q	CONT.	5074	CONT.
Base Support and Real Property	MIPR	USASMDC/AL	0	0		144700	1Q	201819	1Q	CONT.	346519	CONT.
Subtotal Support Costs			0	0		474243		503632			977875	

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 2003 Cost	FY 2003 Award Date	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	0		6021	1/2Q	6022	1/2Q	CONT.	12043	CONT.
	C/CPIF	ASGI/AL	0	0		406	1/2Q	406	1/2Q	CONT.	812	CONT.
	SS/CPAF	Boeing/Various	0	0		1800	1/2Q	1800	1/2Q	CONT.	3600	CONT.
	MIPR	Kirtland AFB/NM	0	0		180	1/2Q	180	1/2Q	CONT.	360	CONT.
	MIPR	USAKA/AK	0	0		18061	1/2Q	18061	1/2Q	CONT.	36122	CONT.
	MIPR	Sandia/NM	0	0		100	1/2Q	100	1/2Q	CONT.	200	CONT.
	MIPR	USASMDC/AL	0	0		2465	1/2Q	2465	1/2Q	CONT.	4930	CONT.
	C/TM	JNTF/CO	0	0		1489	1/2Q	1489	1/2Q	CONT.	2978	CONT.
	MIPR	CSC/AL	0	0		895	1/2Q	895	1/2Q	CONT.	1790	CONT.
	C/TM	Mevatech/AL	0	0		4329	1/2Q	4329	1/2Q	CONT.	8658	CONT.
	C/TM	CSC/AL	0	0		1781	1/2Q	1781	1/2Q	CONT.	3562	CONT.
	C/CPIF	Aeromet/Various	0	0		922	1/2Q	922	1/2Q	CONT.	1844	CONT.
	MIPR	SBIRS SPO	0	0		488	1/2Q	488	1/2Q	CONT.	976	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis												Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)						R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment						
	MIPR	AMCOM/AL	0	0		1382	1/2Q	1382	1/2Q	CONT.	2764	CONT.
	MIPR	USARSPACE/AL	0	0		110	1/2Q	110	1/2Q	CONT.	220	CONT.
	MIPR	Eglin AAFB/FL	0	0		120	1/2Q	120	1/2Q	CONT.	240	CONT.
	MIPR	Peterson AFB/CO	0	0		278	1/2Q	278	1/2Q	CONT.	556	CONT.
	MIPR	OGA`s/Various	0	0		488	1/2Q	488	1/2Q	CONT.	976	CONT.
	C/CPFF	IEC Electronics/Various	0	0		2455	1/2Q	2455	1/2Q	CONT.	4910	CONT.
	C/TM	CAS/Various	0	0		880	1/2Q	880	1/2Q	CONT.	1760	CONT.
	MIPR	MIT LLNL/MA	0	0		3955	1/2Q	3955	1/2Q	CONT.	7910	CONT.
	C/CPFF	ITT/Various	0	0		1984	1/2Q	1984	1/2Q	CONT.	3968	CONT.
	MIPR	AEDC/TN	0	0		20	1/2Q	20	1/2Q	CONT.	40	CONT.
	MIPR	Sandia/NM	0	0		2853	1/2Q	2853	1/2Q	CONT.	5706	CONT.
	C/Other	Mevatech/AL	0	0		80	1/2Q	80	1/2Q	CONT.	160	CONT.
	MIPR	HAFB/MA	0	0		896	1/2Q	896	1/2Q	CONT.	1792	CONT.
	MIPR	SMDC/AL	0	0		74	1/2Q	74	1/2Q	CONT.	148	CONT.
	Other	TSI/AL	0	0		804	1/2Q	804	1/2Q	CONT.	1608	CONT.
	C/CPFF	VRC/AL	0	0		2362	1/2Q	2362	1/2Q	CONT.	4724	CONT.
	C/CPFF	Colsa/AL	0	0		336	1/2Q	336	1/2Q	CONT.	672	CONT.
	MIPR	SLAD/AL	0	0		140	1/2Q	140	1/2Q	CONT.	280	CONT.
	C/CPFF	CEI/AL	0	0		518	1Q	518	1Q	CONT.	1036	CONT.
	C/CPFF	TRW/AL	0	0		1866	1/2Q	1866	1/2Q	CONT.	3732	CONT.
	MIPR	Various OGA`s	0	0		1089	1/2Q	1089	1/2Q	CONT.	2178	CONT.
	C/CPFF	SAIC/Various	0	0		756	1/2Q	756	1/2Q	CONT.	1512	CONT.
	MIPR	AEC/Various	0	0		630	1/2Q	630	1/2Q	CONT.	1260	CONT.
	MIPR	Sandia/NM	0	0		36065	1/2Q	28863	1/2Q	CONT.	64928	CONT.
	MIPR	USASMDC/AL	0	0		7051	1/2Q	7051	1/2Q	CONT.	14102	CONT.
	C/CPFF	SY Tech/AL	0	0		1896	1/2Q	1896	1/2Q	CONT.	3792	CONT.
	MIPR	SMC/AL	0	0		28891	1Q	28891	1Q	CONT.	57782	CONT.
	MIPR	OGA`s/Various	0	0		4340	1/2Q	4340	1/2Q	CONT.	8680	CONT.
	MIPR	Vandenberg AFB/CA	0	0		2765	1/2Q	2765	1/2Q	CONT.	5530	CONT.
TTEC	C/CPFF	SY Tech/AL	0	0		3121	1/2Q	2812	1/2Q	CONT.	5933	CONT.
	MIPR	SED/AL	0	0		671	1/2Q	671	1/2Q	CONT.	1342	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

TTEC	MIPR	STRICOM/FL	0	0		488	1/2Q	488	1/2Q	CONT.	976	CONT.
	Various	Various/Various	0	0		2920	1/2Q	2896	1/2Q	CONT.	5816	CONT.
Subtotal Test and Evaluation			0	0		151221		143687			294908	

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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
GMD Fire Control & Comms												
	MIPR	NSWC/MD	0	0		3619	2Q	2760	2Q	CONT.	6379	CONT.
	C/CPAF	TRW/MA	0	0		3916	2Q	3916	2Q	CONT.	7832	CONT.
	FFRDC	Mitre/IDA/Various	0	0		1147	2Q	1147	2Q	CONT.	2294	CONT.
	C/CPAF	Sparta/AL	0	0		3053	2Q	3053	2Q	CONT.	6106	CONT.
	C/CPAF	NRC/Various	0	0		688	2Q	688	2Q	CONT.	1376	CONT.
	C/BPA	QRI/Various	0	0		874	2Q	874	2Q	CONT.	1748	CONT.
	C/CPAF	CSC/AL	0	0		1767	2Q	1767	2Q	CONT.	3534	CONT.
	C/CPAF	Vanguard Research/AL	0	0		84	2Q	84	2Q	CONT.	168	CONT.
	MIPR	USAF ESC/MA	0	0		69	2Q	69	2Q	CONT.	138	CONT.
	MIPR	ARL/CA	0	0		247	2Q	247	2Q	CONT.	494	CONT.
	C/CPAF	Mevatech/AL	0	0		688	2Q	688	2Q	CONT.	1376	CONT.
	C/CPAF	TBD	0	0		707	2Q	707	2Q	CONT.	1414	CONT.
	C/CPAF	TSI	0	0		201	2Q	201	2Q	CONT.	402	CONT.
	MIPR	Argonne NL	0	0		140	2Q	140	2Q	CONT.	280	CONT.
	Various	Miscellaneous	0	0		8	2Q	8	2Q	CONT.	16	CONT.
X Band Radar Technology Development												
	FFRDC	MIT Lincoln Lab/MA	0	0		1265	1/2Q	1265	1/2Q	CONT.	2530	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Upgraded Early Warning Radar (UEWR) Development												
	FFRDC	MIT Lincoln Lab/MA	0	0		300	2Q	301	2Q	CONT.	601	CONT.
	FFRDC	Mitre/Various	0	0		9547	1/3Q	8423	1/3Q	CONT.	17970	CONT.
	C/CPFF	SEMCOM/Various	0	0		3757	1/3Q	4140	1/3Q	CONT.	7897	CONT.
	C/CPFF	Tecolote/Various	0	0		272	1/3Q	280	1/3Q	CONT.	552	CONT.
	C/CPFF	ESC/Hanscom/Various	0	0		570	1/4Q	580	1/4Q	CONT.	1150	CONT.
Subtotal Management Services			0	0		32919		31338			64257	

Remarks

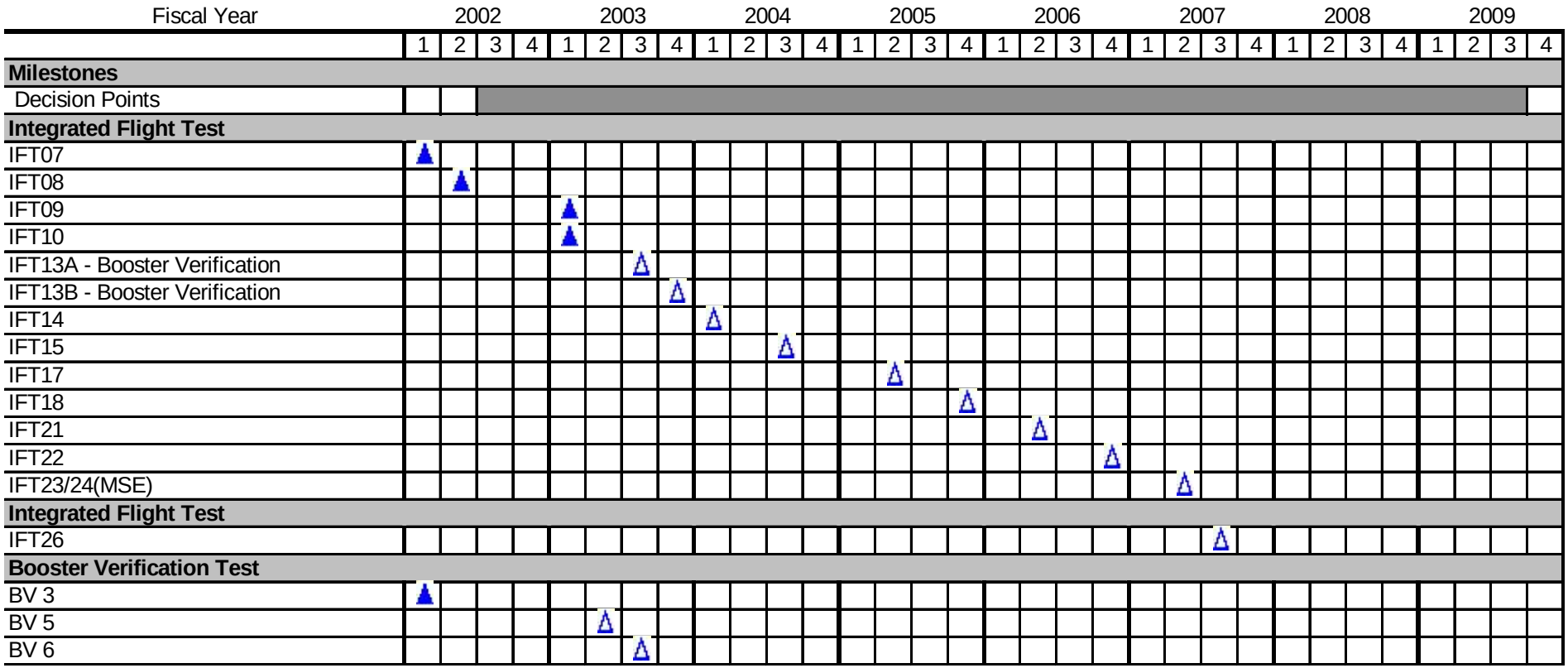
The Prime Contractor has the responsibility to balance resources across the GMD program and allocate funding according to program progress. This may require the Prime Contractor to reallocate funding, which would change the estimates provided in this R-3 document.

Project Total Cost			0	0		1605368		1773621			3378989	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestones								
Decision Points	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
Integrated Flight Test								
IFT07	1Q							
IFT08	2Q							
IFT09		1Q						
IFT10		1Q						
IFT13A - Booster Verification		3Q						
IFT13B - Booster Verification		4Q						
IFT14			1Q					
IFT15			3Q					
IFT17				2Q				
IFT18				4Q				
IFT21					2Q			
IFT22					4Q			
IFT23/24(MSE)						2Q		
IFT26						3Q		
Booster Verification Test								
BV 3	1Q							
BV 5		2Q						
BV 6		3Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0908 Ground-Based Midcourse Defense (GMD) Test Bed Block 2008	0	0	0	0	0	0	878477	877297
RDT&E Articles Qty	0	0	0	0	0	0	3	3

A. Mission Description and Budget Item Justification

The Ground-based Midcourse Defense (GMD) System Element of the Midcourse Defense Segment (MDS) consists of a series of block development efforts supporting the midcourse descent phase of the BMDS. The Block 2004 consists of the early development and construction of the initial GMD operational capability in parts of the BMDS Test Bed (initiated under Project 3011). Block 2006 (Project 0808) continues the development of capabilities to detect, track, intercept, and defeat ballistic missile threats to the U.S. during the midcourse phase of flight as well as GMD improvements to the BMDS Test Bed (initiated under Project 3012, GMD Development and Test Bed Upgrades). GMD development efforts continue with Block 2008 (Project 0908) and consists of sustaining engineering and spiral upgrades to the GMD components of the Block 2004/06 BMDS Test Bed. These efforts will include Preplanned Product Improvements (P3I) to GMD components.

Project 0808, Ground-Based Midcourse Defense (GMD) Block 2006 and Project 0908, Ground-Based Midcourse Defense (GMD) Block 2008 provide hardware, planning, mission support and execution of the GMD test program. They also provide a broad range of development activities and technologies and components for the ground-based element of Ballistic Missile Defense System (BMDS). This development effort will mature key technologies in logical stages to allow for an enhanced 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 technologies supporting a ground-based "Hit-to-Kill" capability. These projects require infrastructure support for the GMD program at Redstone Arsenal, Alabama.

The GMD Development program provides an integrated development and test program of more capable interceptors (both launch and kill vehicles), targets, sensors, and Fire Control and Communications systems and infrastructure.

B. Accomplishments/Planned Program

Funding in this project is not programmed until FY 2008.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

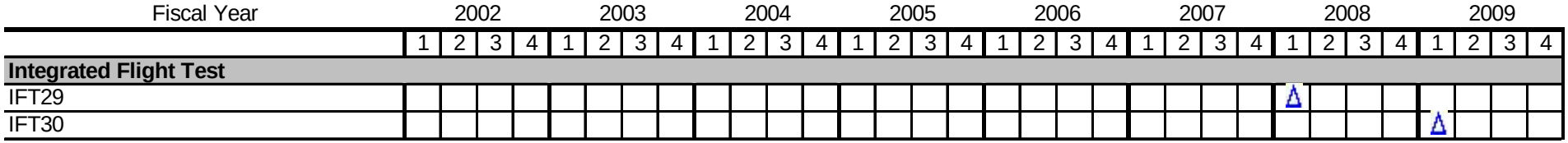
MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Flight Test								
IFT29							1Q	
IFT30								1Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3020 Sea-Based Midcourse Defense (SMD)	446475	384312	0	0	0	0	0	0
RDT&E Articles Qty	4	9	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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:

0709 - Aegis BMD Block 2004
0809 - Aegis BMD Block 2006
0909 - Aegis BMD Block 2008
0009 - Aegis BMD Block 2010
0402 - Japan Cooperative Research

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) successfully demonstrated in flight tests.
- Provides early capability and Block I Research and Development (R&D) missiles.
- Provides the potential for early, but limited, BMD capabilities.
- Provides for potential Block I R&D missiles.
- 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 expanded battle space through the use of remote data provided by Joint Tactical Information Data System (JTIDS).
- Provides the ability to rapidly reconfigure BMD ships into a fleet air defense capability.
- Provides ships self-defense capability with all weapons.
- Conducts 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.
- Provides the flexibility to use either the SM-3 Block I or SM-3 Block IA missiles.
- Performs an operational assessment.
- Modifies Aegis destroyers for prototype GMD surveillance and tracking capability.
- Delivers prototype surveillance and tracking destroyers in FY 2003.
- Modifies Aegis cruisers with the Block 2004 capability.
- Modifies Aegis destroyers with GMD surveillance and tracking capability.

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 improved prototype radar discrimination:
- 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 the potential for initial defensive operations use.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Provides improved battle space to the Block 2004 capability through changes to the Concepts of Operations (CONOPS) such as Boost Phase engagements.
- 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.
- Supports the continued development of the Aegis discrimination Test Bed for development of new radar discrimination algorithms such as feature extraction algorithms.
- Demonstrates improved discrimination with synthetic wide bandwidth AN/SPY-1 Radar Test Bed modifications both ashore and at-sea.
- Uses either the SM-3 Block I or SM-3 Block IA missiles.
- Allows for international participation.
- Performs an operational assessment.
- 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 ships with a self-defense capability with all weapons.

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 2002	FY 2003	FY 2004	FY 2005
Aegis BMD Block 04	412620	366812	0	0
RDT&E Articles (Quantity)	4	9	0	0

FY 2002 Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (2), Targets (2)

- Conducted two Block 2004 In Process Reviews (IPRs).
- Conducted Block 2004 System Capability Review (SCR).
- Conducted System level performance assessment of Block 2004 capabilities.
- Completed two successful Monolithic Solid Divert and Attitude Control System (SDACS) Attitude Control Assembly (ACA) tests.
- Completed Critical Design Review (CDR) for the sealed seeker design.
- Completed Preliminary Design Review (PDR) for SM-3 Infra-red (IR) discrimination.
- Conducted Third Stage Rocket Motor (TSRM) Design Verification Testing.
- Completed TSRM-11 ground test to validate lessons learned from Aegis LEAP Intercept (ALI) flight missions.
- Conducted Developmental Unit (DU)-5 Monolithic ACA and tube Main Thruster Assembly (MTA) test.
- Conducted FM-2 Kinetic Warhead (KW) characterization flight test and exceed objectives by hitting the target.
- Completed ALI flight test exit criteria after successfully completing FM-3 flight test with an intercept of the target.
- Conducted Quick Reaction Launch Vehicle (QRLV)-2 tracking mission during Alaskan Command (ALCOM) Northern Edge Exercises.
- Conducted System Integration Test (SIT) II tracking missions.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Conducted Pacific Blitz and Target Complex Generator Test System (TCGTS).
- Conducted 3 full-scale lethality sled tests.
- Participated in Ground-based Midcourse Defense (GMD) Integrated Flight Test-9 (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.
- Conducted interoperability test with other BMDS elements.
- Initiated performance studies to implement ship system radar and weapons control system changes to support the low exo-atmospheric intercept guidance control changes.
- Initiated performance studies to optimize SM-3 third stage guidance control and rocket motor multi-pulse management to support the low-altitude intercept.
- Initiated modifications to the models and simulation tools to support the Aegis Weapon System and SM-3 Missile changes for the low-altitude intercept capability.

FY 2003 Planned Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (3), Targets (3), Prototype Surveillance & Tracking Destroyers (3)

- Continue engineering development of the Block 2004 Aegis BMD System.
- Conduct Block 2004 Design Disclosure Review (DDR).
- Conduct Block 2004 system Critical Design Review (CDR) and begin code development of Aegis Weapon System (AWS).
- Verify shipboard system interfaces with ETEDDS.
- Conduct All-Up-Round level CDRs for SM-3 Block I.
- Continue Infra-red (IR) discrimination algorithm development.
- Complete aim point shift capability development.
- Complete Monolithic SDACS design studies.
- Continue Radio Frequency (RF)/IR discrimination guidance algorithms implementation.
- Continue TSRM obsolete material replacement development efforts.
- Continue and complete SM-3 Block 2004 SDACS development.
engineering tests for multiple pulse configuration.
- Continue and complete SM-3 nosecone structural integrity tests.
- Initiate SM-3 All-Up-Round level obsolete material replacement development effort.
- Verify sealed seeker design.
- Release KW initial software build with discrimination features.
- Initiate IR discrimination studies.
- Conduct Monolithic SDACS ground and qualification tests.
- Conduct TSRM Design Verification Test.
- Conducted FM-4 flight test successfully hitting the target.
- Conduct FM-5 and FM-6 flight tests to verify Block 2004 with KW multi-pulse SDACS capability and lethal aim point shift in an ascent phase scenario.
- 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.
- Participate in GMD flight mission RCF-1.
- Conduct lethality and post-intercept analysis.
- Continue to test interoperability with other BMDS elements.
- Acquire Risk Reduction Flight (RRF) and FM-7 targets.
- Acquire targets for Pacific Blitz 04.
- Continue performance studies and initiate development of ship system changes to implement the low-altitude intercept guidance control changes.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Continue performance studies and initiate development of SM-3 Third Stage Guidance Control and Rocket Motor Multi-pulse management to support the low-altitude intercept.
- Continue modifications to the models and simulation tools to support the Weapon System and SM-3 Missile changes for the low-altitude intercept capability.
- Conduct Vertical Launching System (VLS) PDR and CDR.
- Initiate modification for SAASM Crypto VLS.
- Conduct VLS canister thermal trade studies.

	FY 2002	FY 2003	FY 2004	FY 2005
Aegis BMD Block 06	33855	17500	0	0
RDT&E Articles (Quantity)	0	0	0	0

FY 2002 Accomplishments:
- Developed the Block 2006 Program Plan.
- Conducted AN/SPY-1 Radar Ballistic Missile Defense (BMD) Signal Processor (BSP) System Design Review (SDR).
- Continued development and system engineering support for the four U.S./Japan Cooperative Research (JCR) components.
- Completed nosecone Preliminary Design Review (PDR) supporting integration of Japan Defense Agency (JDA) developed nosecone on Joint Control Test Vehicle-1 (JCTV-1) and Joint Flight Mission-1 (JFM-1).
- Completed 21" missile components PDR supporting JDA development of second stage propulsion, Quantum Well Infrared Photodectector (QWIP) seeker, and lightweight nosecone of an advanced SM-3.
- Continued design and development of the DoD two-color seeker toward Captive Carry.
- Continued design and development of Divert and Attitude Control System (DACS) alternatives.
- Performed system engineering support for JDA design and development of second stage propulsion, Japan QWIP seeker, and lightweight nosecone.

FY 2003 Planned Accomplishments:
- Complete inputs for MDA Engineering Review Boards (ERB) for Block 2006.
- Complete Block 2006 capability assessment.
- Continue use of KW IR Seeker Captive Carry and AN/SPY-1 Radar High Range Resolution (HRR) Test Beds.
- Continue fabrication of AN/SPY-1 BSP Advanced Developmental Model (ADM).
- Continue Infra-Red (IR) discrimination advance studies for Block 2006 capabilities.
- Continue development and system engineering support for the four U.S./JCR components.
- Initiate procurement of test articles and ship modifications for JCTV-1 and JFM-1.
- Conduct PDR for Ship system and Vertical Launching System (VLS) modifications.
- Conduct CDR supporting integration of JDA developed nosecone on JCTV-1 and JFM-1.
- Complete ground testing in the U.S. of the Japan QWIP and DoD Mercury Cadmium Telluride (MCT) two-color seekers.
- Continue system engineering support for JDA design and development of second stage propulsion, QWIP seeker, and lightweight nosecone.
- Complete JCR nosecone wind tunnel tests.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

C. Other Program Funding Summary

	FY 2002	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	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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. Current development activities supporting Aegis BMD Block 04 could be used to provide a limited capability to protect deployed U.S. and allied forces.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	13085	7817	2Q					CONT.	20902	TBD
	SS/CPAF	Lockheed Martin/NJ	115741	80499	1/2Q					CONT.	196240	TBD
	SS/FFRDC	MIT/LL/MA	5997	6200	2Q					CONT.	12197	TBD
	MIPR	NSWC/CL/CA	2055	600	1Q					CONT.	2655	TBD
	MIPR	NRL/DC	2576	600	1Q					CONT.	3176	TBD
	MIPR	NSWC/DD/VA	8219	12056	1Q					CONT.	20275	TBD
	MIPR	NSWC/PHD/CA	3584	5802	1Q					CONT.	9386	TBD
	SS/CPAF	Raytheon/AZ	151653	137447	1/2Q					CONT.	289100	TBD
	C/CPFF	PSC/VA	1700	0	1/2Q					CONT.	1700	TBD
	SS/CPAF	United Defense/MN	1382	2228	1/2Q					CONT.	3610	TBD
	Various	Various	4167	7583	1/2Q					CONT.	11750	TBD
	SS/CPFF	Mitre/NJ	0	980	2Q					CONT.	980	TBD
	C/CPFF	Northrup Grumman/VA	0	400	2Q					CONT.	400	TBD
	MIPR	NSWC/CD/MD	0	1000	1Q					CONT.	1000	TBD
	MIPR	NSWC/IH/MD	0	1088	1Q					CONT.	1088	TBD
	MIPR	WSMR/NM	0	1400	1Q					CONT.	1400	TBD
Aegis BMD Block 06												
	C/CPAF	United Defense/MN	585	0						CONT.	585	CONT.
	MIPR	NSWC/DD/VA	208	0						CONT.	208	CONT.
	SS/CPFF	JHU/APL/MD	430	0						CONT.	430	CONT.
	SS/CPAF	Lockheed Martin/NJ	3050	0						CONT.	3050	CONT.
	SS/CPAF	Raytheon/AZ	26800	0						CONT.	26800	CONT.
	Various	Various	653	0						CONT.	653	CONT.
Subtotal Product Development			341885	265700		0		0			607585	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	10568	2411	1Q					CONT.	12979	TBD
	SS/CPFF	JHU/APL/MD	8348	2700	2Q					CONT.	11048	TBD
	C/CPAF	COMP/VA	2417	0						CONT.	2417	TBD
	C/CPAF	CREE/VA	2400	0						CONT.	2400	TBD
	SS/CPFF	BMPCO/MD	1170	0						CONT.	1170	TBD
	C/CPFF	MEI/VA	1250	0						CONT.	1250	TBD
	FFRDC	MIT/LL/MA	7040	2250	2Q					CONT.	9290	TBD
	MIPR	NSWC/CD/VA	2919	0						CONT.	2919	TBD
	SS/CPFF	SEG/VA	3740	1750	2Q					CONT.	5490	TBD
	MIPR	NSWC/PHD/CA	2932	0						CONT.	2932	TBD
	SS/CPAF	Lockheed Martin/NJ	0	1200	1/2Q					CONT.	1200	TBD
	Various	Various	6635	1389	1/2Q					CONT	8024	TBD
Aegis BMD Block 06												
	MIPR	NSWC/DD/VA	622	873	1Q					CONT.	1495	CONT.
	SS/CPFF	HU/APL/MD	1289	850	2Q					CONT.	2139	CONT.
	SS/CPAF	Raytheon/AZ	0	1000	1/2Q					CONT	1000	TBD
	SS/CPAF	Lockheed Martin/NJ	0	750	1/2Q					CONT	750	TBD
	Various	Various	218	1527	1/2Q					CONT	1745	TBD
Subtotal Support Costs			51548	16700		0		0			68248	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	1175	2320	2Q					CONT.	3495	TBD
	SS/CPFF	JHU/APL/MD	2870	4300	1Q					CONT.	7170	TBD
	MIPR	NAWC/PM/CA	1987	1980	1Q					CONT.	3967	TBD
	MIPR	NSWC/DD/VA	5118	7278	1Q					CONT.	12396	TBD
	MIPR	NSWC/PHD/CA	3677	3691	1Q					CONT.	7368	TBD
	MIPR	SMDC/AL	9245	10546	2Q					CONT.	19791	TBD
	MIPR	CINCPACFLT/HI	1024	0						CONT.	1024	TBD
	MIPR	PMRF/HI	2869	5090	1Q					CONT.	7959	TBD
	Various	Various	3639	7895	1Q					CONT.	11534	TBD
Subtotal Test and Evaluation			31604	43100		0		0			74704	

Remarks

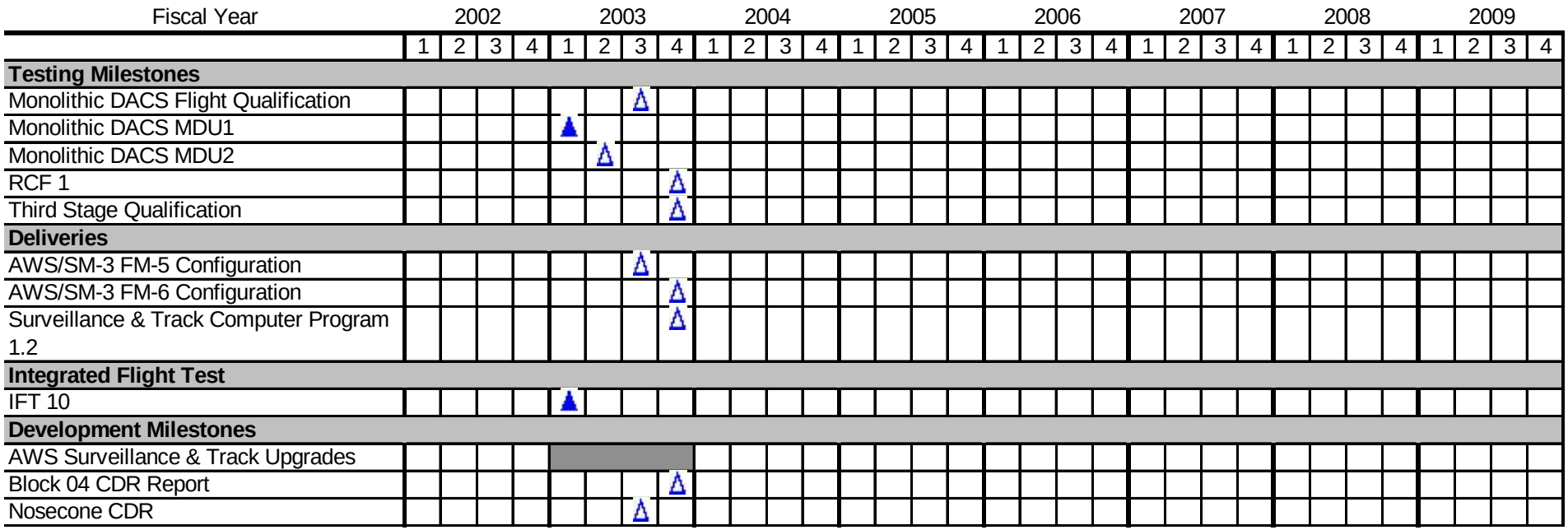
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	1600	0	2Q					CONT.	1600	TBD
	C/CPFF	Anteon/VA	10336	25000	1/2Q					CONT.	35336	TBD
	C/CPAF	BAE/VA	1615	0	2Q					CONT.	1615	TBD
	C/CPFF	Jaycor/VA	1141	0	1Q					CONT.	1141	TBD
	C/CPAF	Logiccon/VA	1435	0	1Q					CONT.	1435	TBD
	MIPR	NAVSEA/DC	3400	9000	1Q					CONT.	12400	TBD
	SS/CPFF	JHU/APL/MD	1128	1500	2Q					CONT.	2628	TBD
	MIPR	NSWC/DD/VA	783	1000	1Q					CONT.	1783	TBD
	SS/CPFF	Paradigm Technologies/VA	0	5000	2Q					CONT.	5000	TBD

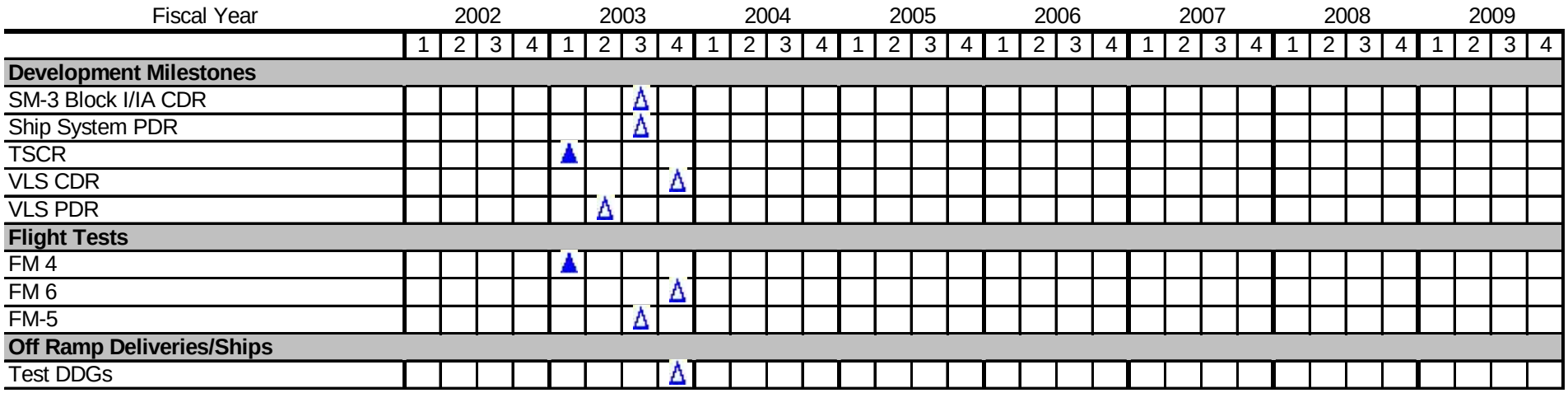
MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

	SS/CPAF	Lockheed Martin/NJ	0	1000	2Q					CONT.	1000	TBD
	SS/CPAF	Raytheon/AZ	0	1200	2Q					CONT.	1200	TBD
	Other	MDA/VA	0	11487	1/3Q					CONT.	11487	TBD
	Various	Various	0	3625	1/2Q					CONT.	3625	TBD
Subtotal Management Services			21438	58812		0		0			80250	
Remarks												
Project Total Cost			446475	384312		0		0			830787	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Monolithic DACS Flight Qualification		3Q						
Monolithic DACS MDU1		1Q						
Monolithic DACS MDU2		2Q						
RCF 1		4Q						
Third Stage Qualification		4Q						
Deliveries								
AWS/SM-3 FM-5 Configuration		3Q						
AWS/SM-3 FM-6 Configuration		4Q						
Surveillance & Track Computer Program 1.2		4Q						
Integrated Flight Test								
IFT 10		1Q						
Development Milestones								
AWS Surveillance & Track Upgrades		1Q-4Q						
Block 04 CDR Report		4Q						
Nosecone CDR		3Q						
SM-3 Block I/IA CDR		3Q						
Ship System PDR		3Q						
TSCR		1Q						
VLS CDR		4Q						
VLS PDR		2Q						
Flight Tests								
FM 4		1Q						
FM 6		4Q						
FM-5		3Q						
Off Ramp Deliveries/Ships								
Test DDGs		4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0709 AEGIS Ballistic Missile Defense Block 2004	0	0	648306	893600	97725	0	0	0
RDT&E Articles Qty	0	0	10	17	1	0	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3020 in FY 2002 and FY 2003.

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) successfully demonstrated in flight tests.
- Provides early capability and Block I research and development (R&D) missiles.
- Provides the potential for early, but limited, BMD capabilities with emergency capability systems.
- Provides for potential Block I R&D missiles.
- 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 expanded battle space through the use of remote data provided by Joint Tactical Information Data System (JTIDS).
- Provides the ability to rapidly reconfigure BMD ships into a fleet air defense capability.
- Provides ships self-defense capability with all weapons.
- Conducts 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.
- Provides the flexibility to use either the SM-3 Block I or SM-3 Block IA missiles.
- Performs an operational assessment.
- Modifies Aegis destroyers for prototype GMD surveillance and tracking capability.
- Delivers prototype surveillance and tracking destroyers in FY 2003.
- Modifies Aegis cruisers with the Block 2004 capability.
- Modifies Aegis destroyers with GMD surveillance and tracking capability.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Weapon System Engineering	0	0	552279	774300
RDT&E Articles (Quantity)	0	0	6	14

FY 2002 Accomplishments (Funded in Project 3020):

Aegis Weapons System (AWS):

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

1) Conducted two Block 2004 In Process Reviews (IPRs).
2) Conducted Block 2004 System Capability Review (SCR).
3)Conducted System level performance assessment of Block 2004 capabilities.

Missile:
1) Completed two successful Monolithic Solid Divert and Attitude Control System (SDACS) Attitude Control Assembly (ACA) tests.
2) Completed Critical Design Review (CDR) for the sealed seeker design.
3) Completed Preliminary Design Review (PDR) for SM-3 Infra-red (IR) discrimination.
4) Conducted Third Stage Rocket Motor (TSRM) Design Verification Testing.
5) Completed TSRM-11 ground test to validate lessons learned from Aegis LEAP Intercept (ALI) flight missions.
6) Conducted Developmental Unit (DU)-5 Monolithic ACA and tube Main Thruster Assembly (MTA) test.

FY 2003 Planned Accomplishments (Funded in Project 3020):

AWS:
1) Continue engineering development of the Block 2004 Aegis BMD System.
2) Conduct Block 2004 System Design Disclosure (SDD).
3) Conduct Block 2004 SDD and begin code development of AWS.
4) Conduct element/multi-element test and verification of AWS Computer Program.
5) Conduct AWS 3.1 SDD.
6) Continue efforts to complete AWS Computer Program certification.
7) Complete AWS-GMD interoperability engineering efforts.
8) Verify shipboard system interfaces with ETEDDS.

Missile:
1) Conduct All-Up-Round level CDRs for SM-3 Block I.
2) Continue IR discrimination algorithm development.
3) Complete Aim point Shift capability development.
4) Complete Monolithic SDACS design studies.
5) Continue Radio Frequency (RF)/IR discrimination guidance algorithms implementation.
6) Continue TSRM obsolete material replacement development efforts.
7) Continue and complete SM-3 Block 2004 SDACS development engineering tests for multiple pulse configuration.
8) Continue and complete SM-3 nosecone structural integrity tests.
9) Initiate SM-3 All-Up-Round level obsolete material replacement development effort.
10) Verify sealed seeker design.
11) Release Kinetic Warhead (KW) initial software build with discrimination features.
12) Initiate IR discrimination studies.
13) Conduct Monolithic SDACS ground and qualification tests.
14) Conduct TSRM Design Verification Test.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Vertical Launching System (VLS):
1) Conduct VLS PDR and CDR.
2) Initiate development of SAASM Crypto VLS VGI upgrade.
3) Conduct VLS canister thermal trade studies.

FY 2004 Planned Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (6)

AWS:
1) Conduct Trade Study/Assessment of Engineering Review Boards (ERB) results and design alternatives.
2) Conduct engineering in-process reviews.
3) Complete engineering algorithm development and design for Surveillance & Track computer programs.
4) Initiate integration of inert operational missile build for Block 2004 capability.
5) Continue to support performance capability assessment engineering.
6) Complete RF/IR discrimination guidance algorithm implementation.
7) Continue AWS code development and begin early testing.
8) Conduct waterfront integration testing.
9) Continue element/multi-element testing and verification of AWS Computer Program.
10) Continue coding of the AWS 3.1 Computer Program.

Missile:
1) Continue use of Captive Carry Test Beds.
2) Complete IR discrimination development effort.
3) Complete TSRM obsolete material replacement development efforts.
4) Continue SM-3 All-Up-Round obsolete material replacement development effort.
5) Initiate SM-3 Value Engineering Change Proposal (VECP) implementation engineering analysis.
6) Initiate SM-3 Hazard Safety tests for Block 2004 Capability.
7) Complete qualification tests of Monolithic SDACS.
8) Initiate SM-3 hardware/software integration testing for Block 2004 capability.
9) Deliver potential research & development (R&D) missiles.
10) Initiate long lead material buy for additional R&D missiles.
11) Initiate assembly of additional R&D missiles.
12) Complete All-Up-Round design and construction modifications for extended shelf life.
13) Initiate facility upgrade to expand missile delivery throughput.
14) Initiate test equipment modification to support additional missile build.
15) Conduct SM-3 Design Verification Tests.

VLS:
1) Complete development of SAASM, VGI upgrades.
2) Commence multi-warfare VLS development.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2005 Planned Accomplishments:

RDT&E Articles: SM-3 Guided Missiles (5), BMD 3.0 Test Cruiser (1), BMD Cruiser (2), Surveillance and Tracking Destroyers (6)

AWS:
1) Complete Block 2004 multi-element integration and testing for BMD 3.0.
2) 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.
3) Conduct waterfront integration testing.

Missile:
1) Continue All-Up-Round obsolete material replacement development effort.
2) Continue SM-3 VECP implementation engineering effort.
3) Continue SM-3 Hazard Safety Testing.
4) Complete SM-3 hardware/software integration testing.
5) Continue SM-3 Design Verification Testing.
6) Deliver R&D missiles initiated in FY 2004.
7) Initiate long lead material buy for additional R&D missiles.
8) Initiate assembly of additional R&D missiles.
9) Continue facility upgrade to expand delivery throughput to 2 to 3 missiles per month.
10) Continue test equipment modifications to support additional missile build.

VLS:
1) Complete multi-warfare VLS development.

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 Weapon System (AWS) computer program deliveries are shown as a single unit delivery in the fiscal year the Engineering Assessment (EA) is conducted.

	FY 2002	FY 2003	FY 2004	FY 2005
Test & Evaluation	0	0	70793	83700
RDT&E Articles (Quantity)	0	0	4	3

FY 2002 Accomplishments (Funded in Budget Project 3020):
1) Conducted Flight Mission-2 (FM-2) Kinetic Warhead (KW) characterization flight test and exceed objectives by hitting the target.
2) Completed Aegis LEAP Intercept (ALI) flight test exit criteria after successfully completing FM-3 flight test with an intercept of the target.
3) Conducted Quick Reaction Launch Vehicle (QRLV)-2 tracking mission during Alaskan Command (ALCOM) Northern Edge Exercises.
4) Conducted System Integration Test-II (SIT-II) tracking missions.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

5) Conducted Pacific Blitz and Target Complex Generator Test System (TCGTS).
6) Conducted 3 full-scale lethality sled tests.
7) Participated in Ground-based Midcourse Defense (GMD) Integrated Flight Test-9 (IFT9) flight mission, using the an Aegis Destroyer to provide target tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of Ballistic Missile Defense System (BMDS) integration.
8) Conducted interoperability test with other BMDS elements.

FY 2003 Planned Accomplishments (Funded in Budget Project 3020):
1) Conducted FM-4 flight test successfully hitting the target in an ascent phase scenario.
2) Conduct FM-5 and FM-6 flight tests to verify Block 2004 with KW multi-pulse SDACS capability and lethal aim point shift in an ascent phase scenario.
3) Participated in GMD IFT10 using an Aegis Cruiser to provide target tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
4) Participate in GMD flight missions RCF-1 using an Aegis Cruiser to provide target tracking data to GMD, and SM-3 KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
5) Conduct lethality and post-intercept analysis.
6) Continue use of KW IR Seeker Captive Carry and AN/SPY-1 Radar High Range Resolution (HRR) Test Beds.
7) Continue to test interoperability with other BMDS elements.
8) Acquire Risk Reduction Flight (RRF) and FM-7 targets.
9) Acquire targets for Pacific Blitz 04.

FY 2004 Planned Accomplishments:

RDT&E Articles: Targets (4)

1) Conduct a risk reduction flight (RRF) of the FM-7 target.
2) Conduct FM-7 flight test against a separating target.
3) Participate in GMD tracking missions using Aegis Cruiser and KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
4) Participate in Pacific Blitz 04 tracking mission.
5) Continue post-intercept lethality analysis.
6) Continue to test interoperability with other BMDS elements.
7) Continue use of Captive Carry and AN/SPY-1 Radar HRR Test Beds.
8) Acquire a Risk Reduction Flight and FM-9 targets.

FY 2005 Planned Accomplishments:

RDT&E Articles: Targets (3)

1) Conduct FM-8 flight test with Block 2004 configuration missile.
2) Conduct a risk reduction flight for the FM-9 target.
3) Conduct FM-9 flight tests with Block 2004 configuration missile.
4) Conduct Block 2004 Engineering Assessment (EA) and At-Sea demonstration.
5) Participate in four GMD tracking missions (RCF-2, IFT17, RCF-3, IFT18) using Aegis Cruiser and KW IR Seeker Captive Carry Test Bed in support of BMDS integration.
6) Continue post-intercept lethality analysis.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

7) Continue to test interoperability with other BMDS elements.
8) Continue use of KW IR Seeker Captive Carry and AN/SPY-1 Radar HRR Test Beds.

	FY 2002	FY 2003	FY 2004	FY 2005
SRBM Low Exo	0	0	25234	35600
RDT&E Articles (Quantity)	0	0	0	0

FY 2002 Accomplishments (Funded in Budget Project 3020):
1) Initiated performance studies to implement ship system Radar and Weapons Control System changes to support the low-exoatmoshperic intercept guidance control changes.
2) Initiated performance studies to optimize SM-3 Third Stage Guidance Control and Rocket Motor Multi-pulse management to support the low exo-atmospheric intercept.
3) Initiate modifications to the models and simulation tools to support the Weapon System and SM-3 Missile changes for the low exo-atmospheric intercept capability.

FY 2003 Planned Accomplishments (Funded in Budget Project 3020):
1) Continue performance studies and initiate development of ship system changes to implement the low-altitude intercept guidance control changes.
2) Continue 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.
3) 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.

FY 2004 Planned Accomplishments:
1) Complete development of ship system algorithms and software coding changes to implement the low exo-atmospheric intercept guidance control changes.
2) 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.
3) 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.

FY 2005 Planned Accomplishments:
1) Conduct firing test to validate the low exo-atmospheric intercept capability.
2) Complete modifications and verification to engagement models and simulations to account for the firing test.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

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. Current development activities supporting Aegis BMD Block 04 could be used to provide a limited capability to protect deployed U.S. and allied forces.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	0		117986	2Q	289952	2Q	CONT.	407938	TBD
AWS	FFRDC	MIT/LL/MA	0	0		5478	2Q	5239	2Q	CONT.	10717	TBD
AWS	SS/CPFF	JHU/APL/MD	0	0		2639	1Q	2580	1Q	CONT.	5219	TBD
AWS	MIPR	NSWC/DD/VA	0	0		8253	1Q	8052	1Q	CONT.	16305	TBD
AWS	MIPR	MITRE/VA	0	0		1074	1Q	1027	1Q	CONT.	2101	TBD
AWS	MIPR	NSWC/PHD/CA	0	0		2620	1Q	2580	1Q	CONT.	5200	TBD
AWS	Other	MDA	0	0		5000	1Q	7800	1Q	CONT.	12800	TBD
AWS	Various	VARIOUS	0	0		7150	1Q	6270	1Q	CONT.	13420	TBD
MISSILE	SS/CPIF	RAYTHOEN/AZ	0	0		261077	2Q	313313	2Q	CONT.	574390	TBD
MISSILE	SS/CPIF	JHU/APL/MD	0	0		8573	2Q	6609	2Q	CONT.	15182	TBD
MISSILE	FFRDC	MIT/LL/MA	0	0		1905	1Q	1469	1Q	CONT.	3374	TBD
MISSILE	MIPR	NSWC/DD/VA	0	0		7144	1Q	5508	1Q	CONT.	12652	TBD
MISSILE	MIPR	NSWC/PHD/CA	0	0		5398	1Q	4161	1Q	CONT.	9559	TBD
MISSILE	MIPR	WSMR/NM	0	0		2223	1Q	1714	1Q	CONT.	3937	TBD
MISSILE	MIPR	NSWC/CD/CA	0	0		1588	2Q	1224	2Q	CONT.	2812	TBD
MISSILE	MIPR	NSWC/IH/MD	0	0		1111	2Q	852	2Q	CONT.	1963	TBD
MISSILE	MIPR	NAWC/CL/CA	0	0		953	1Q	734	1Q	CONT.	1687	TBD
MISSILE	Other	MDA	0	0		6750	1Q	8502	1Q	CONT.	15252	TBD
MISSILE	Various	VARIOUS/VARIOUS	0	0		14300	1Q	9900	1Q	CONT.	24200	TBD
SRBM Low Exo												
	SS/CPIF	Lockheed Martin/NJ	0	0		2500	2Q	3500	2Q	CONT.	6000	TBD
	SS/CPIF	Raytheon/AZ	0	0		22734	2Q	32100	2Q	CONT.	54834	TBD
Subtotal Product Development			0	0		486456		713086			1199542	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	0		6162	2Q	7638	2Q	CONT.	13800	TBD
	SS/CPAF	Lockheed Martin/NJ	0	0		2738	2Q	3395	2Q	CONT.	6133	TBD
	FFRDC	MIT/LL/MA	0	0		5135	1Q	6365	1Q	CONT.	11500	TBD
	MIPR	NSWC/DD/VA	0	0		5502	1Q	6821	1Q	CONT.	12323	TBD
	SS/CPAF	Raytheon/AZ	0	0		1312	2Q	1627	2Q	CONT.	2939	TBD
	SS/CPFF	SEG/VA	0	0		3394	1Q	4951	1Q	CONT.	8345	TBD
	SS/CPFF	BMPCOE/MD	0	0		559	1Q	693	1Q	CONT.	1252	TBD
	SS/CPFF	MITRE	0	0		513	1Q	637	1Q	CONT.	1150	TBD
	Other	MDA	0	0		985	1Q	438	1Q	CONT.	1423	TBD
	Various	VARIOUS/VARIOUS	0	0		2400	1Q	3135	1Q	CONT.	5535	TBD
Subtotal Support Costs			0	0		28700		35700			64400	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	0		5913	1Q	6154	1Q	CONT.	12067	TBD
	C/CPFF	HTS/CA	0	0		2695	2Q	2805	2Q	CONT.	5500	TBD
	SS/CPAF	Xontech/CA	0	0		1013	2Q	1054	2Q	CONT.	2067	TBD
	MIPR	NSWC/PHD/CA	0	0		4288	1Q	4463	1Q	CONT.	8751	TBD
	MIPR	NAWC/PM/CA	0	0		2300	1Q	2394	1Q	CONT.	4694	TBD
	MIPR	NSWC/Corona/CA	0	0		1034	1Q	1076	1Q	CONT.	2110	TBD
	MIPR	NSWC/DD/VA	0	0		8454	1Q	8799	1Q	CONT.	17253	TBD

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	MIPR	CINPACFLT/HI	0	0		546	1Q	605	1Q	CONT.	1151	TBD
	SS/CPFF	JHU/APL/MD	0	0		4995	2Q	5199	2Q	CONT.	10194	TBD
	MIPR	SMDC/AL	0	0		30184	1Q	36681	1Q	CONT.	66865	TBD
	MIPR	SPAWAR/CA	0	0		1201	1Q	1250	1Q	CONT.	2451	TBD
	MIPR	DOI/DC	0	0		977	1Q	1017	1Q	CONT.	1994	TBD
	MIPR	AIRPAC/HI	0	0		868	1Q	903	1Q	CONT.	1771	TBD
	Other	MDA	0	0		2793	1Q	2960	1Q	CONT.	5753	TBD
	Various	VARIOUS/VARIOUS	0	0		3532	1Q	8340	1Q	CONT.	11872	TBD
Subtotal Test and Evaluation			0	0		70793		83700			154493	

Remarks

IV. Management Services Cost ($ in Thousands)

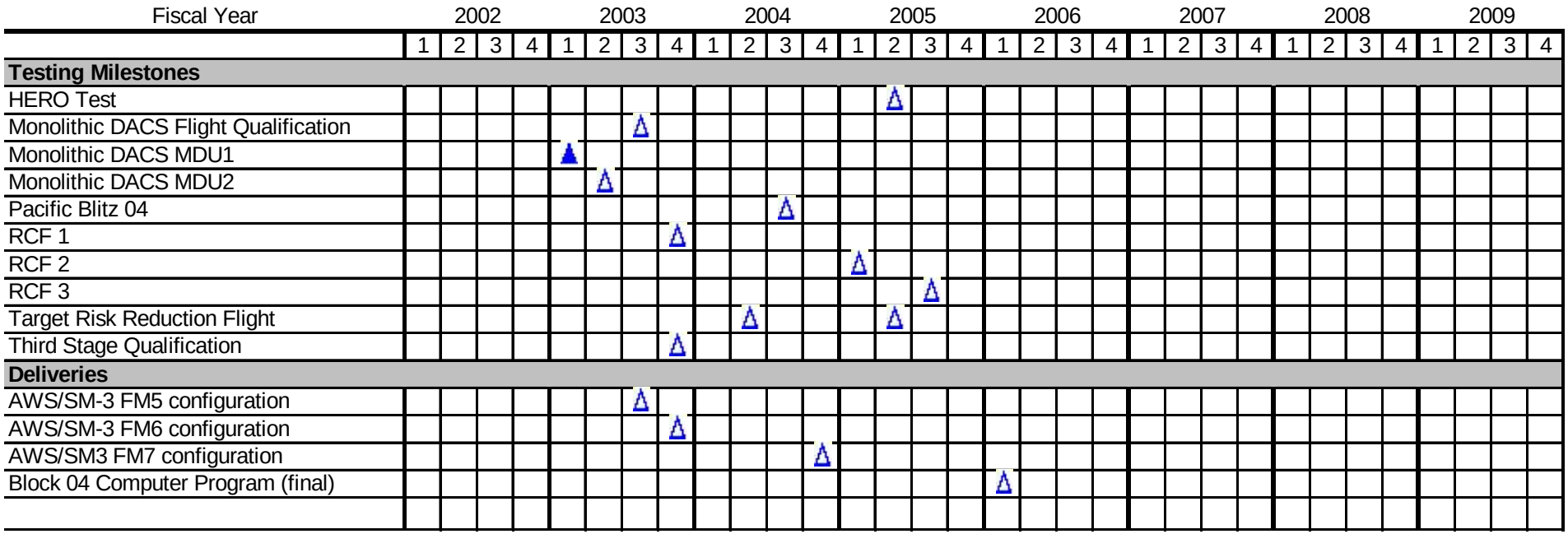
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Weapon System Engineering												
	Other	NAVSEA/DC	0	0		11100	1Q	12000	1Q	CONT.	23100	TBD
	SS/CPFF	JHU/APl/MD	0	0		2300	2Q	2550	2Q	CONT.	4850	TBD
	MIPR	NSWC/DD/VA	0	0		1700	1Q	1850	1Q	CONT.	3550	TBD
	C/CPFF	Anteon/VA	0	0		25900	1Q	26000	1Q	CONT.	51900	TBD
	SS/CPFF	Paradigm/VA	0	0		5700	1Q	5700	1Q	CONT.	11400	TBD
	SS/CPAF	Lockheed Martin/NJ	0	0		1200	1Q	1250	1Q	CONT.	2450	TBD
	SS/CPAF	Raytheon/AZ	0	0		1400	2Q	1450	2Q	CONT.	2850	TBD
	Other	MDA	0	0		7934	1Q	4564	1Q	CONT.	12498	TBD
	Various	Various/Various	0	0		5123	1Q	5750	1Q	CONT.	10873	TBD
Subtotal Management Services			0	0		62357		61114			123471	

Remarks

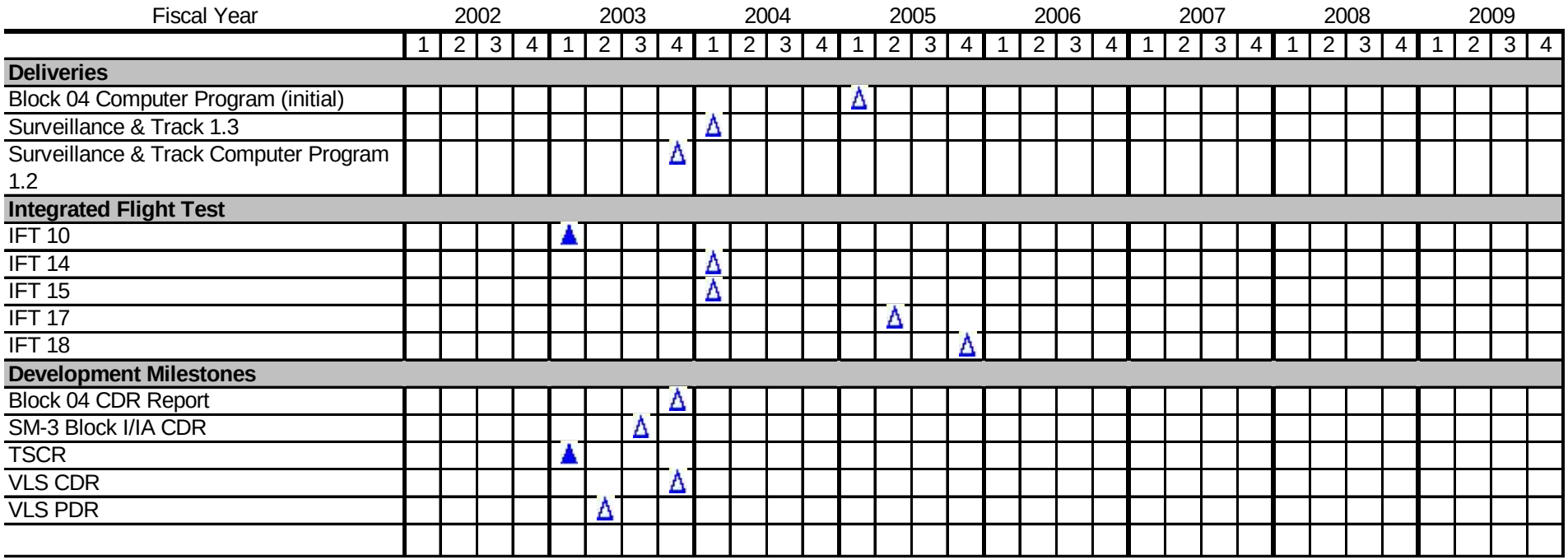
Project Total Cost			0	0		648306		893600			1541906	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

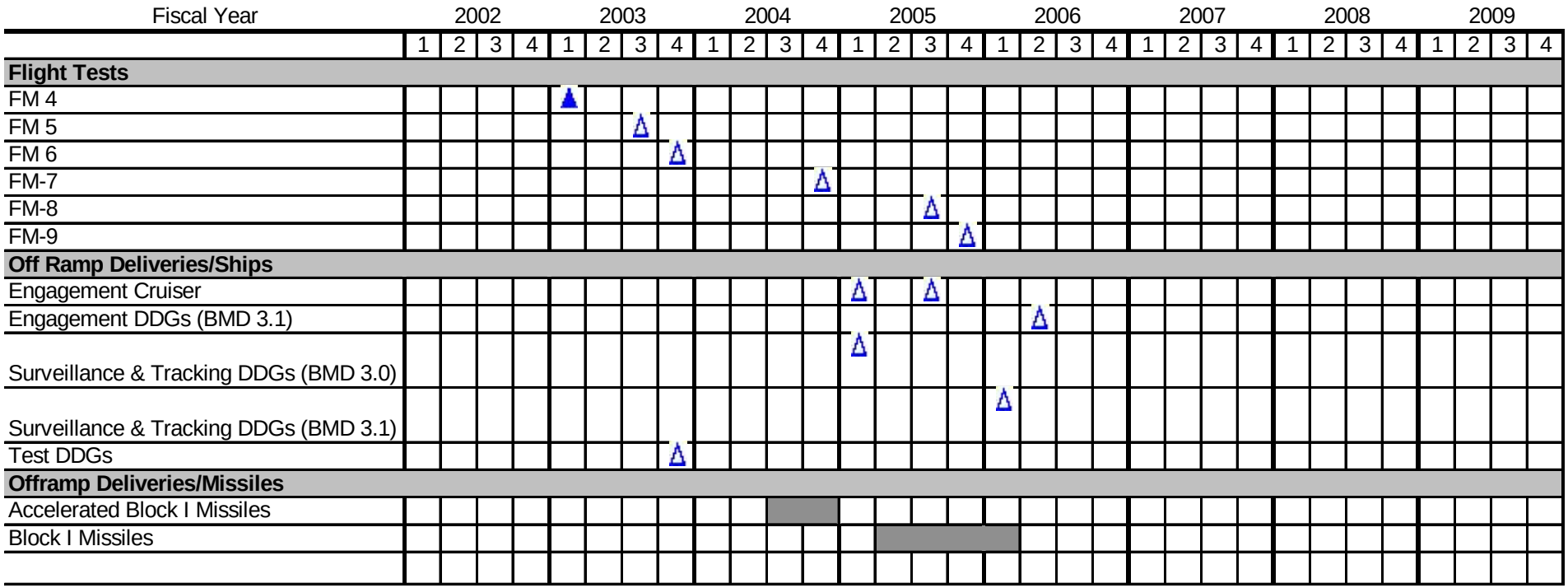


MDA Exhibit R-4 Schedule Profile

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

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



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
HERO Test				2Q				
Monolithic DACS Flight Qualification		3Q						
Monolithic DACS MDU1		1Q						
Monolithic DACS MDU2		2Q						
Pacific Blitz 04			3Q					
RCF 1		4Q						
RCF 2				1Q				
RCF 3				3Q				
Target Risk Reduction Flight			2Q	2Q				
Third Stage Qualification		4Q						
Deliveries								
AWS/SM-3 FM5 configuration		3Q						
AWS/SM-3 FM6 configuration		4Q						
AWS/SM-3 FM7 configuration			4Q					
Block 04 Computer Program (final)					1Q			
Block 04 Computer Program (initial)				1Q				
Surveillance & Track 1.3			1Q					
Surveillance & Track Computer Program 1.2		4Q						
Integrated Flight Test								
IFT 10		1Q						
IFT 14			1Q					
IFT 15			1Q					
IFT 17				2Q				
IFT 18				4Q				
Development Milestones								
Block 04 CDR Report		4Q						
SM-3 Block I/IA CDR		3Q						
TSCR		1Q						
VLS CDR		4Q						
VLS PDR		2Q						

MDA Exhibit R-4A Schedule Detail								Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment				
Flight Tests								
FM-4		1Q						
FM-5		3Q						
FM-6		4Q						
FM-7			4Q					
FM-8				3Q				
FM-9				4Q				
Off Ramp Deliveries/Ships								
Engagement Cruiser				1Q,3Q				
Engagement DDGs (BMD 3.1)					2Q			
Surveillance & Tracking DDGs (BMD 3.0)				1Q				
Surveillance & Tracking DDGs (BMD 3.1)					1Q			
Test DDGs		4Q						
Offramp Deliveries/Missiles								
Accelerated Block I Missiles			3Q-4Q					
Block I Missiles				2Q-4Q	1Q			

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0809 AEGIS Ballistic Missile Defense Block 2006	0	0	23859	72500	376828	299321	0	0
RDT&E Articles Qty	0	0	0	0	34	16	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3020 in FY 2002 and FY 2003.

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 improved prototype radar discrimination:
- 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 the potential for emergency system use.
- Provides improved battle space to the Block 2004 capability through changes to the Concepts of Operations (CONOPS) such as Boost Phase engagements.
- 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.
- Supports the continued development of the Aegis discrimination Test Bed for development of new radar discrimination algorithms such as feature extraction algorithms.
- Demonstrates improved discrimination with synthetic wide bandwidth AN/SPY-1 Radar Test Bed modifications both ashore and at-sea.
- Uses either the SM-3 Block I or SM-3 Block IA missiles.
- Allows for international participation.
- Performs an operational assessment.
- 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 ships with a self-defense capability with all weapons.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Weapons System Engineering	0	0	23859	50233
RDT&E Articles (Quantity)	0	0	0	0

FY 2002 Accomplishments (Funded in Budget Project 3020):
1) Developed the Block 2006 Program Plan.
2) Conducted AN/SPY-1 Radar Ballistic Missile Defense (BMD) Signal Processor (BSP) System Design Review (SDR).

FY 2003 Planned Accomplishments (Funded in Budget Project 3020):
1) Complete inputs for Missile Defense Agency (MDA) Engineering Review Boards (ERB) for Block 2006.
2) Complete Block 2006 capability assessment.
3) Continue Aegis AN/SPY-1 High Range Resolution (HRR) work.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

4) Continue fabrication of AN/SPY-1 BSP Advanced Developmental Model (ADM).
5) Continue Infra-red (IR) discrimination advance studies for Block 2006 capabilities.

FY 2004 Planned Accomplishments:
1) Demonstrate real time display on discrimination Test Bed.
2) Continue fabrication and start incremental testing of AN/SPY-1 BSP (ADM).

FY 2005 Planned Accomplishments:
1) Complete fabrication and start incremental testing of AN/SPY-1 BSP (ADM).
2) Commence at-sea testing of AN/SPY-1 BSP Advanced Developmental Model (ADM).
3) Continue to support performance capability assessment engineering.
4) Continue IR discrimination advance studies.
5) Initiate SM-3 hardware/software integration testing.

	FY 2002	FY 2003	FY 2004	FY 2005
Test & Evaluation	0	0	0	22267
RDT&E Articles (Quantity)	0	0	0	0

FY 2005 Planned Accomplishments:
1) Initiate procurement of tracking targets for Pacific Blitz 06
2) Initiate procurement of targets for FM-10 and FM-11

C. Other Program Funding Summary

	FY 2002	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	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

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. Current development activities supporting Aegis BMD Block 04 could be used to provide a limited capability to protect deployed U.S. and allied forces.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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												
Weapons System Engineering	SS/CPAF	Lockheed Martin/NJ	0	0		21400	1Q	41800	1Q	CONT.	63200	CONT.
Subtotal Product Development			0	0		21400		41800			63200	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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			0	0		0		0			0	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	SMDC/AL	0	0		0		20000	2Q	CONT.	20000	TBD
	Various	Various/Various	0	0		0		1200	3Q	CONT.	1200	TBD
Subtotal Test and Evaluation			0	0		0		21200			21200	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date
February 2003

APPROPRIATION/BUDGET ACTIVITY
4. 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 2003 Cost	FY 2003 Award Date	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												
	Other	NAVSEA/DC	0	0		250	1Q	900	1Q	CONT.	1150	CONT.
	SS/CPFF	JHU/APL/MD	0	0		100	1Q	500	1Q	CONT.	600	CONT.
	MIPR	NSWC/DD/VA	0	0		50	1Q	400	1Q	CONT.	450	CONT.
	C/CPFF	Anteon/VA	0	0		200	2Q	1000	2Q	CONT.	1200	CONT.
	SS/CPFF	Paradigm/VA	0	0		50	1Q	450	1Q	CONT.	500	CONT.
	SS/CPAF	Lockheed Martin/NJ	0	0		50	2Q	500	2Q	CONT.	550	CONT.
	SS/CPAF	Raytheon/AZ	0	0		50	2Q	500	2Q	CONT.	550	CONT.
	Other	MDA	0	0		1400	1Q	2016	1Q	CONT.	3416	CONT.
	Various	Various/Various	0	0		309	1Q	3234	1Q	CONT.	3543	CONT.
Subtotal Management Services			0	0		2459		9500			11959	

Remarks

Project Total Cost			0	0		23859		72500			96359	

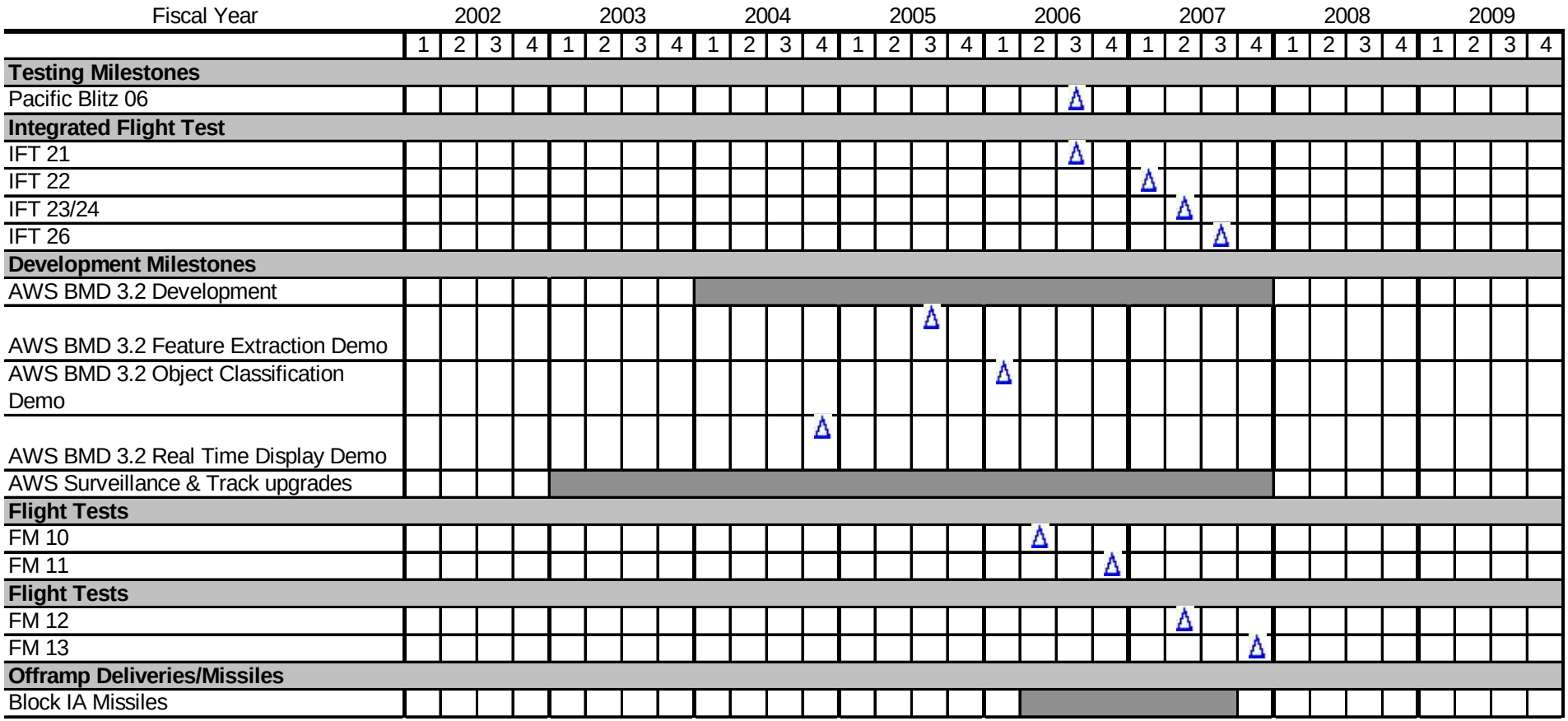
Remarks

MDA Exhibit R-4 Schedule Profile

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

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



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Pacific Blitz 06					3Q			
Integrated Flight Test								
IFT 21					3Q			
IFT 22						1Q		
IFT 23/24						2Q		
IFT 26						3Q		
Development Milestones								
AWS BMD 3.2 Development			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
AWS BMD 3.2 Feature Extraction Demo				3Q				
AWS BMD 3.2 Object Classification Demo					1Q			
AWS BMD 3.2 Real Time Display Demo			4Q					
AWS Surveillance & Track upgrades		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Flight Tests								
FM 10					2Q			
FM 11					4Q			
FM 12						2Q		
FM 13						4Q		
Offramp Deliveries/Missiles								
Block IA Missiles					2Q-4Q	1Q-3Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0909 AEGIS Ballistic Missile Defense Block 2008	0	0	0	116282	186281	322353	470045	386358
RDT&E Articles Qty	0	0	0	0	0	0	4	2

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3020 in FY 2002 and FY 2003.

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:
- Defeats, warheads in the presence of complex countermeasures, 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 SM-3 guided missiles.
- Develops Aegis BMD weapon system with fully integrated synthetic wide bandwidth AN/SPY-1 Radar and appropriate discrimination algorithms.
- Upgrades the AN/SPY-1 Radar with the BMD Signal Processor (BSP).
- Certifies the developed system for tactical deployment.
- Performs an operational assessment.
- Monitors and supports the Sea-based Boost Phase Program as required.
- Prepares to test BMDS interceptor being developed separately.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Weapons System Engineering	0	0	0	116282
RDT&E Articles (Quantity)	0	0	0	0

FY 2005 Planned Accomplishments:
- Conduct Trade Study/Assessment of Engineering Review Boards (ERB) results and design alternatives.
- Initiate development of Ballistic Missile Defense (BMD) 4.0 Computer Program.
- Conduct BMD 4.0 Preliminary Design Review (PDR).

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment			
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	0		0		88611		CONT.	88611	TBD
AWS	FFRDC	MIT/LL/MA	0	0		0		5717		CONT.	5717	TBD
AWS	SS/CPFF	JHU/APL/MD	0	0		0		2401		CONT.	2401	TBD
AWS	MIPR	NSWC/DD/VA	0	0		0		7627		CONT.	7627	TBD
AWS	MIPR	NSWC/PHD/CA	0	0		0		2274		CONT.	2274	TBD
AWS	MIPR	MITRE/VA	0	0		0		1121		CONT.	1121	TBD
AWS	Various	Various/Various	0	0		0		4649		CONT.	4649	TBD
AWS	Other	MDA	0	0		0		3882			3882	
Subtotal Product Development			0	0		0		116282			116282	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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			0	0		0		0			0	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	0		0		0			0	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

IV. Management Services Cost ($ in Thousands)

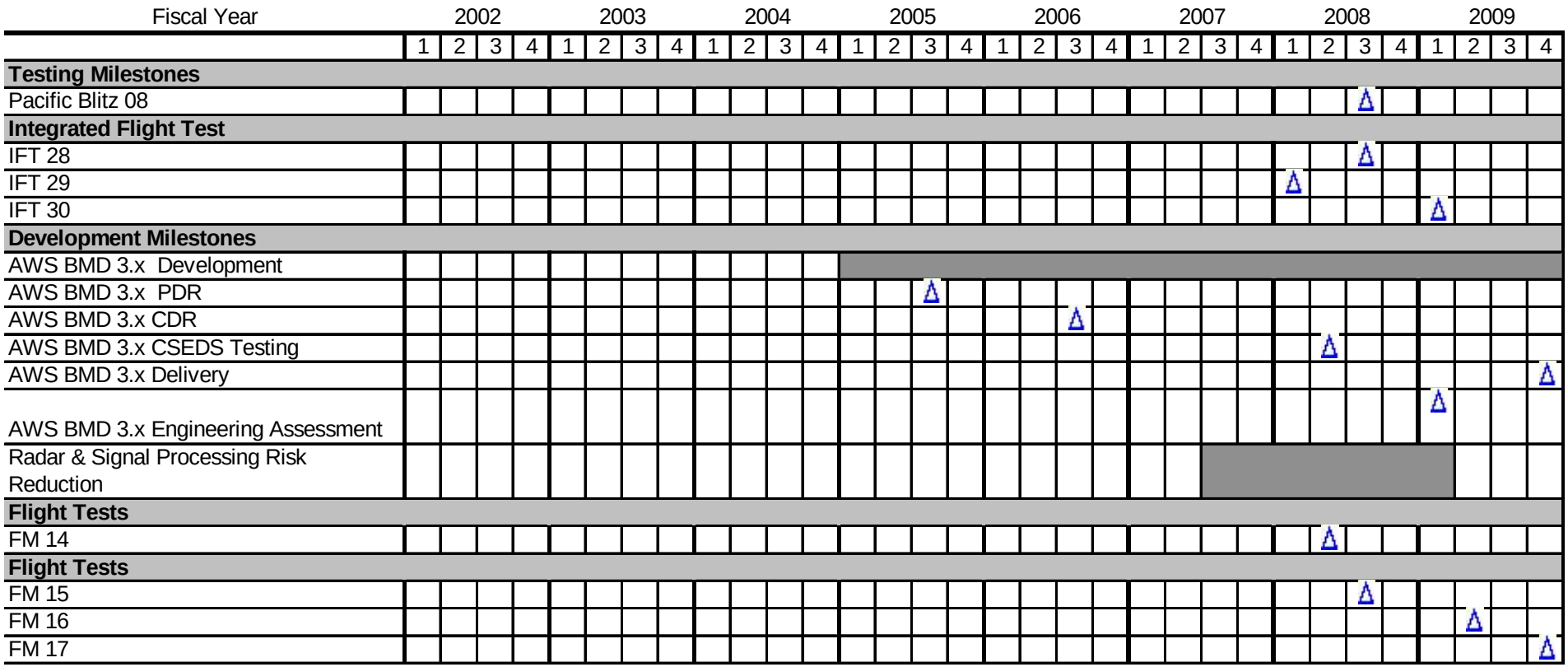
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services			0	0		0		0			0	

Remarks

Project Total Cost			0	0		0		116282			116282	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Pacific Blitz 08							3Q	
Integrated Flight Test								
IFT 28							3Q	
IFT 29							1Q	
IFT 30								1Q
Development Milestones								
AWS BMD 3.x Development				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
AWS BMD 3.x PDR				3Q				
AWS BMD 3.x CDR					3Q			
AWS BMD 3.x CSEDS Testing							2Q	
AWS BMD 3.x Delivery								4Q
AWS BMD 3.x Engineering Assessment								1Q
Radar & Signal Processing Risk Reduction						3Q-4Q	1Q-4Q	1Q
Flight Tests								
FM 14							2Q	
FM 15							3Q	
FM 16								2Q
FM 17								4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	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	0	7808	104346	144568
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3020 in FY 2002 and FY 2003.

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:
- 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).
- Provides for possible integration of the Aegis BMD Weapon System and the Missile Defense Agency (MDA) Common Interceptor.
- Certifies the developed system for tactical use.
- Conducts an Operational Assessment.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Weapon System Engineering				
RDT&E Articles (Quantity)				

Funding for this project is not programmed until FY 2007.

	FY 2002	FY 2003	FY 2004	FY 2005
Test & Evaluation				
RDT&E Articles (Quantity)				

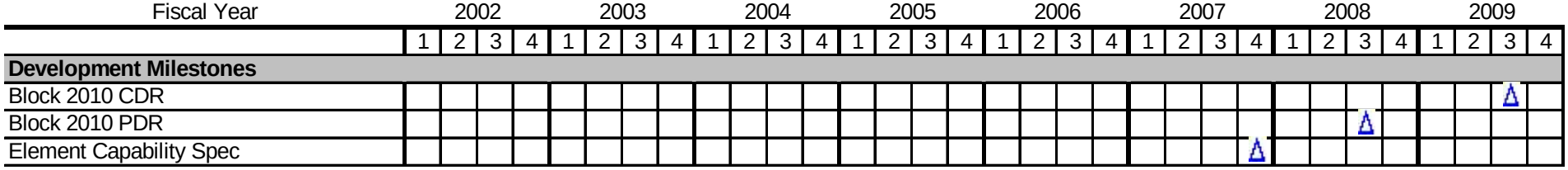
Funding for this project is not programmed until FY 2007.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment			
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones								
Block 2010 CDR								3Q
Block 2010 PDR							3Q	
Element Capability Spec						4Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0402 Japanese Cooperative Program	0	0	54000	73000	25000	0	0	0
RDT&E Articles Qty	0	0	0	1	2	0	0	0

A. Mission Description and Budget Item Justification

This Budget Project was previously captured in Project 3020 in FY 2002 and 2003.

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).

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Japan Cooperative Research Project	0	0	54000	73000
RDT&E Articles (Quantity)	0	0	0	1

FY 2002 Accomplishments (Funded in Budget Project 3020):
1) Continued development and system engineering support for the four U.S./Japan Cooperative Research (JCR) components.
2) Completed nosecone Preliminary Design Review (PDR) supporting integration of Japan Defense Agency (JDA) developed nosecone on Joint Control Test Vehicle-1 (JCTV-1) and Joint Flight Mission-1 (JFM-1).
3) Completed 21" missile components PDR supporting JDA development of second stage propulsion, Quantum Well Infrared Photodectector (QWIP) seeker, and lightweight nosecone of an advanced SM-3.
4) Continued design and development of the DoD two-color seeker toward Captive Carry.
5) Continued design and development of Divert and Attitude Control System (DACS) alternatives.
6) Performed system engineering support for JDA design and development of second stage propulsion, Japan QWIP seeker, and lightweight nosecone.

FY 2003 Planned Accomplishments (Funded in Budget Project 3020):
1) Continue development and system engineering support for the four U.S./JCR components.
2) Initiate procurement of test articles and ship modifications for JCTV-1 and JFM-1.
3) Continue PDR for Ship system and Vertical Launching System (VLS) modifications.
4) Conduct Critical Design Review (CDR) supporting integration of JDA developed nosecone on JCTV-1 and JFM-1.
5) Complete ground testing in the U.S. of the Japan QWIP and DoD Mercury Cadmium Telluride (MCT) seekers.
6) Continue system engineering support for JDA design and development of second stage propulsion, QWIP seeker, and lightweight nosecone.
8) Complete JCR nosecone wind tunnel tests.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

FY 2004 Planned Accomplishments:
1) Continue development and system engineering support for the four U.S./JCR components.
2) Continue procurement of test articles and ship modifications for JCTV-1 and JFM-1.
3) Deliver JDA nosecone to the U.S. for missile integration.
4) Conduct CDR for ship system and VLS modifications.
5) Conduct Captive Carry testing of U.S. MCT seeker.
6) Support software builds for JCR flights.

FY 2005 Planned Accomplishments:

RDT&E Articles: SM-3 Guided Missile (1)

1) Conduct flight test JCTV-1.

C. Other Program Funding Summary

	FY 2002	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	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
SM-3	SS/CPAF	Raytheon/AZ	0	0		49966	2Q	68966	2Q	CONT.	118932	TBD
AWS	SS/CPAF	Lockheed Martin/NJ	0	0		850	1Q	750	1Q	CONT.	1600	TBD
VLS	SS/CPAF	UDLP/MN	0	0		300	2Q	300	2Q	CONT.	600	TBD
Subtotal Product Development			0	0		51116		70016			121132	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
System Engineering	SS/CPFF	NSWC/DD/VA	0	0		880	1Q	880	1Q	CONT.	1760	TBD
System Engineering	SS/CPFF	NSWC/PHD/CA	0	0		161	1/2Q	161	1/2Q	CONT.	322	TBD
System Engineering	SS/CPFF	JHU/APL/MD	0	0		857	2Q	857	2Q	CONT.	1714	TBD
System Engineering	Various	Various/Various	0	0		856	1Q	956	1Q	CONT.	1812	TBD
System Engineering	SS/CPFF	MEI/VA	0	0		130	1Q	130	1Q	CONT.	260	TBD
Subtotal Support Costs			0	0		2884		2984			5868	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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		54000		73000			127000	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

Fiscal Year	2002				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	1	2	3	4
Development Milestones																																
Nosecone CDR							△																									
Nosecone PDR		▲																														
Ship System CDR										△																						
Ship System PDR							△																									
Japan Cooperative Research Project																																
JCTV-1																△																
JFM-1																		△														

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Development Milestones								
Nosecone CDR		3Q						
Nosecone PDR	2Q							
Ship System CDR			2Q					
Ship System PDR		3Q						
Japan Cooperative Research Project								
JCTV-1				4Q				
JFM-1					2Q			

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3050 Segment Common Engineering and Integration	22408	94907	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

[The Risk Reduction efforts are transitioned to the Program Element (PE) 0603890C Ballistic Missile Defense System (BMDS)Core beginning with FY 2004 while the EKV efforts transition to the BMDS Interceptor PE 0603886C. The Counter/Countermeasures (C/CM) efforts are transitioned to PE 0603890C Ballistic Missile Defense System Core beginning with FY 2004. The BMD Information Management System efforts transition to PE 0603880C BMDS System Segment in FY 2003, and to PE 0603890C Ballistic Missile Defense System Core beginning in FY 2004.]

This project provides for three primary efforts of Risk Reduction, Counter/Countermeasures (C/CM), and Engineering and BMD Information Management Systems risk reduction support for the midcourse segment. The risk reduction efforts provide engineering risk management activities for the 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 and information management systems support activities support the risk reduction and C/CM activities.

Risk Reduction:
The risk reduction activities include a number of efforts for FY 2002 and FY 2003 including the Complementary Exo-atmospheric Kill Vehicle (CEKV), Midcourse and AEGIS BMD risk reduction, and the BMDS Interceptors risk reduction.

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 begins the study to determine the ability to develop a potential common EKV for Ground and Sea-based Midcourse Defense. The development will be 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.

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 (HIL)/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; Aegise Weapon System (AWS)/Vertical Launch System (VLS)/SM-3 Interfaces; Midcourse C/CM Techniques; and the RCF-1 Exercise. The Risk Reduction efforts are transitioned to the Program Element (PE) 0603890C Ballistic Missile Defense System Core beginning in FY 2004

The BMDS Interceptors Risk Reduction efforts, beginning in FY 2003, integrate and test 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. The BMDS Interceptor Risk Reduction efforts are transitioned to the BMDS Interceptor PE 0603886C beginning in FY 2004.

Counter/Countermeasures (C/CM):
The counter/countermeasures 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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

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. The Counter/Countermeasures effort is transitioned to Program Element (PE) 0603890C Ballistic Missile Defense System Core beginning with FY 2004.

BMD Information Management System:
The BMD Information Management System projects support the entire MDA Enterprise and includes the BMD Midcourse Defense Segment. The projects focus on the development, implementation, and operation of the MDA Information Management System to include decision support and collaboration tools to support the mission and business areas of the MDA. The BMDS IMS provides critical information for the planning, analysis, and accomplishment of the midcourse risk reduction activities. The BMD Information Management System efforts transitions to PE 0603880C BMDS System Segment in FY 2003, and to PE 0603890C Ballistic Missile Defense System Core beginning in FY 2004.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Risk Reduction	1550	81369	0	0
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:

Complementary Exo-atmospheric Kill Vehicle (CEKV):
- Defined CEKV capability needs within the framework of a CEKV system capability requirements review,
- Conducted CEKV Capability Definition Contractor selection,
- Conducted design trades with integrated risk management assessments with Kill Vehicle (KV) system analyses,
- Developed assessment of Navy constraints in CEKV support, and
- Provided independent assessments of predicted performance for components and system critical functions.

FY 2003 Planned Program:

Complementary Exo-atmospheric Kill Vehicle (CEKV):
- Based on the completed study conducted in FY 2002 the CEKV efforts are 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 include activities in the areas of Standard Missile (SM)-3 Monolithic Divert Attitude Control System (DACS) Producibility, Integration and Ground Testing; SM-3 and Aegis HIL/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 include:

- Conduct Monolithic Solid Divert and Attitude Control System (SDACS) ground and qualification tests.
- Participate in Ground-based Midcourse Defense (GMD) flight test (RCF-1) using an Aegis Destroyer to provide target tracking data to GMD and SM-3e Kinetic Warhead (KW) Infra-red (IR) - Seeker Captive Carry Test Bed in support of Ballistic Missile Defense System (BMDS) integration.
- Continue element/multi-element testing and verification of Aegis Weapon System (AWS)/SM-3 guided missile interface development & integration.
- Verify Shipboard system interfaces with End-to-End Distributed Development System (ETEDDS).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Continue Aegis Weapon System (AWS)/SM-3 guided missile interface development & integration.
- Continue Vertical Launching System (VLS)/SM-3 guided missile interface development & integration.
- Conduct SM-3 Hardware-in-the-Loop (HIL)/Computer-in-the-Loop (CIL)/End-to-End (ETE) ground tests and simulated engagements.

BMDS Interceptors Risk Reduction:
-Integrate and test 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.

FY 2004 Planned Program:
- Risk reduction efforts transition to the BMD System Segment PE 0603880C in FY 2004.

FY 2005 Planned Program:
- N/A

	FY 2002	FY 2003	FY 2004	FY 2005
Counter/Countermeasures	14410	13538	0	0
RDT&E Articles (Quantity)				

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.

FY 2002 Accomplishments
- Participated in the MDA Blue Team assessment of the Black Team countermeasure that was presented to the MDA White Team (Jan 2002).
- Conducted analysis of GMD system mitigation measures in response to MDA White Team countermeasure.
- Completed analysis of the capability of GMD and supporting elements to discriminate targets in a countermeasure environment. Published results in the Discrimination Capabilities Reference Document (DCRD).
- Prepared an assessment of the GMD EKV Weapons Data Load requirements for 2004 and presented results to MDA White Team and MDA System Engineering.

FY 2003 Planned Program:
- Update and maintain the open-source database on the BMDS and generate one set of countermeasures against the open source system architecture.
- Update the technical description of the baseline BMDS and generate one set of countermeasures with threat risk assessment.
- Initiate operations; perform one cycle of BMDS assessment; select areas for analysis; and identify system weaknesses, technical concerns, and block transition issues.
- Organize Element participation in program, analyze Red and Black Team countermeasures and propose counter-countermeasure mitigation strategies.
- Review adversary teams' countermeasures and Blue Team response; provide independent assessments of teams' products to MDA Director.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

- Conduct Aegis BMD Counter-Countermeasures technique characterization.
- Conduct Aegis BMD Counter-Countermeasures track feature design and discrimination.

FY 2004 Planned Program:
- Counter/Countermeasures transitions to the Ballistic Missile Defense System Core PE 0603890C in FY 2004.

FY 2005 Planned Program:
- N/A

	FY 2002	FY 2003	FY 2004	FY 2005
Engineering and BMD Information Management Systems Risk Reduction Support	6448	0	0	0
RDT&E Articles (Quantity)				

Funding from this project included the MDA Data Centers and Virtual Data Centers who catalog, process and provide electronic access to engineering and technical data from many years of missile related flight tests, simulations, and experiments. The three (3) data centers consist of the Missile Defense Data Center (MDDC), the Advanced Missile Signature Center (AMSC), and the Joint National Integration Data Center (JNIC). This data is vital to the Midcourse Defense Segment projects and experiments. Additionally, data was processed which provides the capability to research and analyze and determine the lethality of missiles during flight tests and experiments. The BMD Web Portal effort under this project provides an economical means for the MDA community to share the investment in years of BMD-related data across the scientific and engineering community.

FY 2002 Accomplishments:
- Designed WEB exchange with remote access capability.
- A single WEB Portal was established.
- Developed Web Portal Version 2.0.
- Continued operation of the Data Centers and Virtual Data Centers.
- Procured equipment to stand up the Information Assurance Operations Center (IAOC).
-Established the Naval Surface Warfare Center as an MDA data center which consolidates, catalogs and provides electronic access to Aegis test data to the MDA community.
-Integrated a lethality database into the MDA Data Centers and provided electronic access across the MDA community.

FY 2003 Planned Program:
-This Project transfers to Project 1050 BMD Information Management Systems in the System BMD Segment Program Element (PE) 0603880C for FY 2003.

FY 2004 Planned Program:
- N/A

FY 2005 Planned Program:
- N/A

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

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 will include risk reduction activities for Ground and Sea-based Midcourse Defense projects and counter/countermeasures that are capability rather than threat based. MDA will participate in a countermeasures program that will focus on identifying threat countermeasures that may not yet be evident, but are physically plausible and technically feasible. The program will identify and develop solutions to improve the capability of ballistic missile defense projects to defeat those countermeasures. Solutions that successfully demonstrate an improvement in MDA project performance will be integrated into the block development program.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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		2625	1Q						2625	
Midcourse Risk Reduction	SS/CPAF	JHU/APL, MD		7437	2Q						7437	
Midcourse Risk Reduction	SS/CPAF	LM, NJ		10655	2Q						10655	
Midcourse Risk Reduction	SS/CPAF	Raytheon, AZ		42743	2Q						42743	
Counter/Countermeasures												
Counter/Countermeasure	SS/CPAF	JHU/APL, MD		363	2Q						363	
Counter/Countermeasure	SS/CPAF	LM, NJ		3000	2Q						3000	
Subtotal Product Development			0	66823							66823	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		1550								1550	
Midcourse Risk Reduction	MIPR	NAWC/CL, CA		400	1Q						400	
Midcourse Risk Reduction	MIPR	NAWC/PM, CA		150	1Q						150	
Midcourse Risk Reduction	SS/CPFF	JHU/APL, MD		1050	2Q						1050	
Midcourse Risk Reduction	C/CPAF	Raytheon, AZ		200	2Q						200	
Midcourse Risk Reduction	C/CPFF	SEG, VA		1000	2Q						1000	
Midcourse Risk Reduction	MIPR	NSWC/DD, VA		914	1Q						914	
Midcourse Risk Reduction	MIPR	NSWC/IH		700	1Q						700	
Midcourse Risk Reduction	SS/FFRDC	MIT/LL, MA		850	2Q						850	
Midcourse Risk Reduction	Various	Various		1748	2Q						1748	

MDA Exhibit R-3 RDT&E Project Cost Analysis | Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

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

BMDS Interceptors	MIPR	NSWC/PHD/Port Hueneme, CA		520	1/2Q						520	
BMDS Interceptors	SS/Other	Raytheon and Navy EA/Tucson, AZ		7932	1/2Q						7932	
Counter/Countermeasures												
Counter/Countermeasures	SS/CPAF	Boeing/AL	7595								7595	
Counter/Countermeasures	SS/CPAF	MIT Lincoln Labs/MA	3427								3427	
Counter/Countermeasures	Various	Various	3388								3388	
Counter/Countermeasures	FFRDC	Various		200	1/3Q						200	
Counter/Countermeasures	CPFF	Various/VA		2525	1/3Q						2525	
Counter/Countermeasures	MIPR	Various		4413	1/3Q						4413	
Counter/Countermeasures	C/CPAF	LM, NJ		800	2Q						800	
Counter/Countermeasures	C/CPFF	BAE, VA		500	1Q						500	
Counter/Countermeasures	SS/CPFF	JHU/APL, MD		1025	2Q						1025	
Counter/Countermeasures		Various		657	1Q						657	
Engineering and BMD Information Management Systems Risk Reduction Support												
BMDS Info Mgt Sys	C/CPAF	CSC/VA	1876	0							1876	
BMDS Info Mgmt Sys	MIPR	AMSC/AL	709	0							709	
BMDS Info Mgmt Sys	MIPR	MDDC/AL	1221	0							1221	
BMDS Info Mgmt Sys	MIPR	JNIC/CO	1776	0							1776	
BMDS Info Mgmt Sys	MIPR	NSWC/CA	200	0							200	
BMDS Info Mgmt Sys	Other	Various	666	0							666	
Subtotal Support Costs			22408	25584		0		0			47992	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	MIPR	CINCPACFLT, HI		500	1Q						500	
Risk Reduction	MIPR	NSWC/Corona, CA		155	1Q						155	
Risk Reduction	MIPR	NSWC/DD, VA		568	1Q						568	
Risk Reduction	MIPR	NSWC/PHD, CA		795	1Q						795	
Risk Reduction	SS/CPFF	JHU/APL, MD		200	2Q						200	
Risk Reduction		Various		282	1Q						282	
Subtotal Test and Evaluation				2500							2500	

Remarks

IV. Management Services Cost ($ in Thousands)

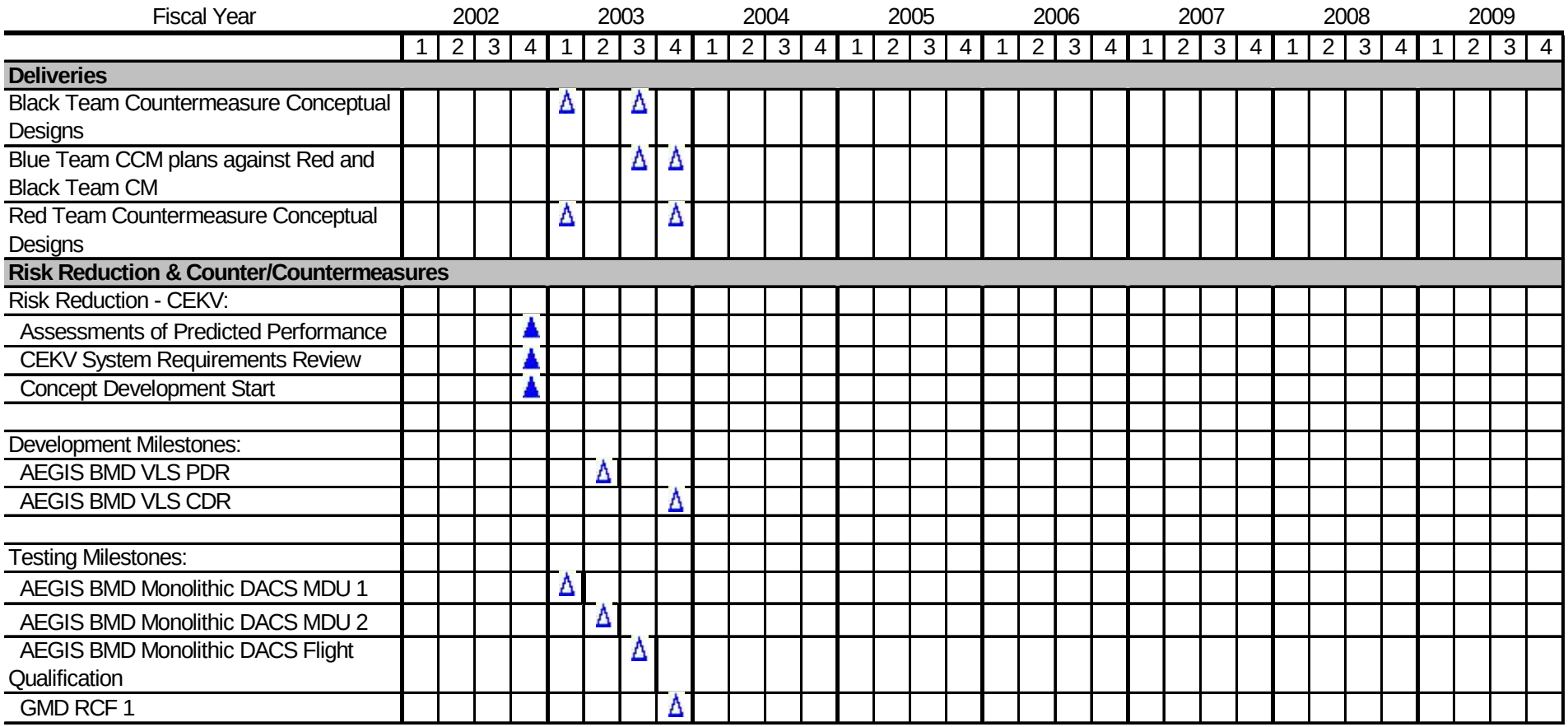
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			22408	94907		0		0			117315	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603882C Ballistic Missile Defense Midcourse Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
Black Team Countermeasure Conceptual Designs		1Q,3Q						
Blue Team CCM plans against Red and Black Team CM		3Q,4Q						
Red Team Countermeasure Conceptual Designs		1Q,4Q						
Risk Reduction & Counter/Countermeasures								
Assessments of Predicted Performance	4Q							
CEKV System Requirements Review	4Q							
Concept Development Start	4Q							
Development Milestones:								
Aegis BMD VLS PDR		2Q						
Aegis BMD VLS CDR		4Q						
Testing Milestones:								
AEGIS BMD Monolithic DACS MDU 1		1Q						
AEGIS BMD Monolithic DACS MDU 2		2Q						
AEGIS BMD Monolithic DACS Flight Qualification		3Q						
GMD RCF 1		4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603882C Ballistic Missile Defense Midcourse Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
3090/0602 Program Operations	112116	63790	76302	44900	38226	43913	29521	29700
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 3090 and Fiscal Years 2004 and out are in Project 0602.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	36899	35199	27074	9880
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	28298	15511	25652	22969
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	17217	4774	23576	12051
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Information Management/Information Technology (IM/IT)	29702	8306	0	0
RDT&E Articles (Quantity)				

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

C. Other Program Funding Summary

	FY 2002	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	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603882C Ballistic Missile Defense Midcourse Defense Segment			
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	583463	718036	626264	653612	755163	665772	477109	354346
4030 Air-Based Boost	465194	584916	0	0	0	0	0	0
0710 Airborne Laser (ABL) Block 2004	0	0	344500	149500	0	0	0	0
0810 Airborne Laser (ABL) Block 2006	0	0	10000	85800	149500	78800	81400	55100
0910 Airborne Laser (ABL) Block 2008	0	0	255535	402168	582462	561417	366217	267352
4020 Sea-Based Boost	30070	0	0	0	0	0	0	0
4040 Space-Based Boost	23779	0	0	0	0	0	0	0
4010 Kinetic Energy Boost	0	91506	0	0	0	0	0	0
4043 Space Based Laser	46248	22856	0	0	0	0	0	0
4090/0602 Program Operations	18172	18758	16229	16144	23201	25555	29492	31894

A. Mission Description and Budget Item Justification

Note: Several projects funded in earlier years are no longer funded within this Program Element. Beginning in FY 2003, funding for the Space Based Laser program (Project 4043) transitioned to support MDA's Laser Technology Program (as part of Program Element 0603875C). For FY 2004-2009, funding for the Kinetic Energy Boost and Sea and Space Based Boost Programs (Projects 4010, 4020 & 4040 in FY 2002-2003) will transition into the Ballistic Missile Defense System (BMDS) Interceptor Program Element (0603886C), Projects 0913 and 0013.

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 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.

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. Some of the critical technical challenges to be addressed in the ABL effort include:

1) On-board sensors,
2) Optical coatings,

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

3) Light weight flight hardware and high bandwidth adaptive optics;
4) Command and control, battle management, and communications (C2BMC) development; and
5) Development of operational concepts sufficient to support the quick reaction firing of DE weapons.

Early proof of principle activities includes a lethality demonstration (missile shootdown). These activities will show the feasibility of engaging a ballistic missile during the boost phase in a representative environment.

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.

Consistent with the MDA block management framework, the Airborne Laser (ABL) System Element of the BDS consists of Blocks 2004, 2006, and 2008:

1) ABL Block 2004 - The ABL initial development contract was awarded to the Boeing/TRW (now Northrop-Grumman)/Lockheed-Martin team in November 1996, to design, fabricate, integrate, and test an ABL aircraft with a laser device. The ABL Block 2004 (formerly PDRR) phase culminates in a lethality demonstration (missile shootdown) against boosting ballistic missile threat-representative targets and delivers one aircraft for integration and testing in the BMDS Test Bed. This aircraft will be capable of providing contingency capability, if directed, that offers rudimentary protection of the United States.

2) ABL Block 2006 - This effort will evaluate the capabilities of the ABL Block 2004 Test Bed against the spectrum of threats, including those not originally specified in the ABL PDRR effort. It will also enhance and test the integration of the ABL Block 2004 aircraft into the BMDS by leveraging software and limited hardware changes.

3) ABL Block 2008 and future blocks - This effort continues the development of the Air-Based Boost Defense capability consistent with BMDS needs. It will include maturation to a second test ABL aircraft that includes new technologies, with enhanced lethality, and additional operational suitability

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	599835	796927	1389817	1399902
Current President's Budget (FY 2004 PB)	583463	718036	626264	653612
Total Adjustments	-16372	-78891	-763553	-746290
Congressional Specific Program Adjustments	0	-60000	0	0
Congressional Undistributed Adjustments	-4647	-12671	0	0
Reprogrammings	606	-6220	-763553	-746290
SBIR/STTR Transfer	-12331	0	0	0

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4030 Air-Based Boost	465194	584916	0	0	0	0	0	0
RDT&E Articles Qty	10	5	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

AIR-BASED BOOST

The Airborne Laser (ABL) is an element of the Ballistic Missile Defense System (BMDS). ABL Block 2004 and ABL Block 2008 designate capability levels. This nomenclature reflects the block designations of the 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).

ABL Block 2004 - The ABL initial development contract was awarded to the Boeing/TRW (now Northrop-Grumman)/Lockheed-Martin team in November 1996, to design, fabricate, integrate, and test an ABL aircraft with a laser device. The ABL Block 2004 (formerly PDRR) phase culminates in a lethality demonstration (missile shootdown) against boosting ballistic missile threat-representative targets and delivers one aircraft for integration and testing in the BMDS Test Bed. This aircraft will be capable of providing contingency capability, if directed, that offers rudimentary protection of the United States.

RDT&E Articles:
The test articles associated with Block 2004 will decrease risk and improve the probability of success for lethal shoot-down in CY 2004. The following targets will be delivered in the fiscal years specified:
FY 2002:
10 Lance Missiles.
FY 2003:
5 Lance Missiles.

ABL Block 2008 and future blocks - This effort continues the development of the Air-Based Boost Defense capability consistent with BMDS needs. It will include maturation to a second test ABL aircraft that includes new technologies, with enhanced lethality, and additional operational suitability.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2004	371562	280200	0	0
RDT&E Articles (Quantity)	0	0	0	0

FY 2002 Accomplishments:
-- Successfully completed Laser Module 1 Testing.
-- Delivered and mounted surrogate laser turret and roll shell.
-- Coated Range Simulator Primary Mirror.
-- Started developmental flight testing.

FY 2003 Planned Accomplishments:
-- Deliver target and beacon illuminator lasers.
-- Complete integration and test of Beam Transfer Assembly and turret ball.
-- Successfully complete surveillance demonstration without the Active Ranger System.
-- Produce first light with high-energy laser at the system integration laboratory (SIL).

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2008	11175	236747	0	0
RDT&E Articles (Quantity)				

FY 2002 Accomplishment:
-- Started acquisition of long lead optics.

FY 2003 Planned Accomplishments:
-- Continue acquisition of long lead optics.
-- Initiate payments for commercial "green" 747-400 aircraft.
-- Award ABL Block 2008 contract, begin ABL Block 2008 development, and begin "Iron Bird" hardware acquisition.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Activities	82457	67969	0	0
RDT&E Articles (Quantity)	10	5		

RDT&E Articles:
The test articles associated with Block 2004 will decrease risk and improve the probability of success for lethal shoot-down in CY 2004. The following targets will be delivered in the fiscal years specified:

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

FY 2002:
10 Lance Missiles.
FY 2003:
5 Lance Missiles.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

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 ABL system into the BMD System, the BMDS C2BMC architecture, and the BMDS Test Bed. The ABL system entered into a program definition and risk reduction contract in November 1996. Major subsystem development, integration, and testing are projected to continue in FY 2003. The program plan is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. This capability-based program takes a spiral development approach toward fielding an ABL System. The approach takes advantage of producing a line of ABL systems that systematically and incrementally adds more capability as the technology matures.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
ABL Block 2004 Contract	C/CPAF	Boeing Defense & Space Group/Seattle, WA		280200	1/4Q						280200	
ABL Block 2008												
ABL Block 2008	SS/CPAF	Boeing Defense & Space Group/Seattle, WA		236747	4Q						236747	
Subtotal Product Development			0	516947		0		0			516947	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
ABL Technical Supt Contracts	Various	Various		13800	1/4Q						13800	
ABL Government and other Supt	Various	Various		15871	1/4Q						15871	
ABL Block 2008												
ABL Block 2008	Various	Various		500	1/4Q						500	
ABL Block 2008	Various	Various		1098	1/4Q						1098	
Subtotal Support Costs			0	31269		0		0			31269	

Remarks

Numerous support contracts and types with various award dates.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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												
Test Instruments	Various	Various		8000	1/4Q						8000	
Targets	MIPR	USASMDC/Huntsville AL		6500	1/4Q						6500	
Integrated Test Force	MIPR	AFFTC/Edwards AFB		17200	1/4Q						17200	
LFT&E	Various	Various		5000	1/4Q						5000	
Subtotal Test and Evaluation			0	36700		0		0			36700	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	584916		0		0			584916	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Fiscal Year	2002				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	1	2	3	4
Block 2004																																
First Light at System Integration Lab								△																								
Block 2008																																
Begin Iron Bird hardware acquisition								△																								
Contract Award								△																								
Initiate payments for commercial 'green' 747-400								△																								
Start acquisition of long-lead optics				▲																												

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2004								
Complete integration/test of BTA and Turret Ball		3Q						
First Light at System Integration Lab		4Q						
Block 2008								
Begin Iron Bird hardware acquisition		4Q						
Contract Award		4Q						
Initiate payments for commercial 'green' 747-400		4Q						
Start acquisition of long-lead optics	4Q							

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0710 Airborne Laser (ABL) Block 2004	0	0	344500	149500	0	0	0	0
RDT&E Articles Qty	0	0	3	2	0	0	0	0

A. Mission Description and Budget Item Justification

ABL Block 2004

The ABL initial development contract was awarded to the Boeing/TRW (now Northrop-Grumman)/Lockheed-Martin team in November 1996, to design, fabricate, integrate, and test an ABL aircraft with a laser device. The ABL Block 2004 (formerly PDRR) phase culminates in a lethality demonstration (missile shootdown) against boosting ballistic missile threat-representative targets and delivers one aircraft for integration and testing in the BMDS Test Bed. This aircraft will be capable of providing contingency capability, if directed, that offers rudimentary protection of the United States.

RDT&E Articles:
The test articles associated with Block 2004 will decrease risk and improve the probability of success for lethal shoot-down in CY 2004. The following targets will be delivered in the fiscal years specified:

FY 2004:
3 Foreign Military Assets.
FY 2005:
2 Foreign Military Assets.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2004			260200	97000
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Contractor Integration and Test -- Continue Boeing/TRW (now Northrop-Grumman)/Lockheed-Martin Block 2004 program contract effort for integration and testing the ABL system, including post lethality demonstration activities in FY 2005.

FY 2002 Accomplishments:
-- This project is a continuation of the ABL Block 2004 effort described under Project 4030. Please refer to FY 2002 ABL Block 2004 accomplishments listed under Project 4030.

FY 2003 Planned Accomplishments:
-- This project is a continuation of the ABL Block 2004 effort described under Project 4030. Please refer to FY 2003 ABL Block 2004 planned accomplishments listed under Project 4030.

FY 2004 Planned Accomplishments:

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

-- Complete ABL Block 2004 ground testing to include first light on the ABL Block 2004 aircraft.
-- First flight of the complete ABL Block 2004 weapon system.
-- Successful track and high energy laser engagement of an instrumented missile alternative.

FY 2005 Planned Accomplishments:
-- Complete lethality demonstration against a boosting ballistic missile.
-- Conduct post-shootdown flight testing.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Activities			84300	52500
RDT&E Articles (Quantity)			3	2

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, and equipment.

FY 2004 Planned Accomplishments:
-- Launch, recover, and refurbish an instrumented missile alternative
-- Complete optical fault system manager tool
-- Deliver atmospheric decision aid to support ABL testing

FY 2005 Planned Accomplishments:
-- Complete preparations for AF Link-16 testing
-- Complete preparations for system-level capability specification verification

RDT&E Articles:
The test articles associated with Block 2004 will decrease risk and improve the probability of success for lethal shoot-down in CY 2004. The following targets will be delivered in the fiscal years specified:

FY 2004:
3 Foreign Military Assets.
FY 2005:
2 Foreign Military Assets.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

C. Other Program Funding Summary

	FY 2002	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	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

D. Acquisition Strategy

The Airborne Laser 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 Airborne Laser entered into a program definition and risk reduction contract in November 1996. Development, integration, and testing will continue in FY 2004. The program plan is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. This capability-based program takes a spiral development approach towards fielding an ABL system. It leverages the use of two test aircraft (Block 2004 and Block 2008) and a ground-based test facility ("Iron Bird"). The approach takes advantage of producing a line of ABLs that systematically and incrementally adds more capability as technology matures. This strategy produces ABL Block 2004, ABL Block 2006, and ABL Block 2008 capabilities during the development phase. ABL Block 2004 and the "Iron Bird" will integrate and test key technologies, allowing improved capabilities and integration of maturing technologies in ABL Block 2008. ABL Block 2006 will evaluate the capabilities of the ABL Block 2004 Test Bed against the spectrum of threats and enhance and test its integration into the BMDS by leveraging software and limited hardware changes.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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				260200	1/4Q	97000	1/4Q		357200	
Subtotal Product Development			0	0		260200		97000			357200	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				14140	1/4Q	7530	1/4Q		21670	
Government and Other Support	Various	Various/Various				40160	1/4Q	23970	1/4Q		64130	
Subtotal Support Costs			0	0		54300		31500			85800	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				25000	1/4Q	16000	1/4Q		41000	
LFT&E	Various	Various/Various				5000	1/4Q	5000	1/4Q		10000	
Subtotal Test and Evaluation			0	0		30000		21000			51000	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

IV. Management Services Cost ($ in Thousands)

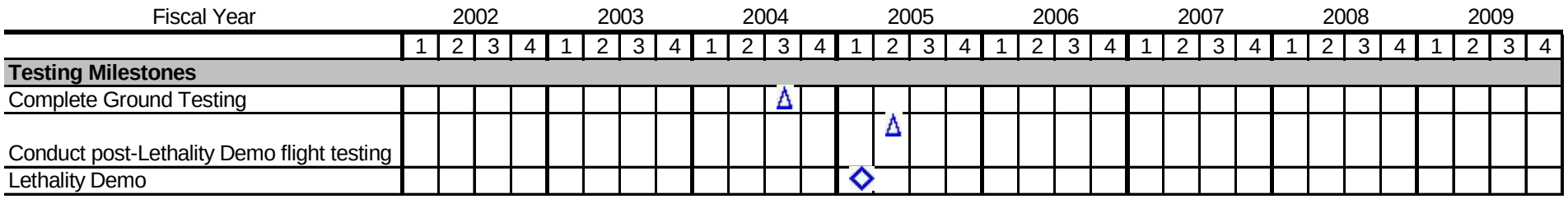
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		344500		149500			494000	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Complete Ground Testing			3Q					
Conduct post-Lethality Demo flight testing				2Q				
Lethality Demo				1Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0810 Airborne Laser (ABL) Block 2006	0	0	10000	85800	149500	78800	81400	55100
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

ABL Block 2006

This effort will evaluate the capabilities of the ABL Block 2004 Test Bed against the spectrum of threats, including those not originally specified in the ABL PDRR effort. It will also enhance and test the integration of the ABL Block 2004 aircraft into the BMDS by leveraging software and limited hardware changes.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2006			9600	53000
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Weapon System Development -- Start Block 2006 effort including enhancements to the capabilities of Block 2004 leveraging software and limited hardware changes. Candidate enhancements could include improvements in BMC4I, interoperability, pointing and tracking, and target engagement.

FY 2004 Planned Accomplishments:
-- Award first task order
-- Start design and software development of first task order for enhanced BMC4I capability.
-- Conduct down-select of additional enhancement options.

FY 2005 Planned Accomplishments:
-- Conduct demonstrations of enhanced BMC4I capabilities in ground test facility.
-- Award additional enhancement tasks.
-- Conduct design and test of additional enhancements.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2006 AVIT				22000
RDT&E Articles (Quantity)				

FY 2005 Planned Program:
Contractor Integration and Test -- Begin evaluation of ABL Block 2004 Test Bed capabilities against the spectrum of threats and its integration into the BMDS. Begin integration of candidate capability/supportability/ deployability enhancements and fund Block 2004 post-development flight test operations and sustainment.

FY 2005 Planned Accomplishments:
-- Award task order for and conduct post-development flight testing and aircraft sustainment.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Activities			400	10800
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Continue test activities at Edwards AFB and acquire advisory and assistance services. Continue government operations and support for labor, training, travel, and equipment.

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

D. Acquisition Strategy

The Airborne Laser 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 Airborne Laser entered into a program definition and risk reduction contract in November 1996. Development, integration, and testing will continue in FY 2004. The program plan is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. This capability-based program takes a spiral development approach towards fielding an ABL system. It leverages the use of two test aircraft (Block 2004 and Block 2008) and a ground-based test facility ("Iron Bird"). The approach takes advantage of producing a line of ABLs that systematically and incrementally adds more capability as technology matures. This strategy produces ABL Block 2004, ABL Block 2006, and ABL Block 2008 capabilities during the development phase. ABL Block 2004 and the "Iron Bird" will integrate and test key technologies, allowing improved capabilities and integration of maturing technologies in ABL Block 2008. ABL Block 2006 will evaluate the capabilities of the ABL Block 2004 Test Bed against the spectrum of threats and enhance and test its integration into the BMDS by leveraging software and limited hardware changes.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2006												
ABL Block 2006 Contract	SS/Other	Boeing Defense & Space Group/Seattle, WA				9600	1Q	75000	1/4Q		84600	
Subtotal Product Development			0	0		9600		75000			84600	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				150	1/4Q	250	1/4Q		400	
Government and Other Support	Various	Various/Various				250	1/4Q	550	1/4Q		800	
Subtotal Support Costs			0	0		400		800			1200	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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						10000	1/4Q		10000	
Subtotal Test and Evaluation			0	0		0		10000			10000	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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		10000		85800			95800	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Fiscal Year	2002				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	1	2	3	4
Testing Milestones																																
Award task order for continued Block 2004 flt test															△																	
Acquisition Milestones																																
Award First Task Order									△																							
Conduct demos of enhanced BMC4I capability																△																
Start Design of enhanced BMC4I capability									△																							

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Award task order for continued Block 2004 flight test				3Q				
Acquisition Milestones								
Award First Task Order			1Q					
Conduct demos of enhanced BMC4I capability				4Q				
Start Design of enhanced BMC4I capability			1Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0910 Airborne Laser (ABL) Block 2008	0	0	255535	402168	582462	561417	366217	267352
RDT&E Articles Qty	0	0	0	1	0	0	0	0

A. Mission Description and Budget Item Justification

ABL Block 2008

This effort continues the development of the Air-Based Boost Defense capability consistent with BMDS needs. It will include maturation to a second test ABL aircraft that includes new technologies, with enhanced lethality, and additional operational suitability.

RDT&E Articles:
The commercial "green" 747-400 aircraft will be delivered in FY 2005.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
ABL Block 2008			139735	213468
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Weapon System Development -- Continue ABL Block 2008 contract effort for design, fabrication, integration, and testing the second ABL test aircraft.

FY 2002 Accomplishment:
-- This project is a continuation of the ABL Block 2008 effort described under Project 4030. Please refer to FY 2002 ABL Block 2008 accomplishment listed under Project 4030.

FY 2003 Planned Accomplishments:
-- This project is a continuation of the ABL Block 2008 effort described under Project 4030. Please refer to FY 2003 ABL Block 2008 planned accomplishments listed under Project 4030.

FY 2004 Planned Accomplishments:
-- Complete ABL Block 2008 requirements analysis and allocation and conduct ABL Block 2008 System Requirements Review (SRR).
-- Complete ABL Block 2008 preliminary design and conduct ABL Block 2008 Preliminary Design Review (PDR).

FY 2005 Planned Accomplishments:
-- Continue engineering design and conduct ABL Block 2008 Critical Design Review (CDR).
-- Begin modification of commercial "green" 747-400 aircraft.
-- Begin fabrication of ABL components.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Infrastructure Improvement			14000	10000
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Continue procurement of long lead items (optics, etc) and sustains ABL-specific industrial base.

FY 2004 Planned Accomplishments:
-- Continue acquisition of long lead optics

FY 2005 Planned Accomplishments:
-- Take delivery of long lead optics

	FY 2002	FY 2003	FY 2004	FY 2005
Technology Insertion			10000	10000
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Develop promising technologies for incorporation in ABL Block 2008 or future ABL blocks.

FY 2004 Planned Accomplishments:
-- Down select technologies for incorporation into the ABL Block 2008 technical baseline.

FY 2005 Planned Accomplishments:
-- Down select technologies for incorporation into the ABL Block 2008 technical baseline.

	FY 2002	FY 2003	FY 2004	FY 2005
Iron Bird			50000	50000
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Continue design and development of system-level ground test facility, also referred to as the "Iron Bird."

FY 2004 Planned Accomplishments:
-- Conduct transition from system integration laboratory (SIL) to the "Iron Bird".

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

FY 2005 Planned Accomplishments:
-- Conduct ABL Block 2008 risk reduction activities in "Iron Bird".

	FY 2002	FY 2003	FY 2004	FY 2005
Commercial 747-400 Acquisition			40000	100000
RDT&E Articles (Quantity)				1

FY 2004/2005 Planned Program:
Continue payments for commercial "green" 747-400 aircraft.

FY 2004 Planned Accomplishments:
-- Continue payments for commercial "green" 747-400 aircraft.

FY 2005 Planned Accomplishments:
-- Take delivery commercial "green" 747-400 aircraft.

RDT&E Articles:
The commercial "green" 747-400 aircraft will be delivered in FY 2005.

	FY 2002	FY 2003	FY 2004	FY 2005
Government Activities			1800	18700
RDT&E Articles (Quantity)				

FY 2004/2005 Planned Program:
Continue advisory and assistance services and government operations and support for labor, training, travel, and equipment.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

D. Acquisition Strategy

The Airborne Laser 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 Airborne Laser entered into a program definition and risk reduction contract in November 1996. Development, integration, and testing will continue in FY 2004. The program plan is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. This capability-based program takes a spiral development approach towards fielding an ABL system. It leverages the use of two test aircraft (Block 2004 and Block 2008) and a ground-based test facility (Iron Bird). The approach takes advantage of producing a line of ABLs that systematically and incrementally adds more capability as technology matures. This strategy produces ABL Block 2004, ABL Block 2006, and ABL Block 2008 capabilities during the development phase. ABL Block 2004 and the "Iron Bird" will integrate and test key technologies, allowing improved capabilities and integration of maturing technologies in ABL Block 2008. ABL Block 2006 will evaluate the capabilities of the ABL Block 2004 Test Bed against the spectrum of threats and enhance and test its integration into the BMDS by leveraging software and limited hardware changes.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2008												
ABL Block 2008	SS/CPAF	Boeing Defense & Space Group/Seattle, WA				139735	1/4Q	213468	1/4Q	CONT.	353203	CONT.
Infrastructure Improvement												
Contract	SS/Other	Various/Various				14000	1/4Q	10000	1/4Q	CONT.	24000	CONT.
Technology Insertion												
Contract	SS/Various	Various/Various				10000	1/4Q	10000	1/4Q	CONT.	20000	CONT.
Iron Bird												
Contract	SS/CPAF	Boeing Defense & Space Group/Seattle, WA				50000	1/4Q	50000	1/4Q	CONT.	100000	CONT.
Commercial 747-400 Acquisition												
Contract	SS/FFP	Boeing Commercial A/C Group/Seattle, WA				40000	1/4Q	100000	1/4Q		140000	
Subtotal Product Development			0	0		253735		383468			637203	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				500	1/4Q	7500	1/4Q	CONT.	8000	CONT.
Government and Other Support	Various	Various/Various				1300	1/4Q	11200	1/4Q	CONT.	12500	CONT.
Subtotal Support Costs			0	0		1800		18700			20500	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

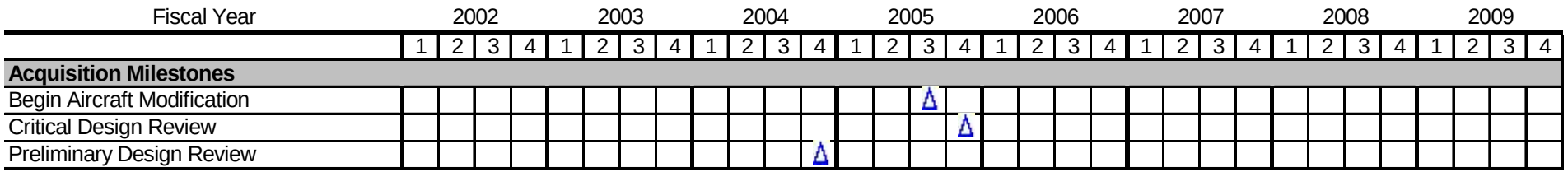
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		255535		402168			657703	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Acquisition Milestones								
Begin Aircraft Modification				3Q				
Critical Design Review				4Q				
Preliminary Design Review			4Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4020 Sea-Based Boost	30070	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 2008 Kinetic Energy (KE) boost phase capability. See Project 4010 for a comprehensive description of the FY 2003 planned program. In FY 2004 and beyond, funding for these projects will transition into the BMDS Interceptor Program Element (PE) - 0603886C, Projects 0913 and 0013. Below is a description of FY 2002 accomplishments for Projects 4020 and 4040.

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.

Creating a boost phase layer is fundamental to the MDA goal of a robust, integrated BMDS. By Block 2008, the MDA plans to develop and demonstrate, through flight-testing in the BMDS Test Bed, a mobile, ground-based boost phase capability that uses hit-to-kill technology. Based on the interceptor's dynamic performance, its initial capability may be extended into the ascent and midcourse phases. MDA will test the Block 2008 interceptor to demonstrate its potential application. This capability will evolve in subsequent Blocks to integrate with other launch platforms (e.g. sea-based) and fill capability shortfalls in the overall BMDS architecture. Throughout its development, the Block 2008 capability will rely heavily on existing hardware and proven technology.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2008	30070			
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:
o Completed concept definition and assessment work to define high payoff interceptor concepts and basing modes.
o Conducted multiple risk reduction experiments demonstrating the critical boost phase functionality.
o Targets of opportunity testing demonstrated the feasibility of critical boost phase components, e.g., tracking capabilities and sensor integration, and provided valuable phenomenological data.
o Initiated cooperative concept definition and assessment efforts with the MDA National Team to provide a foundation for future component development.

C. Other Program Funding Summary

	FY 2002	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	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment			
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
Experiment Component Devpt.	CPAF	Lockheed Martin/ Moorestown, NJ	6100								6100	
Experiment Component Design	CPAF	Raytheon/Tucson, AZ	10804								10804	
Component Risk Reduction	Various	Various	1900								1900	
Concept Development Support	Various	Various	5515								5515	
Subtotal Product Development			24319	0		0		0			24319	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
Test & Evaluation	Other	SMDC/Huntsville, AL	1500								1500	
Subtotal Test and Evaluation			1500	0		0		0			1500	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
SETA/FFRDC	Various	Various	4251								4251	
Subtotal Management Services			4251	0		0		0			4251	
Remarks												
Project Total Cost			30070	0		0		0			30070	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Fiscal Year	2002				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	1	2	3	4
Program Milestones																																
a. Issue Broad Agency Announcements (BAA)		▲																														
b. Concept Assessment Complete				▲																												

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Program Milestones								
a. Issue Broad Agency Announcements (BAA)	2Q							
b. Concept Assessment Complete	4Q							

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4040 Space-Based Boost	23779	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

In FY 2003 MDA combines funds under Projects 4020 and 4040 to develop the Block 2008 boost phase capability. See Project 4020 for the combined KE Boost project accomplishments and description for FY 2002. For FY 2003 planned program detail, see Project 4010.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2008	23779			
RDT&E Articles (Quantity)				

In FY 2003 MDA combines funds under Projects 4020 and 4040 to develop the Block 2008 boost phase capability. See Project 4020 for the combined KE Boost project accomplishments and description in FY 2002. For FY 2003 planned program detail, see Project 4010.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
Experiment Component Devpt.	SS/CPFF	Boeing/Canoga Pk., CA	5500								5500	
Experiment Component Design	SS/CPAF	Raytheon/Tucson, AZ	842								842	
Component Risk Reduction	Various	Various	785								785	
Concept Development Support	Various	Various	13652								13652	
Subtotal Product Development			20779	0		0		0			20779	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
SETA/FFRDC	Various	Various	3000								3000	
Subtotal Management Services			3000	0		0		0			3000	
Remarks												
Project Total Cost			23779	0		0		0			23779	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Fiscal Year	2002				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	1	2	3	4
Program Milestones																																
a. Issue Broad Agency Announcements (BAA)		▲																														
b. Concept Assessment Complete				▲																												

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Program Milestones								
a. Issue Broad Agency Announcements (BAA)	2Q							
b. Concept Assessment Complete	4Q							

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4010 Kinetic Energy Boost	0	91506	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 2008 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 0913 and 0013.

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.

Creating a boost phase layer is fundamental to the MDA goal of a robust, integrated BMDS. By Block 2008, the MDA plans to develop and demonstrate, through flight-testing in the BMDS Test Bed, a mobile, ground-based boost phase capability that uses hit-to-kill technology. Based on the interceptor's dynamic performance, its initial capability may be extended into the ascent and midcourse phases. MDA will test the Block 2008 interceptor to demonstrate its potential application. This capability will evolve in subsequent Blocks to integrate with other launch platforms (e.g. sea-based) and fill capability shortfalls in the overall BMDS architecture. Throughout its development, the Block 2008 capability will rely heavily on existing hardware and proven technology.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2008		91506		
RDT&E Articles (Quantity)				

FY 2002 accomplishments are described in Projects 4020 and 4040. For completeness, these descriptions are repeated below.

FY 2002 Accomplishments:

o Completed concept definition and assessment work to define high payoff interceptor concepts and basing modes.
o Conducted multiple risk reduction experiments demonstrating the critical boost phase functionality.
o Targets of opportunity testing demonstrated the feasibility of critical boost phase components, e.g., tracking capabilities and sensor integration, and provided valuable phenomenological data.
o Initiated cooperative concept definition and assessment efforts with the MDA National Team to provide a foundation for future component development.

FY 2003 Planned Program:

o Award multiple concept design contracts for a down-select to one capability developer in FY 2004 for development of the Block 2008 capability.
o Commence Near-Field InfraRed Experiment (NFIRE) development to collect near-field plume and hardbody data from several targets of opportunity and a dedicated target. MDA will use this data to develop homing algorithms for boost phase endgame, model development, and verification. The NFIRE satellite payload will carry a suite of sensors that will collect data across a broad electromagnetic spectrum from long-wave infrared to visible. In addition, critical data will be collected for early launch detection, sensor tracking, and characterizing the earth background.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

o Integrate and test the Generation 2 kill vehicle (KV) in preparation for a FY 2004 hover test and integration into the near-field experiment 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.
o Continue KE Boost Test Bed development throughout FY 2003.
o Conduct real-time fire control/command and control, battle management, and communications (C2BMC) exercises and simulated engagements using space launch and ballistic missile targets of opportunity.
o Using ground-based and air-based sensors, collect boost/ascent phase data on targets of opportunity to support Block 2008 capability development.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

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 limited KE Boost layer to the BMDS Block 2008 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, multiple Block 2008 concept design contracts will be 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.)

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
Ground Based	C/Various	TBD		30000	3Q					CONT.	30000	CONT.
Sensor Integration	MIPR	SBIRS SPO/Los Angeles AFB,CA		2065	1/2Q					CONT.	2065	CONT.
Subtotal Product Development			0	32065		0		0			32065	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
SETA	Various	Various		5086	1/3Q					CONT.	5086	CONT.
Capability Engineering	MIPR	NSWC/DD /Dahlgren, VA		1250	1/2Q					CONT.	1250	CONT.
Subtotal Support Costs			0	6336		0		0			6336	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
Test Planning & Execution	Other	SMDC/Huntsville, AL		2000	1/2Q					CONT.	2000	CONT.
Test Planning & Execution	MIPR	NSWC/PHD/Port Hueneme, CA		3205	1/2Q					CONT.	3205	CONT.
Test Bed Development & Test	MIPR	SMDC/Hunstville, AL		1600	1/2Q					CONT.	1600	CONT.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

Test Bed Development & Test	MIPR	AFRL/Kirtland AFB, NM		2100	1/2Q					CONT.	2100	CONT.
Boost Kill Vehicle	Other	Raytheon and Navy EA/Tucson, AZ		12100	1/2Q					CONT.	12100	CONT.
Boost Kill Vehicle	Other	AFRL/Kirtland AFB, NM		2500	1/2Q					CONT.	2500	CONT.
Near Field Infrared Experiment	Other	SMC Det 12/Kirtland AFB, NM		7000	1/2Q					CONT.	7000	CONT.
Near Field Infrared Experiment		Spectrum Astro/Gilbert, AZ		15500	1/2Q					CONT.	15500	CONT.
Near Field Infrared Experiment	Other	AFRL/Kirtland AFB, NM		6000	1/2Q					CONT.	6000	CONT.
Near Field Infrared Experiment	Other	Raytheon and Navy EA/Tucson, AZ		600	1/2Q					CONT.	600	CONT.
Subtotal Test and Evaluation			0	52605		0		0			52605	

Remarks

IV. Management Services Cost ($ in Thousands)

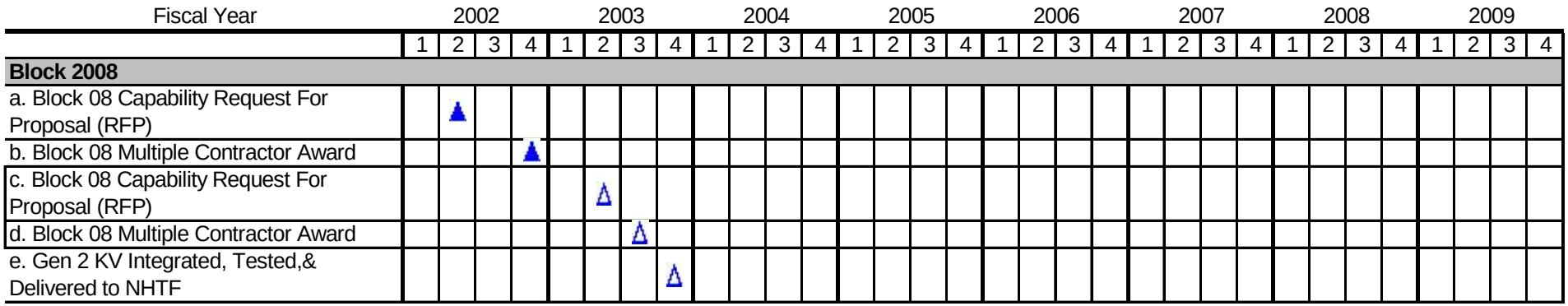
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2008												
FFRDC	MIPR	MIT/LL/Hanscom AFB,MA		100	1/2Q					CONT.	100	CONT.
FFRDC	Various	JHU/APL/Laurel, MD		400	1/2Q					CONT.	400	CONT.
Subtotal Management Services			0	500		0		0			500	

Remarks

Project Total Cost			0	91506		0		0			91506	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**



MDA Exhibit R-4A Schedule Detail	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603883C Ballistic Missile Defense Boost Defense Segment**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2008								
a. Issue Broad Agency Announcements (Proj. 4020)	2Q							
b. Concept Assessment Complete (Proj. 4020)	4Q							
c. Block 08 Capability Request For Proposal (RFP)		2Q						
d. Block 08 Multiple Contractor Award		3Q						
e. Gen 2 KV Integrated, Tested,& Delivered to NHTF		4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4043 Space Based Laser	46248	22856	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

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.

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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Space Based Laser	46248	22856		
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:

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.

Assembled and characterized the first diagnostic for making MHz frequency subaperture measurements on a high energy laser beam (MITS--MHz Intensity and Tilt Sensor).

Successfully made the first MHz frequency subaperture measurements on a high energy laser beam (Alpha test HL913) and demonstrated that the high temporal frequency subaperture 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.

Completed CDR on the Short Stack laser risk reduction Test Bed to validate the performance models used in the IFX laser design.

Completed testing of three Advanced Nozzle configurations for improved HF/HFOT/DF laser performance (SBL developed hardware, testing co-funded by JTO).

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

D. Acquisition Strategy

Space Based Laser 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	30000								30000	
Other	Various	Various	13404								13404	
Laser Technology Program	Various	Various		20570	2Q						20570	
Subtotal Product Development			43404	20570		0		0			63974	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	3444		2Q						3444	
Laser Technology Support	Various	Various		2286	2Q						2286	
Subtotal Support Costs			3444	2286		0		0			5730	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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			46848	22856		0		0			69704	

Remarks

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603883C Ballistic Missile Defense Boost Defense Segment**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
4090/0602 Program Operations	18172	18758	16229	16144	23201	25555	29492	31894
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 4090 and Fiscal Years 2004 and out are in Project 0602.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	4492	4500	7132	5311
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603883C Ballistic Missile Defense Boost Defense Segment

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	9405	6592	7183	7470
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	555	3474	1914	3363
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
IM/IT Operations	3720	4192	0	0
RDT&E Articles (Quantity)				

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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603883C Ballistic Missile Defense Boost Defense Segment**

PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	312973	350436	438242	562752	706514	1043454	1152740	1261906
5041 Space-Based Infrared System (SBIRS) Low/Space Tracking and Surveillance System (STSS)	234076	286331	0	0	0	0	0	0
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	0	275904	284950	285358	203972	75091	35070
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	0	0	81979	177486	88650
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	0	24291	44065	232096	565071	749927	1064774
5049/0403 Russian-American Observation Satellite Program (RAMOS)	50903	48998	29623	77358	39090	35134	24380	24354
0811 Ballistic Missile Defense Radars Block 2006	0	0	101000	144947	133883	0	0	0
0911 Ballistic Missile Defense System Radars Block 2008	0	0	0	0	0	136144	102493	22211
5060 Test & Evaluation	13806	4872	0	0	0	0	0	0
5090/0602 Program Operations	14188	10235	7424	11432	16087	21154	23363	26847

A. Mission Description and Budget Item Justification

Note: The STSS has been broken into three STSS capability blocks (STSS Block 2006 -- Project 0812, STSS Block 2008 -- Project 0912, and STSS Block 2010 -- Project 0012). Two of the other projects in this PE are not block specific, but have undergone project code changes. RAMOS (Project 5049) has been changed to Project 0403. Program Operations (Project 5090) has been changed to Project 0602. The BMDS Radars project is a new initiative starting in FY 2004. BMDS Radar has been broken into two BMDS Radar capability blocks (BMDS Radar Block 2006 -- Project 0811 and BMDS Radar Block 2008 -- Project 0911). The Test and Evaluation (Project 5060) activity beginning in FY 2004 is described in PE 0603888C.

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 build on and be integrated with the predecessor blocks. 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 flight phases-Boost, Midcourse, and Terminal-using multiple basing modes and phenomenology.

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.

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 Space Tracking and Surveillance System (STSS) (having been renamed during FY 2003 from Space Based Infrared System Low (SBIRS Low)), Russian-American Observation Satellites (RAMOS), BMDS Radar, and related sensor initiatives. The efforts in this Sensors Program Element have been structured to leverage existing sensors, define sensor upgrade requirements and take advantage of uses previously prohibited by the ABM Treaty to evolve a network of sensors at the BMDS level to detect, track, and discriminate ballistic missile threats; to control interceptors; and to support kill assessment and re-targeting. 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 to improve sensor performance and increase flexibility and survivability.

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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Consistent with the MDA block management framework, the STSS has been broken into three STSS capability blocks (STSS Block 2006 -- Project 0812, STSS Block 2008 -- Project 0912, and STSS Block 2010 -- Project 0012.

The STSS project (formerly SBIRS Low) is expected to provide global infrared (IR) tracking and discrimination data to the BMDS. The project will develop R&D satellites, ground station and processing infrastructure to detect missiles in boost phase and precisely track boosters and other objects in midcourse through intercept or reentry. STSS will provide data in support of closing the interceptor fire control loop. This substantial capability allows over-the-horizon fire control and tracking of missiles through all phases of missile flight: boost, midcourse and terminal. This space-based sensor capability, when the constellation is adequately populated and integrated into the C2BMC system, provides a global 24-hour, 7-day-a-week infrared sensor for the BMDS.

The Russian-American Observation Satellites (RAMOS) project is an innovative U.S. and Russian Federation space-based remote research and development program addressing ballistic missile defense related technologies. It engages Russian developers of early warning satellites in the joint definition and execution of aircraft and space experiments and provides a foundation for additional future cooperative activities. The RAMOS program will design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid-to-long wavelength infrared bands. Current plans call for Russia to provide the launch capability, satellite platforms, ultraviolet sensors and visible cameras, and the ground processing and control equipment while the U.S. will provide the infrared sensors and visible pushbroom cameras. The satellites are scheduled for launch in FY 2007-08 with a nominal two-year on-orbit life expectancy and goal to extend the mission an additional five years.

The BMDS Radar project will significantly enhance BMDS effectiveness by expanding the battlespace. The BMDS Radar is envisioned to be a Family of Radars (FOR) that will have both land and sea based components. The BMDS FOR will provide early detection, tracking, and discrimination of threat missiles, providing precise data to the BMDS sensor network. The BMDS Radar project will begin by validating the concept of forward basing and sensor layering and on evaluating advanced algorithms using existing assets (MDA and non-MDA) to the maximum extent practical. In parallel, it will define possible improvements or modifications to both MDA and non-MDA owned sensors, and will define and procure additional Radar configurations as needed to support the integrated BMDS. Current plans call for the BMDS Family of Radars Configuration Element I (FORCE I) to be available in late CY 2006 to support initial defensive operations. Evolving radar configurations will use advanced algorithms and provide enhanced capabilities to support the BMDS. The BMDS FOR initiative beginning in FY 2006 will provide for continued sensor research to improve the capabilities and develop advanced algorithms for a BMDS FORCE baseline configuration(s) for Block 2008 and beyond.

Test and Evaluation (T&E) project funding included developing an advanced radar technology Test Bed and proving out leap-ahead technologies and the T&E activity was transferred to PE 0603888C.

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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	335338	373447	489181	1145680
Current President's Budget (FY 2004 PB)	312973	350436	438242	562752
Total Adjustments	-22365	-23011	-50939	-582928
Congressional Specific Program Adjustments	0	-14000	0	0
Congressional Undistributed Adjustments	-2544	-6169	0	0
Reprogrammings	-12768	-2842	-50939	-582928
SBIR/STTR Transfer	-7053	0	0	0

The FY 2002 Sensors Program Element budget request in the FY 2003 budget compared to the FY 2004 budget showed a reduction of $22,365,000. This resulted from a reduction of $2,544,000 based on Congressional Undistributed Adjustments; a reduction of $7,053,000 based on a transfer to the Small Business Innovative Research Program; and a reprogramming of $12,768,000 based on reprogramming that was consistent with priorities.

The FY 2003 Sensors Program Element budget request in the FY 2003 budget compared to the FY 2004 budget showed a reduction of $23,011,000. This resulted from a reduction of $6,169,000 based on Congressional Undistributed Adjustments; and a reduction of $14,000,000 based on the Congressional Specified Program Adjustments and a reduction of $2,842,000 based on reprogramming that is consistent with priorities.

The FY 2004 Sensors Program Element budget request in the FY 2003 budget compared to the FY 2004 budget showed a reduction of $50,939,000. This resulted from a reprogramming of $50,939,000 based on a restructuring in FY 2002 of STSS and RAMOS and the initiation of BMDS Radar project.

The FY 2005 Sensors Program Element budget request in the FY 2003 budget compared to the FY 2004 budget showed a reduction of $582,928,000. This resulted from a reprogramming of $582,928,000 based on a restructuring in FY 2002 of STSS and RAMOS, the initiation of BMDS Radar project and reprogramming that is consistent with priorities.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5041 Space-Based Infrared System (SBIRS) Low/Space Tracking and Surveillance System (STSS)	234076	286331	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The FY 2002 and 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.

SBIRS Low (renamed STSS in December 2002) 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.

In FY 2002, the SBIRS Low element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRS Low Program Definition and Risk Reduction (PDRR) effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRS Low design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks as follows:

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. Current plan is for these two satellites to be launched on a single Delta II launch vehicle in the FY 2007 timeframe. Key activities in the 2002-2003 timeframe include 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, Airborne Surveillance Test Bed (AST) 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 2002-2003 timeframe demonstrates functionality in key BMDS tests such as IFT-10 and IFT-14. FY 2004 and beyond activity is described in Project 0812.

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.

The Block 2010 STSS builds upon the lessons learned from previous development efforts from the PDRR program, Block 2006 and 2008 STSS. Currently Block 2010 is planned to consist of improved sensors, the first common satellite bus and upgraded ground station and software. The common bus will be the baseline for all follow-on satellites, and will be made available as a platform for other government sensors. FY 2003 activity with the Missile Defense National Team (MDNT) will define the composition of this next generation satellite and ground station capability. FY 2004 and beyond activity, including contract award is described in Project 0012.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2006	55071	231770		
RDT&E Articles (Quantity)				

FY 2002 accomplishments:
- Pursued ground-based data fusion processing with surrogate sensors in the Block 2004 Test Bed.
- Conducted surrogate sensor data collection such as the AF Maui Optical Station (AMOS) telescope, the Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft.
- Conducted Near Real Time Demonstrations in conjunction with Integrated Flight Tests (IFTs).
- Continued integration with the Ballistic Missile Defense System (BMDS) Test Bed.
- Awarded new contract to implement the capability-based, spiral-development approach.

FY 2003 activities:
- Continue surrogate sensor data collection such as the AF Maui Optical Station (AMOS) telescope, the Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft.
- Continue Near Real Time Demonstrations in conjunction with IFTs.
- Continue further integration with the BMDS Test Bed.
- Conduct full inventory and check-out of Flight Demonstration System hardware required for Block 2006.
- Perform analysis of the benefits of including an improved acquisition sensor on second satellite.
- Conduct Delta System Definition Review (SDR).
- Conduct Delta Preliminary Design Review (PDR).

FY 2004 and 2005 plans are described in Project 0812.

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2010	9162	54561		
RDT&E Articles (Quantity)				

FY 2002 activities:
- Accomplished other risk reduction.*

FY 2003 activities:
- Determine composition of Block 2010 program through interaction with the Missile Defense National Team (MDNT).
- Develop Request for Proposal (RFP) for Block 2010 work in mid to late FY 2003.
- Initial Review of Block 2010 design options.
- Continue other risk reduction efforts.*

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**

* 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.

FY 2004 and 2005 plans are described in Project 0012.

	FY 2002	FY 2003	FY 2004	FY 2005
PDRR Effort	169843			
RDT&E Articles (Quantity)				

FY 2002 accomplishments:
- Completed software development process improvements identified by the software development capability evaluation.
- Conducted component and system preliminary design audits. (preparation for system PDR under the old acquisition strategy)
- Completed critical system performance capability demonstrations.
- Continued risk reduction efforts.
- Closed out PDRR contracts at the end of FY 2002.

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

D. Acquisition Strategy

SBIRS Low/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.

In FY 2002, the SBIRS Low/STSS program was restructured, resulting in a new acquisition strategy.

The STSS effort is now 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. Additional options or new contracts will be awarded to the NGST team to accomplish future work on Block 2010. Such award(s) are planned for the first quarter FY 2004. Prior to the formation of the new NGST team, the Program Definition and Risk Reduction effort included a competition between the TRW, now NGST, and Spectrum Astro with Raytheon and Northrup Grumman Electronic Systems (NGES) as the respective payload subcontractors. In order to reduce the risk of the restructured program, a main component of the Block 2010 strategy is to maintain competition at the sensor payload level. This competition between Raytheon and NGES will be continued, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

MDA Exhibit R-2A RDT&E Project Justification	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**

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.

The current strategy is a marked change from the acquisition strategy in place at the beginning of FY 2002 in which TRW/Raytheon and Spectrum Astro/NGES pursued separate competing designs under separate PDRR contracts.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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	TRW/CA	16457	190456							206913	
PDRR Effort												
PDRR Contract	C/FFP	TRW/CA	81843								81843	
PDRR Contract	C/FFP	SpectrumAstro/AZ	88000								88000	
Block 2010												
Capability Based R&D Contract	SS/CPAF	TRW/CA		45644							45644	
Subtotal Product Development			186300	236100		0		0			422400	

Remarks

Funding transferred from USAF to MDA beginning in FY 2002.

Capability Based R&D Contract is a multi-year contract covering the testing, integration, and on-orbit operations of 2 Block 2006 satellites and the initial portion (FY 2003) of the Block 2010 effort. Operations continue through Block 2008.

This contract continues in Project 0812 and 0912.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	7227	7257							14484	
Program Definition Support	Various	Various	8936	10010							18946	
SBIRS Low Surrogate Test Bed	Various	Various	3872	5247							9119	
Block 2010												
Risk Reduction	Various	Various	9162	8917							18079	
PDRR Effort												
Subtotal Support Costs			29197	31431		0		0			60628	

Remarks

Program support and program definition support costs have been allocated to Block 2006, as this is the major activity, in this timeframe.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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)

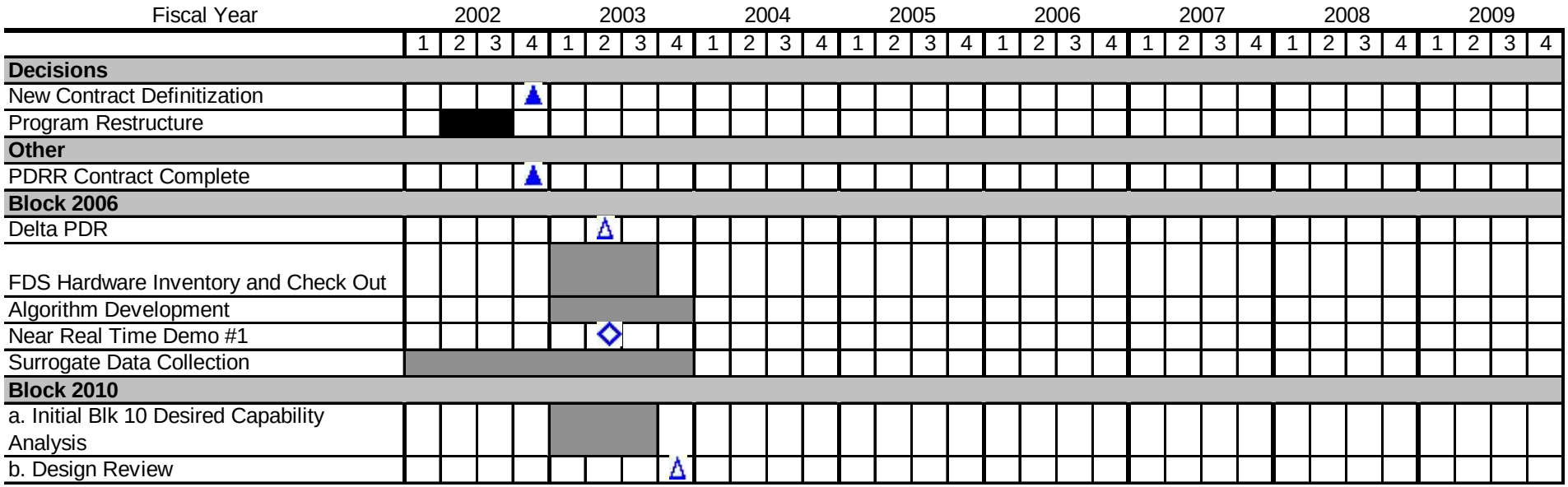
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006												
FFRDC	FFRDC	AEROSPACE/CA	18579	18800		0		0			37379	CONT.
Subtotal Management Services			18579	18800		0		0			37379	

Remarks

Project Total Cost			234076	286331		0		0			520407	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Decisions								
New Contract Definitization	4Q							
Program Restructure	2Q-3Q							
Other								
PDRR Contract Complete	4Q							
Block 2006								
Delta PDR		2Q						
FDS Hardware Inventory and Check Out		1Q-3Q						
Algorithm Development		1Q-4Q						
Near Real Time Demo #1		2Q						
Surrogate Data Collection	1Q-4Q	1Q-4Q						
Block 2010								
a. Initial Blk 10 Desired Capability Analysis		1Q-3Q						
b. Design Review		4Q						

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	0	275904	284950	285358	203972	75091	35070
RDT&E Articles Qty	0	0	0	0	0	2	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 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. This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks.

SBIRS Low (renamed STSS in December 2002) 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.

In FY 2002, the SBIRS Low element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRS Low Program Definition and Risk Reduction (PDRR) effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRS Low design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

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, and ground station and software to support communication of data from these satellites to the BMDS. Current plan is for these two satellites to be launched on a single Delta II launch vehicle in FY 2007. Key activities in the 2002-2003 timeframe include initiation of a new single contract for the Block 2006 program, hardware checkout and initial testing. FY 2004 and beyond activity is described in this Project.

The Block 2006 STSS provides for the integration, ground testing, launch and initial testing of two space vehicles built from largely existing Flight Demonstration System (FDS) legacy components. These satellites will function as part of the BMD Block 2006 Test Bed. Project 0812 also develops the ground segment and software algorithms required to operate and process data from the Block 2006 satellites with growth path to the ground system required for an expanding constellation of R&D satellites developed over subsequent blocks.

The Block 2006 STSS provides the BMDS Test Bed a space node and provides the proof-of-concept for key STSS functionality including stereo data fusion, cueing radars over the horizon and providing interceptor handovers. All on-orbit testing with ballistic missile targets will be orchestrated to allow BMDS participation. The budget includes launch services for the 2 Block 2006 satellites launched on a single Delta II launch vehicle.

The Block 2006 program will develop, launch and conduct initial testing of two satellites with visible and infrared sensor suites for use in the BMDS Block 2006 Test Bed. These two satellites will provide valuable risk reduction and concept demonstration information about acquisition, tracking and discrimination performance including an assessment of the STSS contribution to over-the-horizon fire control of BMDS interceptors. Program support and program definition support through the end of FY 2007 have been attributed to Block 2006. 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, Airborne Surveillance Test Bed (AST) 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Space			128310	133000
RDT&E Articles (Quantity)				

FY 2004 Plans:

- Complete Track Sensor Assembly Integration and Test (AI&T).
- Conduct Delta PDR and Reactivation Review.
- Conduct Delta CDR.
- Complete Payload Software Build 2.
- Complete Closed Loop testing of Sensor Payload Software.

FY 2005 Plans:

- Complete Payload Software Build 3.
- Conduct System Compatibility Tests (Payload and Satellite Bus).
- Initiate Space Vehicle Integration.

	FY 2002	FY 2003	FY 2004	FY 2005
Ground			50075	20000
RDT&E Articles (Quantity)				

FY 2004 Plans:

- Mature Ground System Design.
- Initiate Satellite Operation Training Plan.

FY 2005 Plans:

- Ground Hardware Integration.
- Conduct Initial Crew Training.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

	FY 2002	FY 2003	FY 2004	FY 2005
Other				10000
RDT&E Articles (Quantity)				

FY 2005 Plans:

- Initial funding for targets for Block 2006 satellite testing.

	FY 2002	FY 2003	FY 2004	FY 2005
Gov`t			53335	74950
RDT&E Articles (Quantity)				

FY 2004 Plans:

- Develop connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS.
- First multi-sensor data fusion testing.
- Initial payment toward Launch Services for the 2 Block 2006 satellites.
- FFRDC and Program Office Support.
- Cycle and other support.

FY 2005 Plans:

- Continue developing connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS.
- Continued payment toward Launch Services for the 2 Block 2006 satellites.
- FFRDC and Program Office Support.
- Cycle and other support.

	FY 2002	FY 2003	FY 2004	FY 2005
SE/PM			44184	47000
RDT&E Articles (Quantity)				

FY 2004

- Perform ground test data analysis.
- Conduct initial System Compatibility Tests (Payload and Satellite Bus and Ground System).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

FY 2005

- Conduct System Compatibility Tests (Payload, Satellite Bus and Ground System).

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

SBIRS Low/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.

In FY 2002, the SBIRS Low/STSS program was restructured, resulting in a new acquisition strategy.

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 - the refurbishment, ground testing, launch and on-orbit testing of existing satellite hardware -- and the initial definition work on Block 2010 was awarded in fourth quarter FY 2002. Additional options or new contracts will be awarded to the NGST team to accomplish future work on Block 2010. Such award(s) are planned between the third quarter FY 2003 and the first quarter FY 2004. A key component of the Block 2010 strategy is competition at the sensor payload level. This competition will be between Raytheon and NGES, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

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.

The current strategy is a marked change from the acquisition strategy in place at the beginning of FY 2002 in which TRW/Raytheon and Spectrum Astro/Northrop Grumman pursued separate competing designs under separate PDRR contracts.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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				128310		133000			261310	
Ground												
Capability Based R&D Contract	SS/CPAF	NGST/CA				50075		20000			70075	
SE/PM												
Capability Based R&D Contract	SS/CPAF	NGST/CA				44184		47000			91184	
Other												
Target Acquisition								10000			10000	
Subtotal Product Development			0	0		222569		210000			432569	

Remarks

The Capability Based R&D contract was awarded in FY 2002. Prior year and FY 2003 costs are described in Project 5041.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Gov`t												
System Program Office Support	Various	Various/CA				11286		11484			22770	
Cycle Support	Various	Various/Various				22369		22802			45171	
Launch	MIPR	NASA/Various						20000			20000	
Other												
Subtotal Support Costs			0	0		33655		54286			87941	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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)

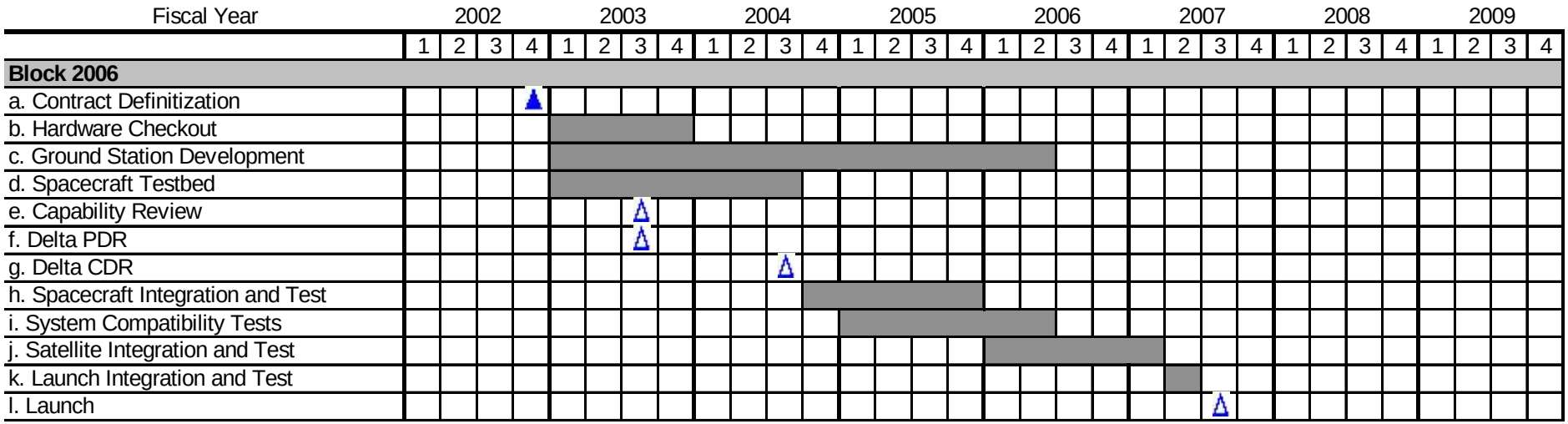
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Gov`t												
FFRDC	FFRDC	AEROSPACE/CA				19680		20664			40344	
Subtotal Management Services			0	0		19680		20664			40344	

Remarks

Project Total Cost			0	0		275904		284950			560854	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Note: FY 2002-2003 funded in Project 5041.

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2006								
a. Contract Definitization	4Q							
b. Hardware Checkout		1Q-4Q						
c. Ground Station Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q			
d. Spacecraft Test Bed		1Q-4Q	1Q-3Q					
e. Capability Review		3Q						
f. Delta PDR		3Q						
g. Delta CDR			3Q					
h. Spacecraft Integration and Test			4Q	1Q-4Q				
i. System Compatibility Tests				1Q-4Q	1Q-2Q			
j. Satellite Integration and Test					1Q-4Q	1Q		
k. Launch Integration and Test						2Q		
l. Launch						3Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	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	0	81979	177486	88650
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 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. This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks.

SBIRS Low (renamed STSS in December 2002) is an element of the BMDS. Through a spiral development process it will provides 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.

In FY 2002, the SBIRS Low element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRS Low PDRR effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRS Low design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

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 this project.

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, no funding or activity is planned in the FY 2004-2005 timeframe.

B. Accomplishments/Planned Program

As the Block 2008 is a refinement of the Block 2006 ground segment, no funding or activity is planned in the FY 2004-2005 timeframe.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

	FY 2002	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	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

D. Acquisition Strategy

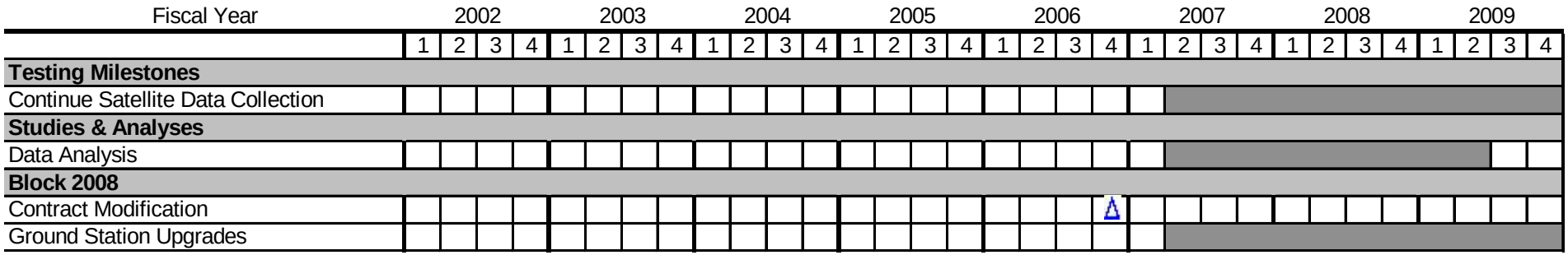
SBIRS Low/STSS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development and evolutionary acquisition through the use of two-year capability blocks.

In FY 2002, the SBIRS Low/STSS program was restructured, resulting in a new acquisition strategy.

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 10. Such award(s) are planned for the first quarter FY 2004. A key component of the Block 20 strategy is competition at the sensor payload level. This competition will be between Raytheon and Northrop Grumman, as subcontractors to TRW, Spectrum Astro plays a major role in Block 10 bus development and systems engineering.

Project 0912 activity is not included in the Block 06 contract. Work planned for the upgrades to the Block 06 ground configuration and software will be accomplished through modification to the Block 2006 contract. Based on the Block 2006 plan, such modification will likely take place in the FY 2006 timeframe.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Continue Satellite Data Collection						2Q-4Q	1Q-4Q	1Q-4Q
Studies & Analyses								
Data Analysis						2Q-4Q	1Q-4Q	1Q-2Q
Block 2008								
Contract Modification					4Q			
Ground Station Upgrades						2Q-4Q	1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	0	24291	44065	232096	565071	749927	1064774
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 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. This development activity provides progressive improvements in ground station and developmental satellites, aligned with the BMDS two-year capability Blocks.

SBIRS Low (renamed STSS in December 2002) 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.

In FY 2002, the SBIRS Low element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRS Low PDRR effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRS Low design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

The Block 2010 STSS builds upon the lessons learned from previous development efforts: the PDRR program and Block 2004, 2006 and 2008 STSS development activities. Block 2010 satellite composition will be determined through interaction with the MDNT, and is currently envisioned to consist of a satellite with improved sensors, the first common satellite bus, as well as the ground station and software. Likely features of this next generation of satellites include larger aperture track sensors, self-cueing acquisition sensors, increased vehicle lifetime, and increased near-real time data processing on-board the satellite. The budget includes launch services for the single Block 2010 satellite. The common bus will be the baseline for all follow-on satellites, and will be made available as a platform for other Government sensors. Funding is included in this PE for a spacecraft bus, space vehicle integration, launch services and operations for one host satellite in the FY11 timeframe.

FY 2003 activity with the MDNT will define the composition of this next generation satellite and ground station capability, leading to the creation of a Request For Proposal (RFP).

FY 2004 and beyond activity, including contract award is described in Project 0012.

Project 0012 is a continuation of the STSS program. FY 2002 and 2003 activity toward Block 2010 satellite and ground system are described in Project 5041.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Space			11874	32892
RDT&E Articles (Quantity)				

Planned FY 2004 activities:
- Award of contract for continued Block 2010 development, 4Q FY 2003 - 1Q FY 2004.
- Conduct payload studies and design work.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

- Continue contractor risk reduction efforts.

Planned FY 2005 activities:
- Continue payload studies and design work.
- Initiate spacecraft design.
- Continue contractor risk reduction efforts.

	FY 2002	FY 2003	FY 2004	FY 2005
Government			12417	11173
RDT&E Articles (Quantity)				

Planned FY 2004 Activities:
- Continue risk reduction efforts.*

Planned FY 2005 Activities
- Continue risk reduction efforts.*

*Risk reduction activities includes cryocoolers, batteries, radiation harden parts, phenomenology, optical filters, Midcourse Space Experiment (MSX) data reduction, contamination control, focal plane arrays {visible and long-wave} and survivability.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

SBIRS Low/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, Northup 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. Additional options or new contracts will be awarded to accomplish future work on Block 2010. Such award(s) are planned between the fourth quarter of FY 2003 and the first quarter of FY 2004. A key component of the Block 2010 strategy is competition at the sensor payload level. This competition will be between Raytheon and NGES, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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				11926	1Q	31618	1Q	CONT.	43544	TBD
Subtotal Product Development			0	0		11926		31618			43544	

Remarks

The Capability Based R&D contract was awarded in FY 2002. Prior year and FY 2003 costs are described in Project 5041.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Government												
Risk Reduction	Various	Various/Various				12365	1/4Q	12447	1/4Q	CONT.	24812	CONT.
Subtotal Support Costs			0	0		12365		12447			24812	

Remarks

The Capability Based R&D contract was awarded in FY 2002. Prior year and FY 2003 costs are described in Project 5041.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

IV. Management Services Cost ($ in Thousands)

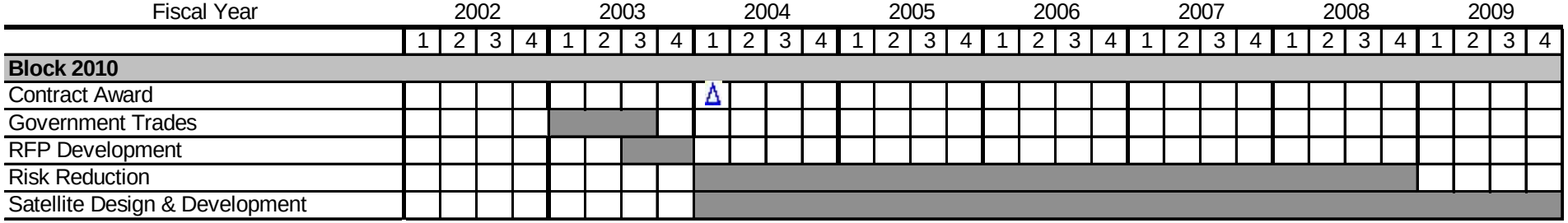
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		24291		44065			68356	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Note: FY 2003 activity funded in Project 5041.

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2010								
Contract Award			1Q					
Government Trades		1Q-3Q						
RFP Development		3Q-4Q						
Risk Reduction			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Satellite Design & Development			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5049/0403 Russian-American Observation Satellite Program (RAMOS)	50903	48998	29623	77358	39090	35134	24380	24354
RDT&E Articles Qty	0	0	0	0	0	0	2	0

A. Mission Description and Budget Item Justification

The Russian-American Observation Satellites (RAMOS) project, a Ballistic Missile Defense Sensors Mission Area Investment activity, is an innovative U.S. - Russian space-based remote sensor research and development program addressing ballistic missile defense and national security. This program engages Russian developers of early warning satellites in the joint definition and execution of aircraft and space experiments. The RAMOS program will design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid-to-long wavelength infrared bands. Preliminary experiments designed to support program definition occurred between 1995 and 1999 using existing U.S. and Russian space and aircraft platforms to collect imagery. The U.S. Midcourse Space Experiment and the Miniature Sensor Technology Integration satellites were used to collect nearly simultaneous stereo imagery with the Russian RESURS 01 satellite. Joint experiments using U.S. and Russian prototype sensors were flown aboard the U.S. Flying Infrared Signatures Technology Aircraft, demonstrating our ability to jointly plan, execute, and analyze RAMOS type experiments.

The RAMOS team began Program Design in the fall of 2000. The RAMOS project consists of two co-orbital satellites each with a sensor suite consisting of an infrared imaging radiometer, a visible wide-angle photometer, a visible camera and an ultraviolet radiometer. Current plans call for Russia to provide the launch capability, satellite platforms, and the ground processing and control equipment while the U.S. will provide the primary sensors (infrared and visible wide-angle photometer). The Russian side will also provide visible and ultra-violet cameras. The satellites are scheduled for launch in FY 2008 with a nominal two-year on-orbit life expectancy. Note that RAMOS is not an operational element of the overall Ballistic Missile Defense System (BMDS). It is a cooperative program with the Russian Federation on mutually beneficial research that is missile defense related and provides a foundation for future cooperative efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Design and Development	48903	35122	20023	17800
RDT&E Articles (Quantity)				

Key activities and goals include: conclude preliminary design and begin detailed design of the satellite sensors, payload support equipment, ground support equipment, and all associated projects to accomplish the space experiments; complete definition of ground facilities design sensor prototypes to be used during interface testing; begin writing sensor software; perform system engineering and configuration control processes; update risk mitigation plans and monitor design process; continue development of models and simulations to test the design and concepts, to include computer mass and mathematical models, orbit models of experiment simulations, and simulations to validate hardware and design trades; begin procurement of long-lead items.

	FY 2002	FY 2003	FY 2004	FY 2005
Fabrication, Assembly, and Test		3000	8800	56358
RDT&E Articles (Quantity)				

Key activities and goals include: fabrication of sensors, sensor prototypes, and payload engineering models; conduct component and subcomponent testing; finalize test plans and continue to perform quality assurance activities during sensor fabrication; conduct fabrication, assembly, and test of payload calibration system and ground facilities; and develop manufacturing plans and integration and test plans.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

	FY 2002	FY 2003	FY 2004	FY 2005
Launch and Mission Ops Planning	2000	4000	800	3200
RDT&E Articles (Quantity)				

Key activities and goals include: define launch vehicle interfaces; complete joint calibration plan; complete definition of ground facility, mission operations design, and operations concept; continue science experiments planning; develop concept for management, processing, storage, and analysis of experiment data.

	FY 2002	FY 2003	FY 2004	FY 2005
RAMOS Solar Arrays		6876		
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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

Russian-American Observation Satellites is a cooperative experiment program designed to engage the Russians in early warning and ballistic missile defense related technologies. The tasks to complete the design, fabrication, launch, and operations of the two-satellite constellation will be completed under three major contracts.

The first contract is with Utah State University/Space Dynamics Laboratory (USU/SDL), Logan, UT, a designated University Affiliated Research Center for space sensors. Space Dynamics Lab is the current U.S. prime contractor for RAMOS and has a prime/subcontractor relationship with the Russian State Company, Rosoboronexport, for Russian tasks. This contractual approach has been used for design and development of the RAMOS project through the critical design phase. After the critical design phase, Utah State University will remain as the prime U.S. contractor for primary sensor (infrared and visible pushbroom) development and fabrication as well as mission planning and data reduction.

The second contract will be a direct contract with the Russian State Company, Rosoboronexport. During FY 2003, Missile Defense Agency (MDA) plans to negotiate a government-to-government agreement with the Russian Federation to underpin the RAMOS program. Once this agreement is concluded, MDA will contract directly with Rosoboronexport for the Russian efforts. Under this contract, Rosoboronexport, through Russian subcontractors, will be responsible for the development and fabrication of the visible and ultraviolet cameras, satellite platforms, development and operation of the ground system in Moscow, and launch services for the two RAMOS satellites.

The third contract is with Ball Aerospace and Technologies Corporation (BATC) of Broomfield, CO. As the RAMOS Systems Engineering and Integration contractor for Missile Defense Agency, BATC will be primarily responsible for monitoring and assessing progress on the Russian effort and facilitating the integration of U.S. and Russian components. BATC will also support preparation of program documentation for technology protection and security and provide in country administrative, security and technical support of RAMOS Program Office.

RAMOS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes the achievement of stated system performance objectives through best U.S. and Russian space industry practices.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	33795	22422		7023	1Q	5900		CONT.	69140	CONT.
R.F. Hardware Development	SS/Other	Rosoboronexport, RF	27828	4500		7000	1Q	6900		CONT.	46228	CONT.
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/Broomfield, CO	16659	6000		5000		2000		CONT.	29659	CONT.
Fabrication, Assembly, and Test												
U.S. Hardware Development	SS/CPFF	Utah State Univ/ SDL/Logan, UT		3000		3800	1Q	24858		CONT.	31658	CONT.
R.F. Hardware Development	SS/FFP	Rosoboronexport/M oscow		0		4200	1Q	27500			31700	
Engineering and Integration Sp	C/CPAF	Ball Aerospace and Tech/Broomfield, CO		0		800		4000			4800	
Launch and Mission Ops Planning												
U.S. Hardware Development	SS/CPAF	Utah State Univ/ SDL/Logan, UT		1500		400	1Q	1100		CONT.	3000	CONT.
R.F. Hardware Development	SS/FFP	Rosoboronexport, RF		1500		200	1Q	1100		CONT.	2800	CONT.
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/Broomfield, CO		1000		200		1000		CONT.	2200	CONT.
RAMOS Solar Arrays												
Design and Development	SS/Other	Unisolar/Michigan		6876	2Q						6876	
Subtotal Product Development			78282	46798		28623		74358			228061	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Remarks

In FY 2001, this project was funded under Program Element 0603875C (International Cooperative Programs). Prior to FY 2001, funding for RAMOS was covered under several projects, including: 1161 Advanced Sensor Technology and 4000 Operational Support.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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/Hanscom AFB, MA	1181	2000		800		2800		CONT.	6781	
Subtotal Support Costs			1181	2000		800		2800			6781	

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.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	200	200		200		200		CONT.	800	CONT.
Subtotal Management Services			200	200		200		200			800	

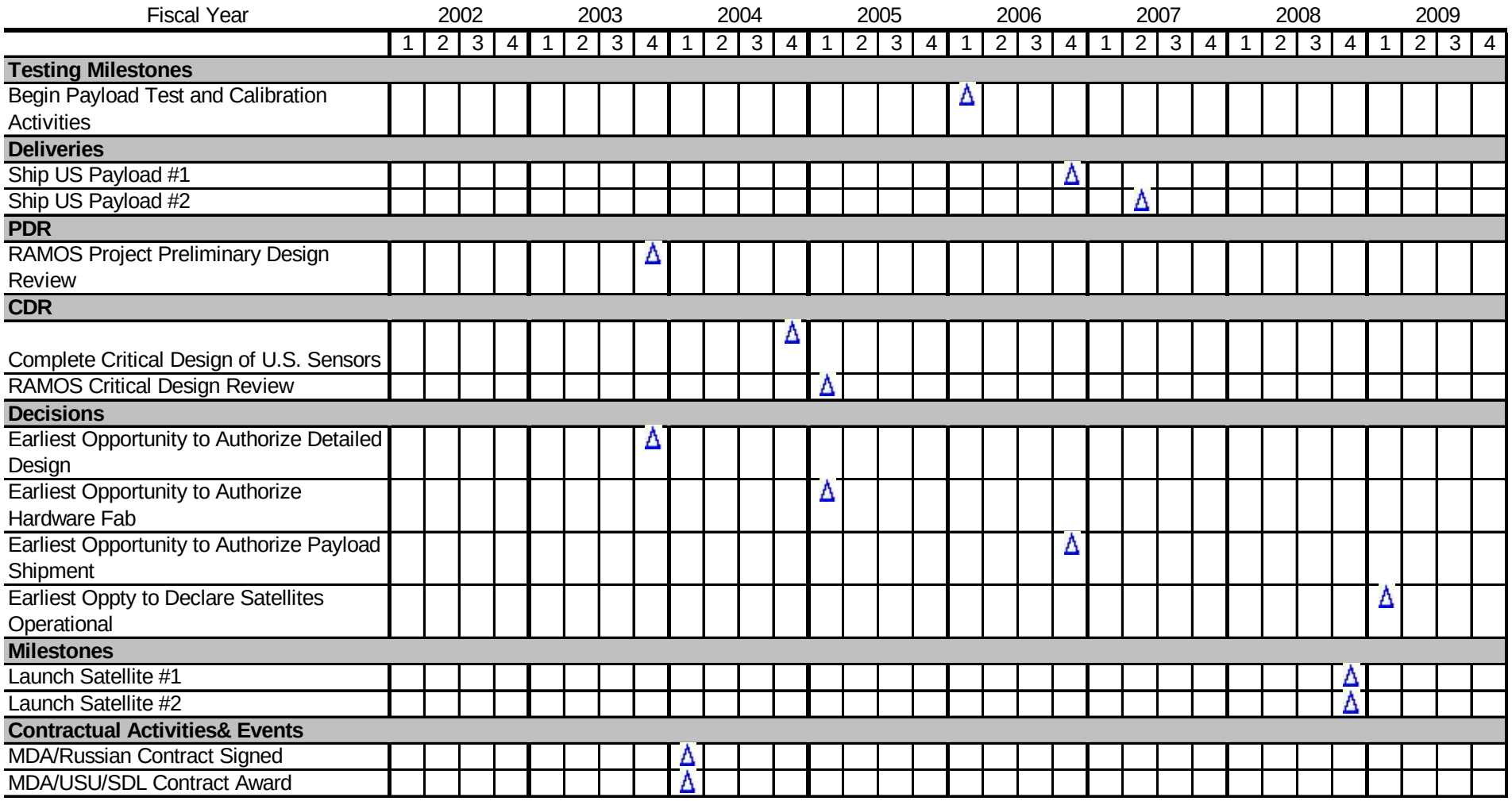
Remarks

Provide security monitoring (ITAR and TAA compliance) support services during US-RF technical interchange meetings in the United States and Russian Federation.

Project Total Cost			79663	48998		29623		77358			235642	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Begin Payload Test and Calibration Activities					1Q			
Deliveries								
Ship US Payload #1					4Q			
Ship US Payload #2						2Q		
PDR								
RAMOS Project Preliminary Design Review		4Q						
CDR								
Complete Critical Design of U.S. Sensors			4Q					
RAMOS Critical Design Review				1Q				
Decisions								
Earliest Opportunity to Authorize Detailed Design		4Q						
Earliest Opportunity to Authorize Hardware Fab				1Q				
Earliest Opportunity to Authorize Payload Shipment					4Q			
Earliest Oppty to Declare Satellites Operational								1Q
Milestones								
Launch Satellite #1							4Q	
Launch Satellite #2							4Q	
Contractual Activities& Events								
MDA/Russian Contract Signed			1Q					
MDA/USU/SDL Contract Award			1Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0811 Ballistic Missile Defense Radars Block 2006	0	0	101000	144947	133883	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Block 2006: BMDS Radar is a new Project, 0811, beginning in FY 2004. The objective of the BMDS Radar project is first to validate the concept of forward basing and BMDS Sensor layering and to assess and validate advanced algorithms. This effort will make use of existing radar configurations to the maximum extent practical. Second, it will provide a Family of Radars (FOR) that can be deployed to observe ballistic missiles early in their flight, providing precise track information for use by other elements of the BMD System.

The BMDS FOR is a transformational capability for the BMDS. When deployed, the BMDS FOR will provide for new missile defense concepts of operation that were unavailable under the ABM Treaty restrictions. The BMDS FOR broadens BMDS capability in the near future, adding robustness against a wide range of threats. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the BMDS FOR is planned to be based both on the ground and on mobile sea assets. The BMDS FOR will extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS, through mobile basing; to respond to unanticipated changes in the future geo-political environment; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system.

MDA plans to initiate development, test, and assessment of BMDS Radar algorithms starting in 2004, leveraging existing radars and technologies to the maximum extent practical, and to provide BMDS Radar by Block 2006, capable of supporting initial defensive operations. To support this development, MDA established a Sensors Directorate to oversee the concept validation of BMDS FOR and the acquisition of additional assets as required to achieve Block 2006 and following operational capabilities. Concept validation will include optimization of the capability of the current BMDS inventory of sensor assets. Family of Radars Configuration Element(s) (FORCE) will be deployed for Block 2006 with FOR configurations implementing spiral upgrades for Blocks 2008 and 2010.

MDA and OSD are exploring the potential synergy that could result by coordinating the BMDS FOR and the Cobra Judy Replacement acquisitions. A recommendation is expected by the fourth (4th) quarter of FY 2003, and acquisition strategies modified accordingly.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Capability Development			101000	144947
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:
- No activity in FY 2002

FY 2003 Planned Program:
FY 2003 Funding provided by Congressional earmarking of $10,000,000 out of Midcourse Program Element, PE 0603882C.

- Complete BMDS FOR project planning and initiate definition and acquisition strategy for Block 2006 FOR configuration(s).
- Finalize the BMDS FORCE I definition for concept validation.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

- Develop initial acquisition strategy and prepare acquisition package
- Release acquisition package and review and evaluate responses.
- Finalize Concept Validation (CV) plans for the initial set of algorithms.
- Initiate FORCE II requirements developments.

FY 2004 Planned Program:
- Award BMDS FORCE I contract(s)
- Define a BMDS sensor architecture.
- Conduct Design Reviews.
- Continue to evaluate tracking and discrimination algorithms.
- Develop test plans.
- Develop integration plan
- Complete definition and acquisition strategy for Block 2006 FOR configuration(s).
- Initiate definition and acquisition strategy for Block 2008 FOR configuration(s).

FY 2005 Planned Program:
- Deliver validated algorithms for BMDS FORCE I
- Conduct Design Reviews.
- Complete Basing Mode Integration Plan.
- Execute BMDS FOR C2BMC and platform integration efforts.
- Continue BMDS integration efforts.
- Complete definition and acquisition strategy for Block 2008 FOR configuration(s).
- Continue assessment of advanced algorithms.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

D. Acquisition Strategy

The BMDS 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 details of the BMDS FOR acquisition development strategy will be approved in FY 2003. The BMDS FOR project is envisioned to include a research and development program designed to provide Forward Based Radar concept validation and potential emergency capability through the use of existing or modified assets, while an operational radar is ready for deployment by Block 2006. Planning for spiral upgrades for Blocks 08 and 10 will proceed in parallel with the Block 2006 radar efforts.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Contractor(s)	C/CPIF	TBD				44000	1Q	88947	1Q	CONT.	132947	CONT.
Subtotal Product Development			0	0		44000		88947			132947	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
SETA/FFRDC	Various	Various				25000	1Q	32000	1Q	CONT.	57000	CONT.
Subtotal Support Costs			0	0		25000		32000			57000	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Concept Validation	C/Various	TBD				10000	1Q	12000	1Q	CONT.	22000	CONT.
Algorithm Test and Assessment	Various	TBD				22000	1Q	12000	1Q	CONT.	34000	CONT.
Subtotal Test and Evaluation			0	0		32000		24000			56000	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

IV. Management Services Cost ($ in Thousands)

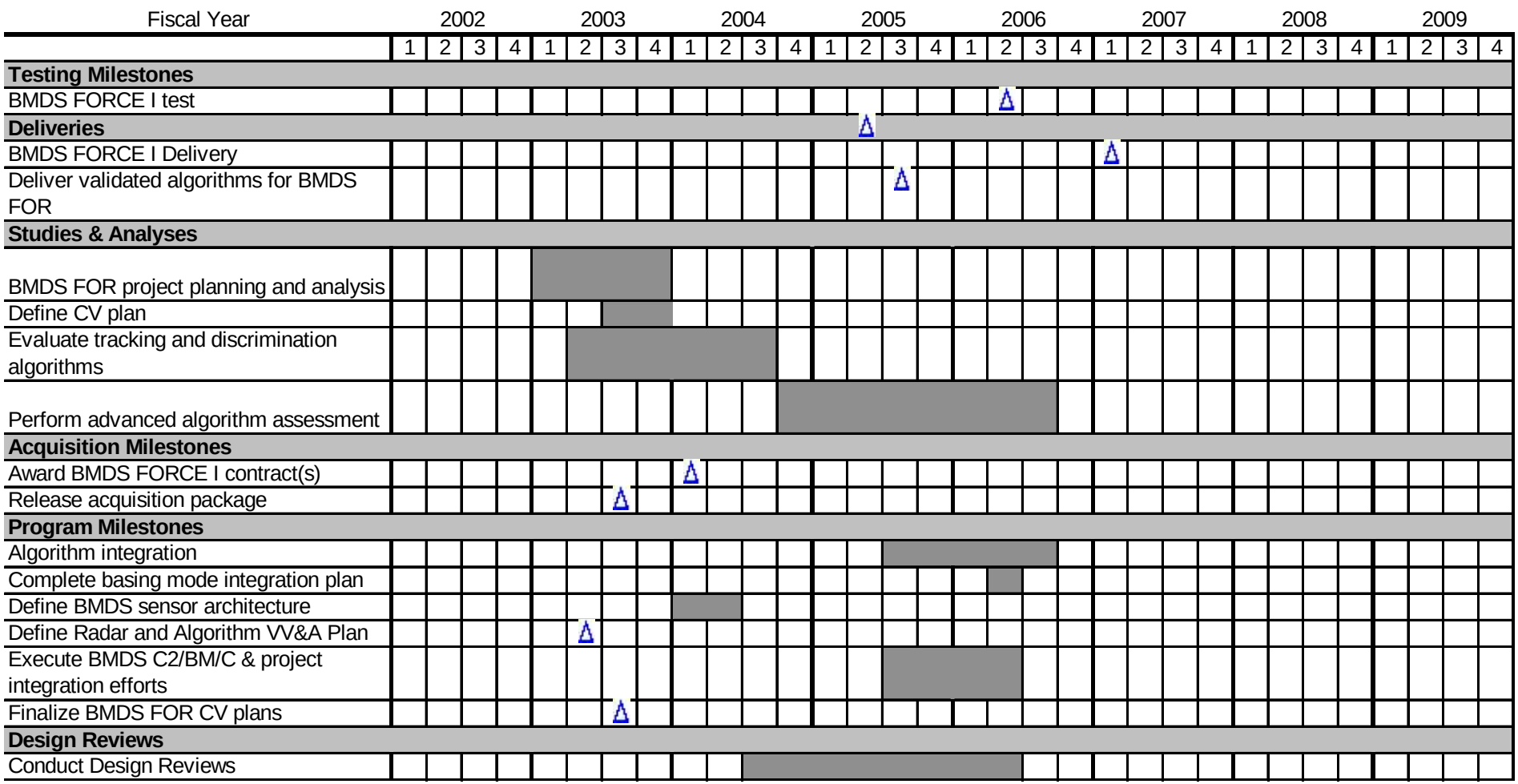
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		101000		144947			245947	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Note: FY 2003 activity funded in Midcourse Program Element, PE 0603882C $10M Congressional earmark.

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
BMDS FORCE I test					2Q			
Deliveries								
BMDS FORCE I Delivery						1Q		
Deliver validated algorithms for BMDS FOR				3Q				
Studies & Analyses								
BMDS FOR project planning and analysis		1Q-4Q						
Define CV plan		3Q-4Q						
Evaluate tracking and discrimination algorithms		2Q-4Q	1Q-3Q					
Perform advanced algorithm assessment			4Q	1Q-4Q	1Q-3Q			
Acquisition Milestones								
Award BMDS FORCE I contract(s)			1Q					
Release acquisition package		3Q						
Program Milestones								
Algorithm integration				3Q-4Q	1Q-3Q			
Complete basing mode integration plan					2Q			
Define BMDS Sensor architecture			1Q-2Q					
Define Radar and Algorithm VV&A Plan		2Q						
Execute BMDS C2BMC & project integration efforts				3Q-4Q	1Q-2Q			
Finalize BMDS FOR CV plans		3Q						
Design Reviews								
Conduct Design Reviews			3Q-4Q	1Q-4Q	1Q-2Q			

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0911 Ballistic Missile Defense System Radars Block 2008	0	0	0	0	0	136144	102493	22211
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Block 2008: BMDS Radar is a new Project, 0911, beginning in FY 04.

The objective of the BMDS Radar project is first to validate the concept of forward basing and BMDS Sensor layering and to assess and validate advanced algorithms. This effort will make use of existing radar configurations to the maximum extent practical. Second, it will provide a Family of Radars (FOR) that can be deployed to observe ballistic missiles early in their flight, providing precise track information for use by other elements of the BMD System.

The BMDS FOR is a transformational capability for the BMDS. When deployed, the BMDS FOR will provide for new missile defense concepts of operation that were unavailable under the ABM Treaty restrictions. The BMDS FOR broadens BMDS capability in the near future, adding robustness against a wide range of threats. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the BMDS FOR is planned to be based both on the ground and on mobile sea assets. The BMDS FOR will extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS, through mobile basing; to respond to unanticipated changes in the future geo-political environment; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system.

MDA plans to initiate development, test, and assessment of BMDS Radar algorithms starting in 2004, leveraging existing radars and technologies to the maximum extent practical, and to provide BMDS Radar by Block 2006, capable of supporting initial defensive operations. To support this development, MDA established a Sensors Directorate to oversee the concept validation of BMDS FOR and the acquisition of additional assets as required to achieve Block 2006 and following operational capabilities. Concept validation will include optimization of the capability of the current BMDS inventory of sensor assets. Family of Radars Configuration Element(s)(FORCE) will be deployed for Block 2006 with FOR configurations implementing spiral upgrades for Blocks 2008 and 2010.

B. Accomplishments/Planned Program

Funding in this project is not programmed until FY 2007.

C. Other Program Funding Summary

	FY 2002	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	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)								R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Core	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

D. Acquisition Strategy

The BMDS 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 in parallel with the Block 2006 radar efforts.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5060 Test & Evaluation	13806	4872	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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).

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 2002	FY 2003	FY 2004	FY 2005
Advanced Concept Studies	13806			
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:
Developed prototype decision architecture.
Developed a radar and optical clutter mitigation architecture.
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 Advanced Systems (AS) funding.
Provided a form for unique unsolicited proposals from concerned citizens to make a contribution to missile defense.

Funding for these activities has been transferred to PE 0603880C, Project 1053 in FY 2003.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

	FY 2002	FY 2003	FY 2004	FY 2005
Airborne Infrared Surveillance System		4872		
RDT&E Articles (Quantity)				

FY 2003
Airborne Infrared Surveillance System (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.

C. Other Program Funding Summary

	FY 2002	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	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date
February 2003

APPROPRIATION/BUDGET ACTIVITY
4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Advanced Concept Studies												
Decision Architecture	Various	SPARTA/SMDC	3000								3000	
Concept Studies	Various	Various	5000								5000	
CM Mitigation	Various	Lockheed Martin/ Various	2000								2000	
Airborne Infrared Surveillance System												
AIRS	CPFF		0	2436	2Q						2436	
Subtotal Product Development			10000	2436		0		0			12436	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Advanced Concept Studies												
Concept definition	Various	Various	3806								3806	
Subtotal Support Costs			3806	0		0		0			3806	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	Various	Various		2436	2Q						2436	
Subtotal Test and Evaluation			0	2436		0		0			2436	

Remarks

IV. Management Services Cost ($ in Thousands)

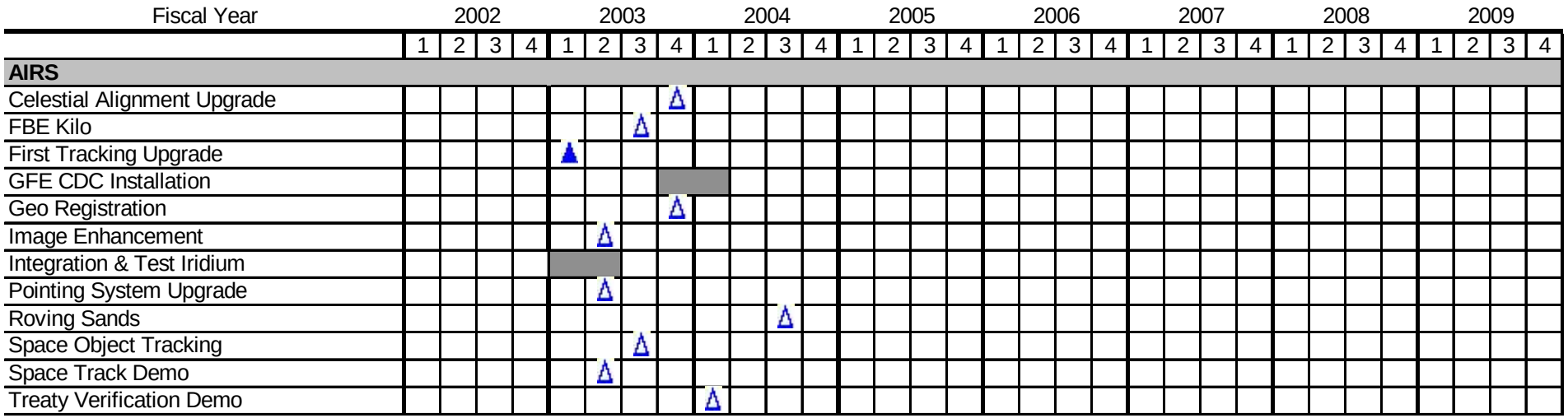
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			13806	4872		0		0			18678	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
AIRS								
Celestial Alignment Upgrade		4Q						
FBE Kilo		3Q						
First Tracking Upgrade		1Q						
GFE CDC Installation		4Q	1Q					
Geo Registration		4Q						
Image Enhancement		2Q						
Integration & Test Iridium		1Q-2Q						
Pointing System Upgrade		2Q						
Roving Sands			3Q					
Space Object Tracking		3Q						
Space Track Demo		2Q						
Treaty Verification Demo			1Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
5090/0602 Program Operations	14188	10235	7424	11432	16087	21154	23363	26847
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 5090 and Fiscal Years 2004 and out are in Project 0602.

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 2002	FY 2003	FY 2004	FY 2005
Management Support	12643	7277	6306	9481
RDT&E Articles (Quantity)				

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	30	1287	1118	1951
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
IM/IT Operations	1515	1671	0	0
RDT&E Articles (Quantity)				

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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	0	301052	541178	1127180	1729613	2558327	2904096
0913 Ballistic Missile Defense Interceptors Block 2008	0	0	295542	528774	1013408	1562482	1938694	1889902
0013 Ballistic Missile Defense Interceptors Block 2010	0	0	0	0	97335	146391	585119	974176
0602 Program Operations	0	0	5510	12404	16437	20740	34514	40018

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) has created the Ballistic Missile Defense System (BMDS) Interceptors Program Element (PE) in FY 2004. Budget documentation for the FY 2002 and FY 2003 Kinetic Energy (KE) Boost program was described in PE 0603883C, Projects 4010, 4020 and 4040. The new PE, 0603886C, consolidates the next generation interceptor development efforts into one BMDS Interceptor program. The BMDS Interceptors program is described in this PE by Block Capabilities, which include Block 2008 and Block 2010.

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 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, the Interceptors Program Element (PE) funds the Kinetic Energy (KE) boost/ascent capability and the Space Based Test Bed element portions of Blocks 2008 and 2010 and other Interceptor-related mission area investment activities. As a longer-term goal, the BMDS Interceptors program element will develop kinetic energy interceptors for the BMD System. This program is an essential component of the BMD System, providing kinetic energy interceptors capable of defending against ballistic missiles in the phases of boost, midcourse, and exo-atmospheric terminal phases. Additionally, the BMDS Interceptor will be designed to integrate with multiple platforms, thereby enhancing layered defenses and increasing defended areas.

Relying heavily on existing hardware and proven technology, MDA will develop the initial capability of the BMDS Interceptor by Block 2008. The program will develop capability enhancements in line with the MDA's evolutionary, spiral acquisition approach to achieve greater capability in Block 2010 and future Blocks.

Block 2008:
Using a deployable ground-based launch platform, the BMDS Interceptors program will first demonstrate initial kinetic energy capability against ballistic missiles in the boost/ascent phase. Our goal is to demonstrate this Block 2008 boost/ascent capability in the BMDS Test Bed by the end of FY 2009 or earlier. In addition, MDA will demonstrate, through testing, the Block 2008 interceptor's applicability in the midcourse phase. The Block 2008 BMDS Interceptor will evolve in subsequent Blocks with adaptability to sea-based platforms and fill capability shortfalls within the overall BMDS architecture.

In parallel with the Block 2008 Interceptor program, MDA will develop a Space Based Test Bed for incremental testing of space-based interceptor capabilities. The first satellites will be available for this testing in Block 2008 with additional functionality provided in successive Blocks.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

Block 2010:
The Block 2010 BMDS Interceptor will rely heavily on the developments of the Block 2008 capability. Through spiral development of the Block 2008 capability, the Block 2010 BMDS Interceptor will have improvements in exo-atmospheric performance and greater basing mode flexibility including adaptability to sea-based platforms.

MDA will develop and test an advanced Space Based Test Bed in support of a Block 2010 capability. It will augment and/or replace the Block 2008 Space Based Test Bed and retire most, if not all, major risks in space-based, kinetic energy ballistic missile defense.

MDA's longer-term goal is to develop low-cost enhanced BMDS multi-use interceptors that have the capability to defend against threat missiles in the boost, midcourse and exo-atmospheric terminal phases of flight. Therefore, MDA is consolidating next generation interceptor (booster plus kill vehicle (KV)) development efforts into one BMDS interceptor program. This BMDS Interceptor will counter the evolving threat through the spiral development of the Block 2008 Interceptor with enhanced KV capability. Technology advances are likely to include higher divert capability, greater seeker sensitivity, advanced discrimination capability, and lower-weight KVs.

The flow down of BMD System 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 the BMDS Interceptors into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	0	0	301052	541178
Total Adjustments	0	0	301052	541178
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	301052	541178
SBIR/STTR Transfer	0	0	0	0

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603886C Ballistic Missile Defense System Interceptors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0913 Ballistic Missile Defense Interceptors Block 2008	0	0	295542	528774	1013408	1562482	1938694	1889902
RDT&E Articles Qty	0	0	3	1	2	9	18	16

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) has created the Ballistic Missile Defense System (BMDS) Interceptors Program Element (PE) in FY 2004. Budget documentation for the FY 2002 and FY 2003 Kinetic Energy (KE) Boost program was described in PE 0603883C, Projects 4010, 4020, and 4040. The new PE, 0603886C, consolidates next generation BMDS Interceptor activities for FY 2004 and beyond into Projects 0913 and 0013.

Ground Based - Creating a boost phase layer is fundamental to the MDA goal of a robust, integrated Ballistic Missile Defense System (BMDS). By Block 2008, the MDA plans to develop and demonstrate, through flight-testing in the BMDS Test Bed, a mobile, ground-based boost phase capability that uses hit-to-kill technology. The dynamic performance of the Block 2008 interceptor may extend its initial capability into the ascent and midcourse phases; testing will occur to demonstrate the interceptor's potential application. Throughout its development, the Block 2008 capability will rely heavily on existing hardware and proven technology. In FY 2003, MDA will award up to three BMDS interceptor concept design contracts with a down-select to one capability development and test contractor in FY 2004. The contract will be structured to design, develop, and test a kinetic boost/ascent element (includes platform-launch, C2BMC, and BMDS sensor integration) and multi-use interceptor capabilities in the BMDS Test Bed. Ground will be the first-basing mode (Block 2008) with a planned evolution to sea-basing in Block 2010. We will test the multi-use interceptor in boost, ascent, and midcourse engagement phases against ICBM, IRBM, and MRBM threat classes. Successful testing in the BMDS Test Bed may lead to production opportunities.

Space Based Test Bed - MDA will begin developing a space-based kinetic energy interceptor Test Bed in FY 2004. Initial on-orbit tests will commence in Block 2008 with three to five satellites. The Test Bed capability will be expanded in two-year Blocks. Test Bed development will consist of technology development and Test Bed integration programs.

Experimentation and Test - The Near-Field InfraRed Experiment (NFIRE) spacecraft launches in summer 2004. The primary objective is to collect near-field plume and hardbody data from several targets of opportunity and dedicated targets. Resultant data will be used for the development of homing algorithms for boost phase endgame and model development and verification. The satellite payload will carry a suite of sensors that will collect data across a broad electromagnetic spectrum ranging from long-wave infrared to visible. In addition, critical data will be collected for early launch detection, sensor tracking, and characterizing the earth background. The Generation 2 kill vehicle (KV) will be integrated into the near-field experiment payload. Second generation KE Boost KVs are mature variants of existing MDA developed KV components, and will be the first KVs with the performance to reliably achieve boost phase intercept. KE Boost Test Bed development and testing will continue in FY 2004. MDA will conduct real-time fire control / C2BMC exercises and simulated engagements using space launch and ballistic missile targets of opportunity. In addition, ground-based and air-based sensors will collect boost/ascent phase data on these targets of opportunity to support the Block 2008 capability development.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Based			184942	341745
RDT&E Articles (Quantity)				

FY 2002 and 2003 accomplishments/plans are described in Program Element (PE) 0603883C, Projects 4010, 4020, and 4040. For completeness, these descriptions are repeated below.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603886C Ballistic Missile Defense System Interceptors

FY 2002 Accomplishments:

o Completed concept definition and assessment work to define high payoff interceptor concepts and basing modes.

FY 2003 Planned Program:

o Award multiple concept design contracts for down-select to one capability developer in FY 2004.

FY 2004 Planned Program:

o Demonstrate boost/ascent phase intercept sensor, fire control, and C2BMC capabilities in BMDS Test Bed.
o Collect critical boost/ascent phenomenology data with ground, airborne, and space test assets.
o Assess BMDS interceptor concepts and designs in BMDS wargames and system tests.
o Define BMDS interceptor evolution concepts for sea-basing, air-basing, and advanced midcourse discrimination.

FY 2005 Planned Program:

o Complete ground-based boost/ascent element design reviews 1 & 2.
o Continue to demonstrate boost/ascent phase intercept sensor, fire control, and C2BMC capabilities in BMDS Test Bed.
o Conduct risk-reduction ground tests of key BMDS interceptor components (booster stages, kill vehicle sensor, divert and attitude control system).
o Continue collection of critical boost/ascent phenomenology data with ground, airborne, and space test assets.
o Assess BMDS interceptor concepts and designs in BMDS wargames and system tests.
o Define BMDS interceptor evolution concepts for sea-basing, air-basing, and advanced midcourse discrimination.

	FY 2002	FY 2003	FY 2004	FY 2005
Space Based Test Bed			14000	119464
RDT&E Articles (Quantity)				

FY 2004 Planned Program:

o Award up to three fixed price contracts in 4Q FY 2004 to potential space prime contractor/integrators.
  -- Space Test Bed Concept Definition and Design.
  -- 6-8 month period of performance.
o Begin Space Test Bed design and development for on orbit Block 2008 testing.

FY 2005 Planned Program:

o Down-select to a single Space Test Bed prime/integrator in 2-3Q FY 2005.
o Initiate technology development and testing of advanced, lightweight space-based interceptor components in 2Q FY 2005.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603886C Ballistic Missile Defense System Interceptors

-- Lightweight, high performance kill vehicle.
-- High mass fraction, space-qualified liquid and solid axial stages.
o Continue Space Test Bed design and development for on orbit Block 2008 testing.

	FY 2002	FY 2003	FY 2004	FY 2005
Experimentation & Test			81600	52877
RDT&E Articles (Quantity)			3	1

RDT&E Articles:
FY 2004 - Target, NFIRE
FY 2004 - Satellite, NFIRE
FY 2004 - Space Launch Vehicle for the NFIRE Satellite
FY 2005 - Target, NFIRE

FY 2002 and 2003 accomplishments/plans are described in Program Element (PE) 0603883C, Projects 4010, 4020 and 4040. For completeness, these descriptions are repeated below:

FY 2002 Accomplishments:

o Conducted multiple risk reduction experiments demonstrating the critical boost phase functionality.
o Targets of opportunity (TOO) testing demonstrated the feasibility of critical boost phase components, e.g., tracking capabilities and sensor integration, and provided valuable phenomenological data.

FY 2003 Planned Program:

o Commence near-field experiment development to collect near-field plume and hardbody data from several targets of opportunity and dedicated targets in order to develop homing algorithms for boost phase endgame and model development and verification.
o Integrate and test the Generation 2 kill vehicle (KV) in preparation for a FY 2004 hover test and integration into the near-field experiment payload.
o Continue KE Boost Test Bed development throughout FY 2003.
o Conduct real-time fire control/BMC2 exercises and simulated engagements using space launch and ballistic missile targets of opportunity.
o Using ground-based and air-based sensors, collect boost/ascent phase data on TOO missions to support Block 2008 capability development.

FY 2004 Planned Program:

o Execute NFIRE
-- Continue integration and test of NFIRE components: Satellite bus; Tracking payload; Generation 2 kill vehicle payloads.
-- Integrate tracking sensor and kill vehicle payloads onto spacecraft.
-- Perform environmental testing on spacecraft.
-- Execute Generation 2 kill vehicle hover test.
-- Complete launch vehicle integration.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

-- Build and launch dedicated NFIRE target for near-field plume and hardbody characterization by NFIRE satellite sensors.
-- Launch NFIRE spacecraft.
-- Begin NFIRE mission operations: Execute TOO missions; Execute Ground IR Event missions; Dedicated Target Fly-by.

o Conduct Test Bed experiments:
-- Track targets of opportunity in boost and ascent phases with Overhead Non-imaging InfraRed (ONIR) satellites and NFIRE.
-- Process real-time tracking data at Joint National Integration Center (JNIC) terrestrial and BMDS Interceptor space-based (NFIRE) C2BMC nodes.
-- Transmit tracking data among JNIC nodes and NFIRE.
-- Simulate engagements.
-- Surveil targets of opportunity with auxiliary airborne and ground-based sensors to enhance Block 2008 capability development.

FY 2005 Planned Program:

o Continue NFIRE mission operations.
-- Execute TOO missions.
-- Execute Satellite Flyby mission with target of opportunity.
-- Execute Ground IR Event missions.
-- Execute KV engagement with dedicated target.
o Continue Test Bed experiments.
o Build targets for Block 2008 developmental tests, which are scheduled to begin in FY 2006.

	FY 2002	FY 2003	FY 2004	FY 2005
Program Management & Engineering			15000	14688
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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

D. Acquisition Strategy

The BMDS Interceptor program 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 consolidated the development of BMDS interceptors under this PE to enhance commonality and avoid duplicative efforts. The BMDS Interceptor builds on the Block 2008 interceptor development, leveraging on emerging technology and capability. Our strategy is to develop a BMDS interceptor with initial ground-based capability and a Space Based Test Bed in Block 2008, and enhanced capability in subsequent blocks.

Ground Based: As described in PE 0603883C, Project 4010, MDA will award concept definition contracts in FY 2003 with a down-select to one capability development contractor in FY 2004. MDA will structure the contract to support the development of a prototype system including interceptors, launchers, platform modification and integration, and sensor integration for testing. Successful testing in the BMDS Test Bed may lead to production opportunities.

Space Based Test Bed: MDA will award concept definition and design contracts in FY 2004 to potential prime integrating contractors with a down-select to one integrating contractor in FY 2005.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Capability Development	C/Various	Various				184942	1Q	341745	1/4Q	CONT.	526687	CONT.
Space Based Test Bed												
Capability Development	Various	Various				14000	1/4Q	119464	1/4Q	CONT.	133464	CONT.
Subtotal Product Development			0	0		198942		461209			660151	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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/Facilities	C/Various	Various				13000	1/4Q	13188	1/4Q	CONT.	26188	CONT.
Subtotal Support Costs			0	0		13000		13188			26188	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	Various	Various				34000	1/4Q	52877	1/4Q	CONT.	86877	CONT.
Experimentation & Test - NFIRE	Various	SpectrumAstro, Raytheon, Other/Gilbert, AZ; Tucson, AZ, & TBD				47600	1/2Q				47600	
Subtotal Test and Evaluation			0	0		81600		52877			134477	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
FFRDC/National Laboratory	Various	Various/ Lawrence Livermore Natnl Lab/Livermore, CA				2000	1/4Q	1500	1/4Q	CONT.	3500	CONT.
Subtotal Management Services			0	0		2000		1500			3500	

Remarks

Project Total Cost			0	0		295542		528774			824316	

Remarks

MDA will award concept definition contracts in FY 2003 with a down-select to one capability development contractor in FY 2004. In addition, in FY 2003, the Scientific and Engineering Technical Assistance (SETA) contract expires 31 March 2003. The government is conducting a full and open competition for program system engineering, management, planning, and operations support. The contract will extend to FY 2006.

MDA Exhibit R-4 Schedule Profile

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

Fiscal Year	2002				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	1	2	3	4
BMDS Interceptors																																
a. Block 08 Multiple Contractor Award							△																									
b. Block 08 Contract Downselect									△																							
c. Near-field Infrared Experiment (NFIRE)											△																					
d. Design Review 1													△																			
e. Design Review 2																△																
f. First Flight Test (Ground Based)																				△												
g. Second Flight Test (Ground Based)																					△											
h. Third Flight Test (Ground Based)																						△										
i. Fourth Flight Test (Ground Based)																							△									
j. Fifth Flight Test (Ground Based)																								△								
k. Sixth Flight Test (Ground Based)																									△							
l. Seventh Flight Test (Ground Based)																										△						
m. Eighth Flight Test (Ground Based)																											△					
n. Ninth Flight Test (Ground Based)																												△				
o. Block 08 Capability																												△				
Space Based Testbed																																
a. Block 08 Multiple Contractor Award												△																				
b. Block 08 Contract Downselect															△																	
c. Design Review 1																			△													
d. Design Review 2																							△									
e. First Satellite Launch																												△				
f. First Flight Test																													△			
g. Additional Satellite Launches																																
h. Additional Flight Tests																																

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BMDS Interceptors								
a. Block 08 Multiple Contractor Award		3Q						
b. Block 08 Contract Downselect			1Q					
c. Near-field Infrared Experiment (NFIRE)			3Q					
d. Design Review 1				1Q				
e. Design Review 2				4Q				
f. First Flight Test (Ground Based)					4Q			
g. Second Flight Test (Ground Based)						1Q		
h. Third Flight Test (Ground Based)						2Q		
i. Fourth Flight Test (Ground Based)						3Q		
j. Fifth Flight Test (Ground Based)						4Q		
k. Sixth Flight Test (Ground Based)							1Q	
l. Seventh Flight Test (Ground Based)							2Q	
m. Eighth Flight Test (Ground Based)							3Q	
n. Ninth Flight Test (Ground Based)							4Q	
o. Block 08 Capability							4Q	
Space Based Test Bed								
a. Block 08 Multiple Contractor Award			4Q					
b. Block 08 Contract Downselect				3Q				
c. Design Review 1					3Q			
d. Design Review 2						3Q		
e. First Satellite Launch							4Q	
f. First Flight Test								1Q
g. Additional Satellite Launches								1Q-4Q
h. Additional Flight Tests								1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0013 Ballistic Missile Defense Interceptors Block 2010	0	0	0	0	97335	146391	585119	974176
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Ground and Sea Based - The Block 2010 BMDS Interceptor will rely heavily on the developments of the Block 2008 capability. Through spiral development of the Block 2008 capability, the Block 2010 BMDS Interceptor will have improvements in exo-atmospheric performance and greater basing mode flexibility including adaptability to sea based platforms. Potential performance advances in this capability are guidance algorithms, seeker hardware and associated signal processing/discrimination software. The increased basing flexibility and performance will allow intercepts of ballistic missiles in all phases of flight and increase defended area.

Space Based - MDA will develop and test an advanced Space Based Test Bed in support of a Block 2010 capability. It will augment and/or replace the Block 2008 Space Based Test Bed and retire most, if not all, major risks in space based, kinetic energy ballistic missile defense. Building on the Block 2008 Space Based Test Bed, the Block 2010 Space Based Test Bed will develop an additional three to five satellites with advanced, lightweight lifejackets and interceptors. A technology development effort focused on the miniaturization of space based components will support the Block 2010 Test Bed testing by developing advanced, high performance kill vehicles and axial propulsion. We will also address key issues such as lifejacket/interceptor miniaturization, inter-satellite communications, interceptor guidance, and constellation management and control during this phase.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
BMDS Interceptor Block 2010				
RDT&E Articles (Quantity)				

Funding in this project is not programmed until FY 2006.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603886C Ballistic Missile Defense System Interceptors

PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		

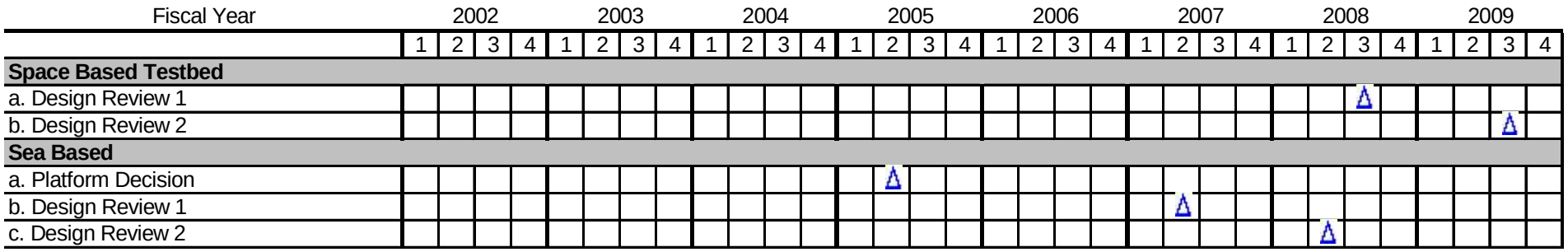
D. Acquisition Strategy

The BMDS Interceptor program 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.

Ground and Sea Based - The Block 2008 prime contractor will be responsible for developing Block 2010 capability. The prime contractor will modify the Block 2008 element to incorporate the increased performance and sea basing capability and produce the Block 2010 capability.

Space Based - The Block 2008 Test Bed integrator will be responsible for developing Block 2010 Space Based Test Bed. The prime contractor will integrate advanced interceptor and lifejacket technologies into the existing Block 2008 Test Bed.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Space Based Test Bed								
a. Design Review 1							3Q	
b. Design Review 2								3Q
Sea Based								
a. Platform Decision				2Q				
b. Design Review 1						2Q		
c. Design Review 2							2Q	

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program Operations	0	0	5510	12404	16437	20740	34514	40018
RDT&E Articles Qty	0	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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	0	0	83	348
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603886C Ballistic Missile Defense System Interceptors

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	0	0	3860	8277
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	0	0	1567	3779
RDT&E Articles (Quantity)				

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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603886C Ballistic Missile Defense System Interceptors**

PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	0	611522	711181	661416	643302	639839	672396
0304 Test & Evaluation Core	0	0	315108	303771	299195	322564	286832	303148
0704 Test & Evaluation Block 2004	0	0	37401	32943	0	0	0	0
0804 Test & Evaluation Block 2006	0	0	2386	9401	40645	39477	0	0
0904 Test & Evaluation Block 2008	0	0	962	1028	3616	12908	85088	86585
0305 Targets & Countermeasures Core	0	0	19842	20749	20949	21358	21405	21598
0705 Targets & Countermeasures - Block 2004	0	0	197387	169779	0	0	0	0
0805 Targets & Countermeasures - Block 2006	0	0	31860	109877	212500	171624	0	0
0905 Targets & Countermeasures - Block 2008	0	0	0	56794	77398	67974	238821	253064
0602 Program Operations	0	0	6576	6839	7113	7397	7693	8001

A. Mission Description and Budget Item Justification

Funding for this effort was previously held under the Ballistic Missile Defense System Segment Program Element (PE 0603880C).

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 flow down of Ballistic Missile Defense System (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 Operations Support into the BMD System, the BMDS C2BMC architecture, and the BMD Test Bed.

The Ballistic Missile Defense Test & Targets Program Element (PE) provides the resources to test and evaluate the multi-layered BMDS capability, and develop targets and countermeasures for use in system testing for defense of the United States, deployed forces, friends, and allies. This PE is comprised of nine primary projects: Test & Evaluation Core; Targets & Countermeasures Core; Program Operations to include Personnel, Support and Fiscal; Test & Evaluation Block 2004, Targets & Countermeasures Block 2004, Test & Evaluation Block 2006, Targets & Countermeasures Block 2006, Test & Evaluation Block 2008, and Targets & Countermeasures Block 2008. Core functions provide for the implementation of the test and targets capability across multiple Blocks; expand the capabilities of the BMDS in future Blocks beyond the FYDP; and, develop capability not yet foreseen as part of a current or future block. Block functions facilitate the disciplined and integrated management of each of the BMDS Blocks. 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 Test & Evaluation (T&E) program provides consolidated BMDS-wide T&E capabilities and resources required to allow for cohesive facilitation, management, and execution of 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. The T&E program funds the BMD System Test and Assessment program that includes system tests, critical measurements, integration tests, data centers support, 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; and Facilities, Siting, and Environmental (FS&E) efforts.

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/Long Range Liquid Fuel

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

boosters, Medium Range Targets, Strategic Range Air Launch Target, Long Range FMA (Land and Sea), 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. Targets and Countermeasure activities associated with specific BMDS Elements are captured in the respective BMDS Element.

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	0	0	611522	711181
Total Adjustments	0	0	611522	711181
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	611522	711181
SBIR/STTR Transfer	0	0	0	0

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0304 Test & Evaluation Core	0	0	315108	303771	299195	322564	286832	303148
RDT&E Articles Qty	0	0	2	4	2	4	4	4

A. Mission Description and Budget Item Justification

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 efforts are funded in the Ballistic Missile Defense System Core Program Element (PE 0603890C) in FY 2004 and beyond.

The Test & Evaluation (T&E) Project consolidates all System-wide T&E resources. This allows for the more cohesive facilitation, management and execution of these test activities for a single, integrated 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. Specific Test & Evaluation costs are captured in the respective BMDS element.

MDA's testing needs are quickly expanding beyond those of the individual BMDS elements. To address these needs, the System Test & Assessment Program provides 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); 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. However, funding for SETA and SMDC support personnel is included in this documentation.

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, CM/CCM 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 have been designated Critical Measurements and Countermeasure (CMCM) 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.

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:
- 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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

- 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

BMD-unique range assets at various DoD test ranges:
- 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 Launch Complex
- Naval Air Warfare Center, Weapons Division, Pt Mugu, CA

Airborne sensors, data collection assets, and special test equipment include:
- High Altitude Observatory II (HALO - II)
- Wide-body Airborne Sensor Platform (WASP)
- Remote Area Safety Aircraft - P-3s

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. Recommended test infrastructure improvements resulting from the FY 2002 Test Bed Infrastructure Study and the on-going Target Requirements Study are also implemented through the Test Resources Program. The Test Resources effort also supports the development of target requirements and the certification that targets satisfy test objectives.

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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Test Resources			153739	140064
RDT&E Articles (Quantity)			0	0

FY 2004 & 2005 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, 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. For example, the Reagan Test Site (RTS) will maintain Meck Island for GMD testing.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

- Provide sustainment funding for the next generation, state-of-the-art airborne instrumentation platforms, HALO-II and WASP that will replace the HALO-I and the Airborne Surveillance Test Bed (AST).
- Provide level-of-effort funding to maintain MDA-unique ground test facilities, including wind tunnels, space chambers, light gas guns, the high-speed test track, 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.
- 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, improve Meck Island test infrastructure including the power grid to support GMD testing and upgrades existing ground based sensors (millimeter wave - MMW) to expand the testing envelope through an increase in range and sensitivity.
- 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 scheduled for completion by 2Q/04.

	FY 2002	FY 2003	FY 2004	FY 2005
System Test & Assessment			155848	158645
RDT&E Articles (Quantity)			2	4

FY 2004 RDT&E Articles Two (2) short and/or long range test vehicles for CMCM Flight Test Program

FY 2005 RDT&E Articles Four (4) short and/or long range test vehicles for CMCM Flight Test Program

FY 2004 Planned Program

- Collect, prioritize, validate, and document requirements for MDA Measurements Program.
- Conduct test planning, sensor planning, material development, range integration efforts, and design reviews in support of Tests of Opportunity (TOOs) and dedicated flight tests - CMCM-2.
- Execute a dedicated flight test CMCM-1. CMCM-1 will be designed to: support Block 2004 BMDS Capability Assessment, CM/CCM 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/CCM focus areas (concepts classified).
- 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.
- Data Center support will consist of Legacy Data identification and archiving, Disaster Recovery preparation, Subject Matter Expertise for M&S VV&A, and Web-Hosting services for M&S.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

FY 2005 Planned Program

- Continue to collect, prioritize, validate, and document requirements for MDA Measurements Program.
- Conduct test planning, sensor planning, material development, range integration efforts, and design reviews in support of Tests of Opportunity (TOOs).
- Execute a dedicated flight test CMCM-2. CMCM-2 will be designed to: support Block 2004 BMDS Capability Assessment, CM/CCM characterization, M&S validation, Spiral development of Block 2006 BMD system architecture/algorithms/technologies/CONOPS, and definition of Block 2008 and beyond, and to address other MDA National Team and System Engineering CM/CCM focus areas (concepts are classified and are different from CMCM-1 in FY 2004).
- 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.
- Data Center support will consist of Legacy Data identification and archiving, Disaster Recovery preparation, Subject Matter Expertise for M&S VV&A, and Web-Hosting services for M&S.

	FY 2002	FY 2003	FY 2004	FY 2005
Facilities, Siting & Environmental			5521	5062
RDT&E Articles (Quantity)			0	0

FY 2004 & 2005 Planned Programs

- 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

C. Other Program Funding Summary

	FY 2002	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	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

D. Acquisition Strategy

The core Test & Evaluation Program will support 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.

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.

Test programs will be executed utilizing a consolidated targets development, test resource, facilities, siting and environmental, and system-wide test program strategy. BMD management requirements will be met through MDA and other DoD agency personnel. BMD technical and program management services will be competitively procured from industry to provide the required infrastructure, engineering, programmatic, test and evaluation, and system specific expertise required to develop BMDS programs.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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												
Measurements Flight Tests	Various					30295	1Q	24192	1Q	CONT.	54487	
Special Program Tests	Various					9898	1Q	10087	1Q	CONT.	19985	
CM/CCM	Various					73500	1Q	81282	1Q	CONT.	154782	
Optical Data Analysis	Various					14631	1Q	15052	1Q	CONT.	29683	
RCS Data Analysis	Various					6840	1Q	6938	1Q	CONT.	13778	
Lethality	Various					2940	1Q	2938	1Q	CONT.	5878	
Kill Assessment	Various					3190	1Q	3437	1Q	CONT.	6627	
International Programs	Various					1048	1Q	775	1Q	CONT.	1823	
Data Centers	Various					3195	1Q	3188	1Q	CONT.	6383	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

Facilities, Siting & Environmental												
Facilities & Siting	Various	Various				232	1Q	241	1Q	CONT.	473	
Environmental Compliance	Various	Various				992	1Q	306	1Q	CONT.	1298	
Test Resources												
Ground Test Facilities	Various	Army, Air Force/NY, AL, FL, MD, TN, CA, NM				19722	1Q	20272	1Q	CONT.	39994	
Ranges and Implementation	Various	Various/HI, NM, Marshall Is et al				53495	1Q	41401	1Q	CONT.	94896	
Airborne Sensors	C/Various	Raytheon, Aeromet, Boeing/CA, OK, WA				27135	1Q	22465	1Q	CONT.	49600	
Targets Cert & Reqt`s	Various	USASMDC, POET/Huntsville AL, Wash DC				1359	1Q	1389	1Q	CONT.	2748	
TBI Alternatives	Various	Various				34844	1Q	37081	1Q	CONT.	71925	
Subtotal Test and Evaluation			0	0		283316		271044			554360	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				2333	1Q	2389	1Q	CONT.	4722	
Support Contracts	C/Various	Various/Arlington, VA				7457	1Q	7835	1Q	CONT.	15292	
T&E Travel	Other					521	1Q	532	1Q	CONT.	1053	
Facilities, Siting & Environmental												
Support Contracts	C/Various	Various/Arlington, VA				4297	1Q	4515	1Q	CONT.	8812	

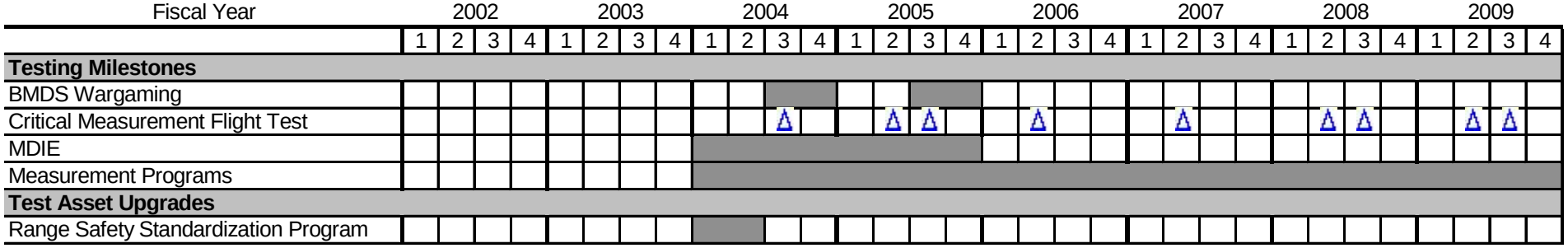
MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Test Resources												
SMDC Support	Other	USASMDC/Huntsville, AL				2505	1Q	2465	1Q	CONT.	4970	
Support Contracts	C/Various	Various/Arlington, VA				8522	1Q	8699	1Q	CONT.	17221	
Poet Support	SS/MIPR	POET/Arlington, VA				1579	1Q	1583	1Q	CONT.	3162	
Test Resources	Other	WHS/Washington, DC				4578	1Q	4709	1Q	CONT.	9287	
Subtotal Management Services			0	0		31792		32727			64519	
Remarks												
Project Total Cost			0	0		315108		303771			618879	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
BMDS Wargaming			3Q-4Q	3Q-4Q				
Critical Measurement Flight Test			3Q	2Q,3Q	2Q	2Q	2Q,3Q	2Q,3Q
MDIE			1Q-4Q	1Q-4Q				
Measurement Programs			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Test Asset Upgrades								
Range Safety Standardization Program			1Q-2Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0704 Test & Evaluation Block 2004	0	0	37401	32943	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).

The BMDS Test Block 2004 program provides a cohesive program of testing to include: System Integration Flight Tests (SIFTs); 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. 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).

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Flight Tests			21236	20164
RDT&E Articles (Quantity)			0	0

FY 2004 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.

Two major SIFTs planned in FY 2004:
- SIFT 1 is first large scale Block 2004 integration event and tests C2BMC during multiple element flight test.
- SIFT 2 (2-1 & 2-2) provides interim Block 2004 progress reports.

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 (2-3 & 2-4).
- Begin SIFT 3 consisting of (3-1 & 3-2). This is the culminating Block 2004 test event.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Tests			16165	12779
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Program

- Conduct one Missile Defense Integration Exercise to measure BMDS interoperability and initial integration.
- Conduct one BMDS Wargame per year to develop CONOPs and Tactics, Techniques and Procedures.
- Conduct one Integrated Ground Test per year to provide BMD System readiness testing, measure integration, and support system capability assessments.

FY 2005 Planned Program

- Conduct one Missile Defense Integration Exercise per year to measure BMDS interoperability and initial integration.
- Conduct one BMDS Wargame per year to develop CONOPs and Tactics, Techniques and Procedures.
- Conduct one Integrated Ground Test per year to provide BMD System readiness testing, measure integration, and support system capability assessments.

C. Other Program Funding Summary

	FY 2002	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	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

D. Acquisition Strategy

The Test & Evaluation Block 2004 Program will support 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.

Test 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.

Test programs will be executed utilizing a consolidated targets development, test resource, facilities, siting and environmental, and system-wide test program strategy.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Flight Tests												
System Wide Tests	Various					11203	1Q	9655	1Q	CONT.	20858	
Test Planning	Various					701	1Q	662	1Q	CONT.	1363	
Radar Exploitation	Various					2695	1Q	2742	1Q	CONT.	5437	
Corp Data Coll & Analysis	Various					6647	1Q	7105	1Q	CONT.	13752	
Ground Tests												
Program Wide Interop Ground	Various					11157	1Q	7540	1Q	CONT.	18697	
Arrow TMDSE	Various					3038	1Q	3180	1Q	CONT.	6218	
BMDS Wargames	Various					1960	1Q	2059	1Q	CONT.	4019	
Subtotal Test and Evaluation			0	0		37401		32943			70344	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												

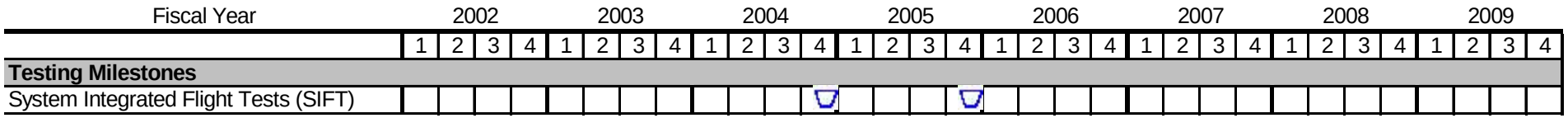
Remarks

Project Total Cost			0	0		37401		32943			70344	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
System Integrated Flight Tests (SIFT)			4Q	4Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0804 Test & Evaluation Block 2006	0	0	2386	9401	40645	39477	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).

The BMDS Test Block 2006 program provides a cohesive program of testing to include: System Integration Flight Tests (SIFTs); 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, 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), Test Planning, and Corporate Data Collection groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis).

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Flight Tests			1424	4260
RDT&E Articles (Quantity)			0	0

FY 2004-2005 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.

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Tests			962	5141
RDT&E Articles (Quantity)			0	0

FY 2004-2005 Planned Program

- Conduct one Missile Defense Integration Exercise to measure BMDS interoperability and initial integration.
- Conduct one BMDS Wargame per year to develop CONOPs and Tactics, Techniques and Procedures.
- Conduct one Integrated Ground Test per year to provide BMD System readiness testing, measure integration, and support system capability assessments.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

D. Acquisition Strategy

The Test & Evaluation Block 2006 Program will support 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.

Test 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.

Test programs will be executed utilizing a consolidated targets development, test resource, facilities, siting and environmental, and system-wide test program strategy.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Flight Tests												
System Wide Tests	Various					1424	1Q	4260	1Q	CONT.	5684	
Ground Tests												
Prog Wide Interop Ground	Various							4113	1Q	CONT.	4113	
BMDS Wargames	Various					962	1Q	1028	1Q	CONT.	1990	
Subtotal Test and Evaluation			0	0		2386		9401			11787	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

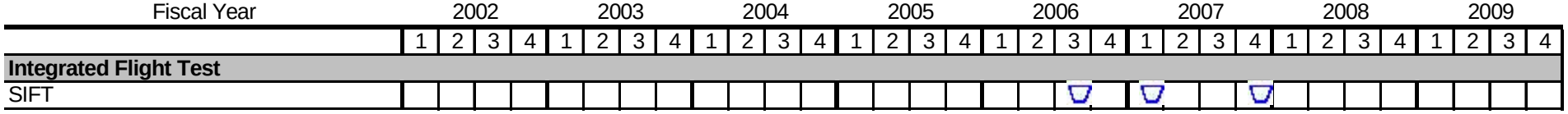
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		2386		9401			11787	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Flight Test								
SIFT					3Q	1Q,4Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0904 Test & Evaluation Block 2008	0	0	962	1028	3616	12908	85088	86585
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held in the Test & Evaluation portion of the BMD System Segment Program Element (PE 0603880C).

The BMDS Test Block 2008 program provides a cohesive program of testing to include: System Integration Flight Tests (SIFTs); 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, 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), Test Planning, and Corporate Data Collection groups. These groups perform various functions which support BMDS data collection objectives (mission planning, sensor execution, data analysis).

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Ground Tests			962	1028
RDT&E Articles (Quantity)			0	0

FY 2004-2005 Planned Program
- Conduct one Missile Defense Integration Exercise to measure BMDS interoperability and initial integration.
- Conduct one BMDS Wargame per year to develop CONOPs and Tactics, Techniques and Procedures.
- Conduct one Integrated Ground Test per year to provide BMD System readiness testing, measure integration, and support system capability assessments.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets			
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

D. Acquisition Strategy

The Test & Evaluation Block 2008 Program will support 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.

Test 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.

Test programs will be executed utilizing a consolidated targets development, test resource, facilities, siting and environmental, and system-wide test program strategy.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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												
BMDS Wargames	Various	Various				962	1Q	1028	1Q	CONT.	1990	
Subtotal Test and Evaluation			0	0		962		1028			1990	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

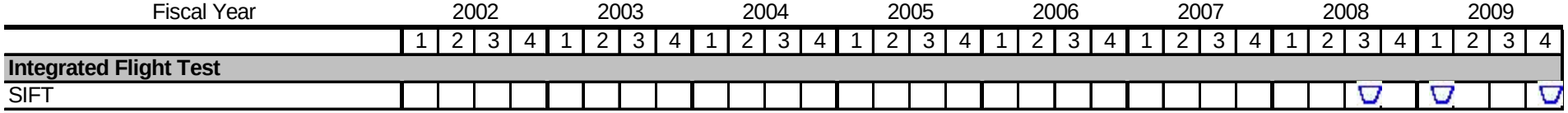
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		962		1028			1990	

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.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Flight Test								
SIFT							3Q	1Q,4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0305 Targets & Countermeasures Core	0	0	19842	20749	20949	21358	21405	21598
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS) Program Element (PE 0603880C, Project 1030).

Targets & Countermeasures Core Support includes primary core support, mission support and field activity support for the management of design, prototyping, development, acquisition, certification, product improvement, and qualification testing of a suite of targets and payloads to test the capability of the BMDS.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Targets Support	0	0	10344	10807
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-Support program management and mission and core support for on-site field activity personnel.

FY 2005 Planned Accomplishments:
-Continues to support program management and mission and core support for on-site field activity personnel.

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel Support	0	0	9498	9942
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-This effort funds government personnel salaries for program management, project support, project costs, and travel.

FY 2005 Planned Accomplishments:
-Continues to fund government personnel salaries for program management, project support, project costs, and travel.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

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 program develops capability-based target systems utilizing both existing GFE and new target systems that meet target specifications detailed in BMD system and technical requirements documents. BMDS target systems will be developed and acquired utilizing a targets prime contract for all future target booster development activities, BMDS design and development of payloads and countermeasures, and all advanced target development. The prime contractor will also provide systems level management and perform systems engineering across the portfolio of BMDS targets. The government will maintain system responsibility and will ensure successful management of BMDS targets execution. Current, on-going target development contracts will either be completed under the current contract structure, or will be transitioned to the prime contractor, depending on the status of the contract and maturity of the target system being developed.

Prime Contract costs are captured under Target Support in the following Projects: Project 0705 for Block 2004, Project 0805 for Block 2006 and Project 0905 for Block 2008.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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/Various	Various/Kirtland, NM	0	0		300		300			600	
Field Activity Support	C/Various	Various/Huntsville, AL	0	0		7664		7794			15458	
Subtotal Support Costs			0	0		7964		8094			16058	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Govt Proj Per & Support	Other	Govt Agency/Huntsville, AL	0	0		6097		6464			12561	
Government Travel	C/Various	Various/Wash. DC	0	0		200		200			400	
Target Management Support	C/Various	Various/Various	0	0		2380		2713			5093	
Subtotal Management Services	C/Various	Various/Wash. DC	0	0		3201		3278			6479	
Subtotal Management Services			0	0		11878		12655			24533	
Remarks												
Project Total Cost			0	0		19842		20749			40591	

Remarks

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0705 Targets & Countermeasures - Block 2004	0	0	197387	169779	0	0	0	0
RDT&E Articles Qty	0	0	9	7	0	0	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS) Program Element (PE 0603880C, Project 1030).

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 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), Theater High Altitude Area Defense (THAAD), etc.) fund the acquisition and use of targets required for BMDS testing. The following new developments are planned to meet the following Block 2004 testing:

- Continues the development of Short Range Air Launch Targets (SRALT) to support Arrow, Patriot (PAC-3), and THAAD.
- Continues and completes the development of Short Range Liquid Fuel Target Booster to support Airborne Laser (ABL), Arrow, THAAD, and AEGIS Ballistic Missile Defense (BMD).
- Continues and completes the modification of a Foreign Material Acquisition (FMA) target launched from a Mobile Launch Platform to support Arrow and THAAD.
- Initiates the development of multi-mode Medium Range Targets to support Aegis BMD and THAAD.
- Completes payload suite design and development for 1 advanced concepts flight test and 5 Critical Measurements and Countermeasures (CMCM) tests.
- Purchases long lead material asset and asset management items for short and medium range target components.
- Continues the maintenance, aging surveillance, refurbishment, and routine testing of existing Government Furnished Equipment (GFE) boosters.

Central to the development and acquisition of new target systems to support the BMDS Block testing schedule is the utilization of a prime contractor. The Targets and Countermeasures Directorate will have awarded a prime contract who will be responsible for: 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 2002	FY 2003	FY 2004	FY 2005
Target Support			66129	89144
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-This effort funds the Targets and Countermeasures Acquisition Strategy prime contract currently scheduled for award in 4Q/03. This includes all core contract costs, such as program management, systems engineering and incentive fee. Funding will also utilize new target support efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories and early concept support for the prototyping of advanced systems or sub-systems for BMDS targets. Other funded efforts providing unique target support requirements, certification and instrumentation analyses will be conducted by Federally Funded Research and Development Centers (FFRDCs).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

FY 2005 Planned Accomplishments:
-Continues to fund the Targets and Countermeasures Acquisition Strategy prime contract currently scheduled for award in 4Q/03. This includes all core contract costs, such as program management, systems engineering and incentive fee. Funding will also utilize new target support efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories and early concept support for the prototyping of advanced systems or sub-systems for BMDS targets. Other funded efforts providing unique target support requirements, certification and instrumentation analyses will be conducted by Federally Funded Research and Development Centers (FFRDCs).

	FY 2002	FY 2003	FY 2004	FY 2005
Target Development			44176	17606
RDT&E Articles (Quantity)			6	2

This effort provides for: 1) new target development efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories; and, 2) early concept development and prototyping of advanced systems or sub-systems for BMDS targets. Current, on-going target development efforts such as the Short Range Air Launch Target (SRALT), Short Range Liquid Fuel Target Booster (LFTB), the FMA launch from a Mobile Launch Platform, and the Medium Range Target will be completed.

FY 2004 Planned Accomplishments:
- RDT&E Test Articles: 5 SRALTs; 1 FMA for launch off of Mobile Launch Platform
- Complete SRALT development and conduct Risk Reduction Flight (RRF)
- Continue Short Range Liquid Fuel Booster development
- Complete FMA/Mobile Launch Platform preparations and conduct RRF
- Continue MRT development

FY 2005 Planned Accomplishments:
- RDT&E Test Articles: 1 Medium Range Target; 1 Short Range Liquid Fuel Target Booster
- Complete MRT development and conduct RRF
- Complete the Short Range Liquid Fuel Target Booster development and conduct RRF

	FY 2002	FY 2003	FY 2004	FY 2005
Payload Development			48330	12984
RDT&E Articles (Quantity)			3	5

This effort develops capability-based payloads (re-entry vehicles, countermeasures, instrumentation) in support of Critical Measurements and Countermeasures (CMCM) flight tests. These flight tests collect and assess critical phenomenology data in order to develop realistic payloads for targets used in BMDS flight tests. This effort also initiates the development of the Small Low Observable (SLO) payload suite to support Ground-based Midcourse Defense (GMD), and also completes a next generation Fly Along Sensor Package (FASP), which will provide critical visible and infrared imagery for missile defense seeker performance risk reduction, algorithm evaluation, and target payload characterization.

FY 2004 Planned Accomplishments:
- RDT&E Test Articles: 2 payload suites for CMCM-1a and 1b in 4Q/04 tests; 1 FASP

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

- Begin development of a SLO payload suite (RV, instrumentation, associated objects, payload interface) to support Ground-based Midcourse Defense (GMD) to support RCF-2, IFT-21 and IFT-22.
- Complete development of FASP
- Complete development of 2 payload suites for CMCM-1a and 1b tests in 4Q/04
- 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 3Q05

FY 2005 Planned Accomplishments:
- RDT&E Test Articles: 1 GMD payload suite; 4 payload suites for CMCM-2a/b and 3a/b
- Complete payload design and development for the two CMCM-2a and 2-b flight tests in 3Q/05
- Complete payload design and development for the two CMCM-3a and 3-b flight tests in 4Q/05
- Complete development of a SLO payload suite (RV, instrumentation, associated objects, payload interface) to support Ground-based Midcourse Defense (GMD) to support RCF-2, IFT-21 and IFT-22.

Note: Payload suites include countermeasures, re-entry vehicles, instrumentation, adaptor sections, and deployment mechanisms.

	FY 2002	FY 2003	FY 2004	FY 2005
Asset Management			38752	50045
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets, FMA assets and the Strategic Target System (STARS).

FY 2005 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets, FMA assets and the STARS.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

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 program develops capability-based target systems utilizing both existing GFE and new target systems that meet target specifications detailed in BMD system and technical requirements documents. BMDS target systems will be developed and acquired utilizing a targets prime contract for all future target booster development activities, BMDS design and development of payloads and countermeasures, and all advanced target development. The prime contractor will also provide systems level management and perform systems engineering across the portfolio of BMDS targets. The government will maintain system responsibility and will ensure successful management of BMDS targets execution. Current, on-going target development contracts will either be completed under the current contract structure, or will be transitioned to the prime contractor, depending on the status of the contract and maturity of the target system being developed

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	0		7620		0			7620	
Short Range Liquid Fuel	C/CPFF	TRW/Orbital Sciences Corp./CA/AZ	0	0		10800		8350			19150	
FMA/Mobile Launch Platform	C/CPFF	Lockheed Martin/Huntsville, AL	0	0		200		0			200	
Medium Range Target	C/Various	TBD	0	0		19520		3480			23000	
New Target Development	C/Various	TBD	0	0		0		0				
Advanced Development	C/Various	TBD	0	0		6036		5776			11812	
Payload Development												
Fly Along Sensor Package	C/FFRDC	MIT/LL/Boston, MA	0	0		2600		0			2600	
HARDFAC	C/CPFF	AFRL/Alburqueque, NM	0	0		1255		1260			2515	
SLO Development	C/Various	TBD	0	0		14000		6000			20000	
CM Design Develop, Characterize	C/Various	Various	0	0		5000		0			5000	
Payload Suite for CMCM-1			0	0		3500		0			3500	
Payload Suite for CMCM-2			0	0		12975		4474			17449	
Payload Suite for CMCM-3			0	0		9000		1250			10250	
Subtotal Product Development			0	0		92506		30590			123096	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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/Other	JHU/APL/Laurel, MD	0	0		1285		1000			2285	
Targets Prime Acq. Contract	C/Various	TBD	0	0		64844		88144			152988	
Subtotal Support Costs			0	0		66129		89144			155273	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 Range Targets	Various	Various	0	0		4075		9488			13563	
Long Range Targets	Various	Various	0	0		10159		8150			18309	
Various Booster Management	Various	Various	0	0		24518		32407			56925	
Subtotal Test and Evaluation			0	0		38752		50045			88797	

Remarks

IV. Management Services Cost ($ in Thousands)

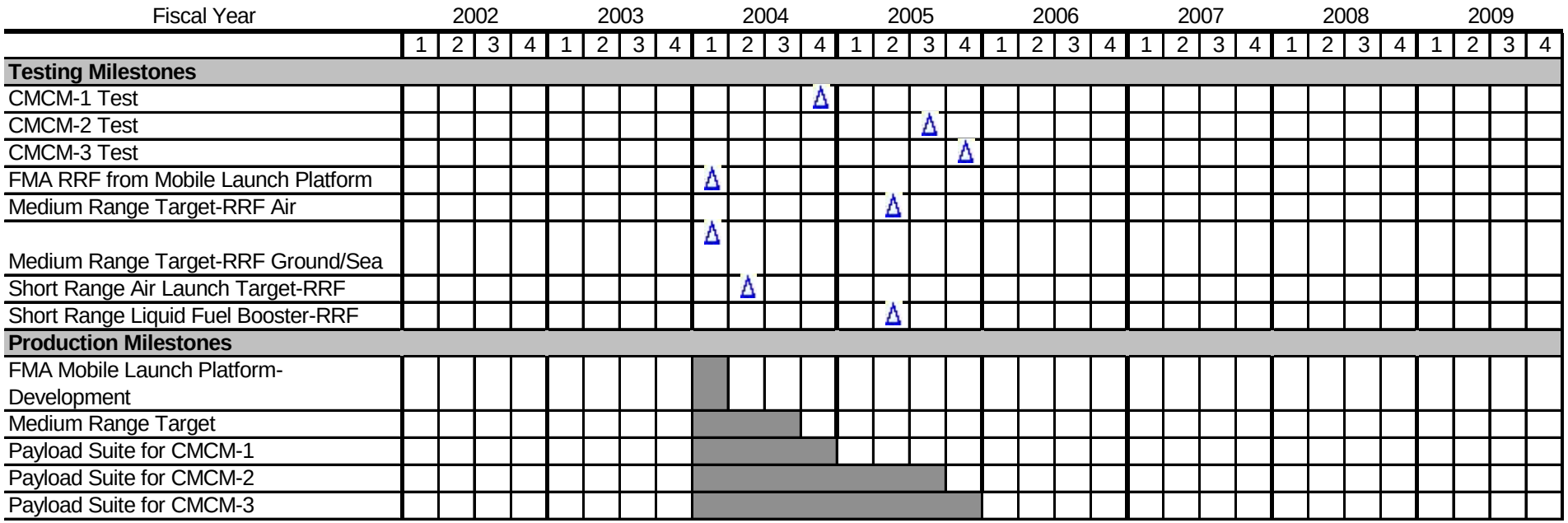
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		197387		169779			367166	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
CMCM-1 Test			4Q					
CMCM-2 Test				3Q				
CMCM-3 Test				4Q				
FMA RRF from Mobile Launch Platform			1Q					
Medium Range Target-RRF Air				2Q				
Medium Range Target-RRF Ground/Sea			1Q					
Short Range Air Launch Target-RRF			2Q					
Short Range Liquid Fuel Booster-RRF				2Q				
Production Milestones								
FMA Mobile Launch Platform-Development			1Q					
Medium Range Target			1Q-3Q					
Payload Suite for CMCM-1			1Q-4Q					
Payload Suite for CMCM-2			1Q-4Q	1Q-3Q				
Payload Suite for CMCM-3			1Q-4Q	1Q-4Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0805 Targets & Countermeasures - Block 2006	0	0	31860	109877	212500	171624	0	0
RDT&E Articles Qty	0	0	0	0	6	6	0	0

A. Mission Description and Budget Item Justification

Funding for this effort was previously held under the Ballistic Missile Defense System Segment Program Element (PE 0603880C, Project 1030).

The Targets & Countermeasures Block 2006 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 efforts are planned to support Block 2006 testing:

- Continue the Targets Prime contract.
- Initiates the development, completion, and risk reduction testing of the Enhanced Target Delivery System (ETDS) to support the Ground Based Midcourse Defense (GMD) and Aegis Ballistic Missile Defense (Aegis BMD) programs.
- Initiates the development and risk reduction testing of a Long Range Foreign Material Acquisition (FMA) to support the Airborne Laser (ABL), Kinetic Interceptor (KI) and GMD programs.
- Completes payload suite design and development for 10 Critical Measurements & Countermeasures (CMCM) tests.
- Purchases long lead material asset and asset management items for short, medium, and long range target components.
- Continues the maintenance, aging surveillance, refurbishment, and routine testing of existing GFE boosters.

Central to the development and acquisition of new target systems to support the BMDS block testing schedule is the utilization of a prime targets contractor. The Targets and Countermeasures Directorate will award a prime contract in FY 2004 that will: 1) provide systems engineering across the targets portfolio, including managing and executing Block target requirements; 2) develop future target booster development activities; 3) design and develop BMDS payloads and countermeasures; 4) develop advanced targets; and, 5) Long Lead Material and Asset Management.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Target Support			2614	6815
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
This effort funds the Targets and Countermeasures Acquisition Strategy prime contract to include core contract costs, such as program management and systems engineering.

FY 2005 Planned Accomplishments:
This effort continues to fund the Targets and Countermeasures Acquisition Strategy prime contract to include core contract costs, such as program management and systems engineering.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

	FY 2002	FY 2003	FY 2004	FY 2005
Target Development			23246	56794
RDT&E Articles (Quantity)			0	0

This effort funds the development of new target efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories, and early concept development and prototyping of advanced systems or sub-systems for BMDS targets. RDT&E articles described below are scheduled to be completed in FY 2006.

FY 2004 Planned Accomplishments:
-Begin development or acquire a Long Range FMA to support ABL, KI , and GMD flight tests.

FY 2005 Planned Accomplishments:
-Initiate development of the ETDS to support GMD.
-Continue development or acquire a Long Range FMA to support ABL, KI , and GMD flight tests.

	FY 2002	FY 2003	FY 2004	FY 2005
Payload Development			6000	46268
RDT&E Articles (Quantity)			0	0

This effort develops capability-based payloads (re-entry vehicles, countermeasures, instrumentation) in support of CMCM flight tests. Additionally, this effort includes design, development, and characterization of payloads used in CMCM flight tests. These flight tests collect and assess critical phenomenology data in order to develop realistic payloads for targets used in BMDS flight tests. RDT&E articles described below are scheduled to be completed in FY 2006 and FY 2007.

FY 2004 Planned Accomplishments:
-Initiate and develop 3 payload suites for the Long Range CMCM-4 flight test.
-Initiate and develop 2 countermeasure articles for the Sounding Rocket CMCM-4 flight test.

FY 2005 Planned Accomplishments:
-Initiate and develop payload instrumentation for the Sounding Rocket CMCM-4 flight test.
-Initiate and develop 3 payload suites for Long Range CMCM-5 flight test.
-Initiate and develop 2 countermeasure articles for the Sounding Rocket CMCM-6 flight test.
-Continue development of 3 payload suites for the Long Range CMCM-4 flight test.
-Continue development of 2 countermeasure articles for the Sounding Rocket CMCM-4 flight test.

Note: Payload suites include countermeasures, re-entry vehicles, instrumentation, adapter sections, and deployment mechanisms.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

	FY 2002	FY 2003	FY 2004	FY 2005
Asset Management				
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets; Foreign Material Acquisition (FMA) assets; and the Strategic Target System (STARS). Funding to support this Block 06 effort is in FY 2006 and FY 2007.

FY 2005 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets; FMA assets; and the STARS. Funding to support this Block 06 effort is in FY 2006 and FY 2007.

C. Other Program Funding Summary

	FY 2002	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	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

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 program develops capability-based target systems utilizing both existing GFE and new target systems that meet target specifications detailed in BMD system and technical requirements documents. BMDS target systems will be developed and acquired utilizing a targets prime contract for all future target booster development activities, BMDS design and development of payloads and countermeasures, and all advanced target development. The prime contractor will also provide systems level management and perform systems engineering across the portfolio of BMDS targets. The government will maintain system responsibility and will ensure successful management of BMDS targets execution. New target development efforts are planned to transition to the prime contractor.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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		TBD						28000	1Q		28000	
Long Range FMA		TBD	0			23246		28794			52040	
Payload Development												
Payload Suite for CMCM-4			0	0		6000		34268			40268	
Payload Suite for CMCM-5			0	0		0		11000			11000	
Payload Suite for CMCM-6			0	0		0		1000			1000	
Subtotal Product Development			0	0		29246		103062			132308	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Targets Prime Contract	C	TBD	0	0		2614		6815			9429	
Subtotal Support Costs			0	0		2614		6815			9429	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

IV. Management Services Cost ($ in Thousands)

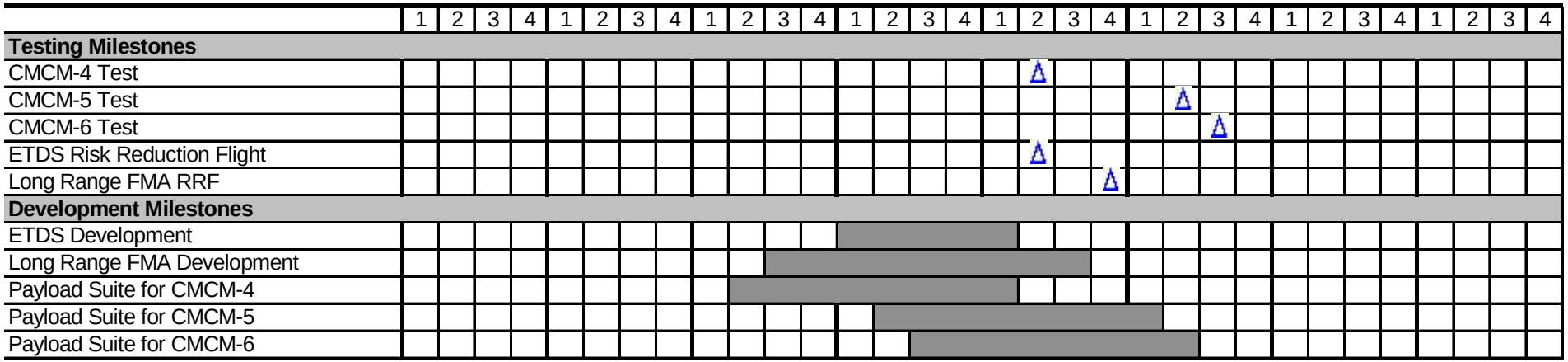
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		31860		109877			141737	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
CMCM-4 Test					2Q			
CMCM-5 Test						2Q		
CMCM-6 Test						3Q		
ETDS Risk Reduction Flight					2Q			
Long Range FMA RRF					4Q			
Development Milestones								
ETDS Development				1Q-4Q	1Q			
Long Range FMA Development			3Q-4Q	1Q-4Q	1Q-3Q			
Payload Suite for CMCM-4			2Q-4Q	1Q-4Q	1Q			
Payload Suite for CMCM-5				2Q-4Q	1Q-4Q	1Q		
Payload Suite for CMCM-6				3Q-4Q	1Q-4Q	1Q-2Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0905 Targets & Countermeasures - Block 2008	0	0	0	56794	77398	67974	238821	253064
RDT&E Articles Qty	0	0	0	0	0	1	5	7

A. Mission Description and Budget Item Justification

Funding for this effort was previously held under the Ballistic Missile Defense System (BMDS) Program Element (PE 0603880C, Project 1030).

The Targets & Countermeasures Block 2008 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 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), Theater High Altitude Area Defense (THAAD), etc.) fund the acquisition and use of targets required for BMDS testing. The following efforts are planned to support Block 2008 testing:

- Continue the Targets Prime contract.
- Initiate development of the Medium and Long Range Liquid Fuel Booster to support the Airborne Laser (ABL) program, Aegis BMD, THAAD, and Ground-based Midcourse Defense (GMD) flight tests.
- Initiate development of the Strategic Range Air Launch Target.
- Completes payload suite design and development for 10 Critical Measurements & Countermeasures (CMCM) tests.
- Purchases long lead material asset and asset management items for short, medium, and long range target components.
- Continues the maintenance, aging surveillance, refurbishment, and routine testing of existing Government Furnished Equipment (GFE) boosters.

Central to the development and acquisition of new target systems to support the BMDS block testing schedule is the utilization of a prime targets contractor. The Targets and Countermeasures Directorate will award a prime contract in FY 2004 that will: 1) provide systems engineering across the targets portfolio, including managing and executing Block target requirements; 2) develop future target booster development activities; 3) design and develop BMDS payloads and countermeasures; 4) develop advanced targets; and, 5) Long Lead Material and Asset Management.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Target Support			0	0
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-This effort funds the Targets and Countermeasures Acquisition Strategy prime contract to include core contract costs, such as program management and systems engineering. Funding for this effort to support the Block 2008 capability is programmed for FY 2006-FY 2009.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

FY 2005 Planned Accomplishments:
-This effort continues to fund the Targets and Countermeasures Acquisition Strategy prime contract to include core contract costs, such as program management and systems engineering. Funding for this effort to support the Block 2008 capability is programmed for FY 2006-FY 2009.

	FY 2002	FY 2003	FY 2004	FY 2005
Target Development			0	56794
RDT&E Articles (Quantity)			0	0

This effort funds the development of new target efforts required for full-up BMDS testing across the entire spectrum of target launch trajectories, and early concept development and prototyping of advanced systems or sub-systems for BMDS targets. RDT&E articles described below are scheduled to be completed in FY 2007.

FY 2004 Planned Accomplishments:
N/A.

FY 2005 Planned Accomplishments:
-Initiate development of the Strategic Range Air Launch Target to support GMD flight tests.
-Initiate development of the Medium and Long Range Liquid Fuel booster to support ABL, Aegis BMD, THAAD, and GMD.

	FY 2002	FY 2003	FY 2004	FY 2005
Payload Development			0	0
RDT&E Articles (Quantity)			0	0

This effort develops capability-based payloads (re-entry vehicles, countermeasures, instrumentation) in support of CMCM flight tests. Additionally, this effort includes design, development, and characterization of payloads used in CMCM flight tests. These flight tests collect and assess critical phenomenology data in order to develop realistic payloads for targets used in BMDS flight tests. Funding for this effort to support Block 2008 capability testing starts in FY 2007. RDT&E articles described below are scheduled to be completed in FY 2008 and FY 2009.

FY 2004 Planned Accomplishments:
-N/A: Payload suites for CMCM 7-10 will be developed starting in FY 2006 and FY 2007.

FY 2005 Planned Accomplishments:
-N/A: Payload suites for CMCM 7-10 will be developed starting in FY 2006 and FY 2007.

Note: Payload suites include countermeasures, re-entry vehicles, instrumentation, adapter sections, and deployment mechanisms.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

	FY 2002	FY 2003	FY 2004	FY 2005
Asset Management			0	0
RDT&E Articles (Quantity)			0	0

FY 2004 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets; Foreign Material Acquisition (FMA) assets; and the Strategic Target System (STARS). Funding for this effort to support the Block 2008 capability is programmed for FY 2008-FY 2009.

FY 2005 Planned Accomplishments:
-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 GFE boosters. GFE boosters include Minuteman, Peacekeeper, Lance, and Pershing assets; FMA assets; and the STARS. Funding for this effort to support the Block 2008 capability is programmed for FY 2008-FY 2009.

C. Other Program Funding Summary

	FY 2002	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	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

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 program develops capability-based target systems utilizing both existing GFE and new target systems that meet target specifications detailed in BMD system and technical requirements documents. BMDS target systems will be developed and acquired utilizing a targets prime contract for all future target booster development activities, BMDS design and development of payloads and countermeasures, and all advanced target development. The prime contractor will also provide systems level management and perform systems engineering across the portfolio of BMDS targets. The government will maintain system responsibility and will ensure successful management of BMDS targets execution. New target development efforts are planned to transition to the prime contractor.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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	Other	TBD	0	0		0		18000	1/4Q		18000	
Med/Long Range LFB	Other	TBD	0	0		0		38794	1/4Q		38794	
Payload Development												
CMCM-7	Other	TBD	0	0		0		0				
CMCM-8	Other	TBD	0	0		0		0				
CMCM-9	Other	TBD	0	0		0		0				
CMCM-10	Other	TBD	0	0		0		0				
Subtotal Product Development			0	0		0		56794			56794	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Targets Prime Contract	Other	TBD	0	0			3/4Q					
Subtotal Support Costs			0	0		0		0			0	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 Range Targets	Various	Various										
Long Range Targets	Various	Various										
Various Booster Management	Various	Various										
Subtotal Test and Evaluation			0	0		0		0			0	

Remarks

IV. Management Services Cost ($ in Thousands)

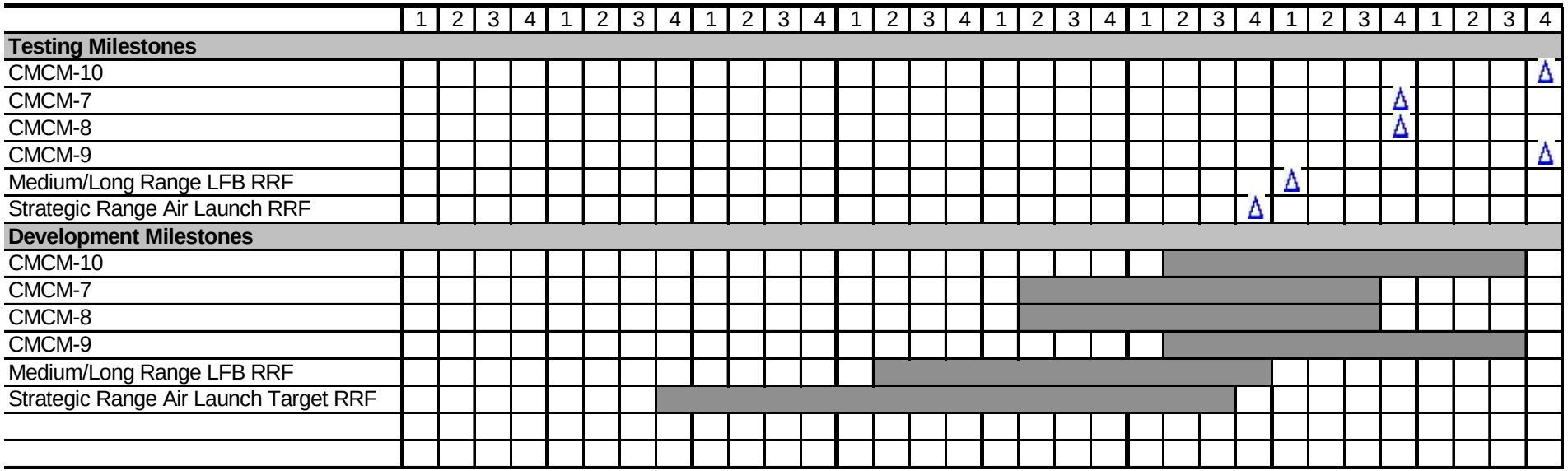
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		0		56794			56794	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
CMCM-10								4Q
CMCM-7							4Q	
CMCM-8							4Q	
CMCM-9								4Q
Medium/Long Range LFB RRF							1Q	
Strategic Range Air Launch RRF						4Q		
Development Milestones								
CMCM-10						2Q-4Q	1Q-4Q	1Q-3Q
CMCM-7					2Q-4Q	1Q-4Q	1Q-3Q	
CMCM-8					2Q-4Q	1Q-4Q	1Q-3Q	
CMCM-9						2Q-4Q	1Q-4Q	1Q-3Q
Medium/Long Range LFB RRF				2Q-4Q	1Q-4Q	1Q-4Q		
Strategic Range Air Launch Target RRF		4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603888C Ballistic Missile Defense Test and Targets**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program Operations	0	0	6576	6839	7113	7397	7693	8001
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Transferred in from the Ballistic Missile Defense System Segment Program Element 0603880C.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	0	0	3148	3116
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	0	0	2438	2556
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	0	0	990	1167
RDT&E Articles (Quantity)				

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.

C. Other Program Funding Summary

	FY 2002	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	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603888C Ballistic Missile Defense Test and Targets			
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	0	343644	384763	333636	343447	349335	360951
0701 Command and Control, Battle Management and Communications (C2BMC) Block 2004	0	0	114472	79306	0	0	0	0
0801 Command and Control, Battle Management and Communications (C2BMC) Block 2006	0	0	53247	104481	115707	0	0	0
0901 Command and Control, Battle Management and Communications (C2BMC) Block 2008	0	0	736	11662	27070	144464	144988	146638
0702 Hercules Block 2004	0	0	18161	27427	0	0	0	0
0802 Hercules Block 2006	0	0	19481	17893	44729	44669	0	0
0902 Hercules Block 2008	0	0	18810	17276	16905	16883	62342	60255
0703 Joint Warfighter Support Block 2004	0	0	24139	12861	0	0	0	0
0803 Joint Warfighter Support Block 2006	0	0	0	11784	23644	12292	0	0
0903 Joint Warfighter Support Block 2008	0	0	0	0	0	12292	28530	30502
0204 Joint National Integration Center (JNIC)	0	0	79122	85876	85236	92228	91283	99443
0602 Program Operations	0	0	15476	16197	20345	20619	22192	24113

A. Mission Description and Budget Item Justification

Funding for this effort was previously captured under the Ballistic Missile Defense System Segment Program Element (PE 0603880C).

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) Products 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 Products mission will be comprised of four primary projects: C2BMC, Joint Warfighter, Joint National Integration Center and Hercules. Through the employment of the Missile Defense National Team (MDNT), a single, integrated layered Ballistic Missile Defense System (BMDS) will be acquired. 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) Command, Control and 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 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. The C2BMC role in BMD is as follows:

- Provides Planning, Control, Monitoring, and Execution of the BMDS
- Provides connectivity and information exchange between external elements and components of the BMDS
- Provides the capability to operate the elements in an integrated, layered, fashion, and
- Provides the Human in Control (HIC) to BMDS.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603889C Ballistic Missile Defense Products**

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), University Affiliated Research Centers (UARC) and Scientific Engineering and Technical Assistance (SETA) providers, will develop and deliver a flexible integrated BMDS C2BMC.

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 initial defensive operations, integration of SPACECOM/NORTHCOM 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.

The Joint National Integration Center (JNIC) operates as the field-operating agency of MDA and maintains a world-class research, development, test and evaluation and rapid prototyping center. The center consists of a highly secure consolidated research and development building and a support building totaling almost a million square feet. It provides MDA with a high performance computing capability and a worldwide secure communications connectivity throughout the missile defense community. The JNIC is a premier modeling and simulation and software development center for missile defense.

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, which 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 for developing algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	0	0	343644	384763
Total Adjustments	0	0	343644	384763
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	343644	384763
SBIR/STTR Transfer	0	0	0	0

Funding for this effort was previously captured under the Ballistic Missile Defense System Segment Program Element (PE 0603880C).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	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	0	114472	79306	0	0	0	0
RDT&E Articles Qty	0	0	3	2	0	0	0	0

A. Mission Description and Budget Item Justification

Beginning in FY 2004, funding for this effort will transition from BMD Systems Program Element (PE) (0603880C-Project 1010) to the new Ballistic Missile Defense Products PE (0603889C-Project 0701).

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.

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 Low - SBIRS Low)) 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 (GMD), Theater High Altitude Air Defense (THAAD), Airborne Laser (ABL), Patriot 3 (PAC-3) Interceptor, Aegis BMD, Space Based Infrared System Low - SBIRS Low), and Defense Support Program (DSP). This may change as a result of annual Block capability reviews.

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 (JRE) long-haul communications capability during the FY02/FY03 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.

The desired Block 2004 BMDS C2BMC capabilities are as follows:

- C2: a Common Operational Picture (COP); Dissemination of BMDS Early Warning and Impact Point Prediction (IPP)/Launch Point Estimate (LPE) data to BMDS elements; Set weapons release conditions and Disseminate Weapons Release Conditions to BMDS Elements; Deliberate and Dynamic Planning using Joint Defense Planner (JDP); Analyze BMD plan using JEDA (Joint Engine for Defense Analysis); and Collaborate Plan with Army Missile Defense Warning System (AMDWS) and Area Air Defense Commander (AADC).

- BM: Track Correlation/Fusion; Track/Mid-Course Feature Handover and Precision Cue; Threat Object-Cluster Discrimination and Classification.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603889C Ballistic Missile Defense Products

- Comms: Integrated Global Command Network (GCN)/Defense Information System Network (DISN)/Link 16 and other Networks; Limited RT Network Management Monitoring; and Message Format Conversion.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Missile Defense National Team BMC2/C (MDNTB(I))			57769	42635
RDT&E Articles (Quantity)			3	2

RDT&E Articles
- FY 2004: BMDS C2BMC Element Spirals 4.3 and 4.4, one BMDS C2BMC Suite;
- FY 2005: BMDS C2BMC Element Spiral 4.5 and one BMDS C2BMC suite.

The Missile Defense National Team for C2BMC (MDNTB(I)) will deliver BMDS C2BMC Element definition, system design, planning for the content of each Block as well as the 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 of initial defensive operations; 3) support demonstrations and experiments; 4) define the approach to support the initial defensive operations capabilities and define the components and attributes of the necessary acquisition package for transitioning the BMDS C2BMC to full-scale development and deployment.

FY 2004:
- To achieve the above objectives, the MDNTB(I) shall develop and provide the Block 2004 BMDS C2BMC system architecture and operational architecture description data to include BMDS C2BMC element and interface data for each BMDS element, and for the Objective BMDS C2BMC element as necessary. Block 2004 shall consist of five (5) software spirals (4.1 through 4.5) and will feature improvements to the BMDS C2 system. Spiral 4.3 (Situational Awareness and Execution) and Spiral 4.4 (Sensor Cueing) are planned for delivery in FY 2004. Work on the Objective Architecture shall be accomplished as required.

- Develop a new stand-alone C2BMC suite prototype to provide a BMDS C2BM capability; and weapon system/sensor system BMC2C HW/SW that perform as components of the C2BMC element.

- Operate and upgrade the C2BMC-Experimental (C2BMC-X) environment at the JNIC to perform/support demonstrations, experiments (including technology insertion), exercises, war games, and user assessments.

- Operate and upgrade the two Development and Testing (D&T) laboratories and the three Integration and Testing (I&T) 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 Suite at the JNIC.

- 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.

FY 2005:
- Continue development of the Block 2004 BMDS C2BMC system architecture and operational architecture description data to include BMDS C2BMC element and interface data for each BMDS element, and for the Objective BMDS C2BMC element. Block 2004 shall consist of five (5) software spirals (4.1 through 4.5) and will feature improvements to the BMDS C2 system. Spiral 4.5 (Element GTOM) is planned for FY 2005. Work on the Objective Architecture shall be accomplished as required.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

- Develop a new stand-alone C2BMC suite prototype to provide a BMDS C2BM capability; and weapon system/sensor system BMC2C HW/SW that perform as components of the C2BMC element.

- Continue to operate and upgrade the C2BMC-Experimental (C2BMC-X) environment at the JNIC to perform/support demonstrations, experiments (including technology insertion), exercises, war games, and user assessments.

- Continue to perate and upgrade the two Development and Testing (D&T) laboratories and the three Integration and Testing (I&T) 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 Suite at the JNIC.

- Continue to 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.

	FY 2002	FY 2003	FY 2004	FY 2005
BMDS C2BMC Products			50075	32020
RDT&E Articles (Quantity)				

BMDS C2BMC Products funds non-MDNTB(I) activities in support of Block 2004 BMDS C2BMC development and validation.

FY 2004:
-To achieve this effort, the Block 2004 BMDS 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.

- Enhance system level tracking and discrimination capability to include Improved/Precision Cueing for Aegis BMD 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. Continue Benchmark project management.

- 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 Early Warning project focusing on technical data package (functional specifications) and finalizing the Early Warning Master implementation Plan.

- Design and integrate JRE capability for Aegis BMD (Block 2004). Funds Navy non-BMDS programs to support BMDS needs.

- Embed the JRE capability into BMDS, and continue to update the JRE Application Protocol (JREAP). Initiate development of JRE capability for Aegis BMD.

- 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

- Develop and test the communications integration of other elements and test environment of the BMC2C Test Bed to ensure high availability of communications for the system.

FY 2005:
- Continue solicitation for C2BMC new technology experiments in the C2BMC-X laboratory.

- 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.

- Continue ISC2 program integration engineering analysis.

- 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 BM/C2/C element node at the JNIC.

- Continue BMDS Information Assurance/Computer Network Defense (IA/CND) efforts begun in FY02. Update IA/CND Implementation plan and threat/risk assessment. Perform IA/CND Architecture Design. Evaluate BMDS component compliance with architecture.

	FY 2002	FY 2003	FY 2004	FY 2005
FFRDC and SETA Support			6628	4651
RDT&E Articles (Quantity)				

FY 2004:
-Funding represents support of 15 Staff Technical Equivalent (STE) FFRDC and 15 SETA personnel.

FY 2005:
-Funding represents support of 11 STE FFRDC and personnel and 10 SETA personnel.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

D. Acquisition Strategy

Command, Control, Battle Management and Communications (C2BMC) will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

The design and development of a BMDS Command, Control, Battle Management and Communication Architecture and System Specifications is a collaborative effort. The strategy is to require the Missile Defense National Team BM/C2/C (MDNTB(I)) to perform the engineering and delivery of an executable C2BMC Test Bed, C2BMC Block capability specifications, design specifications and interface control documents for the BMDS. The MDNT will be composed of two industry teams (MDNTB(I) & MDNTS(I)), 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 contractors, 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. BMDS C2BMC 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 BMC2/C (MDNTB(I))												
MDNTB(I)	SS/CPAF	MDNTB(I)/Gaith`burg, MD; Arl, VA				57769	1/2Q	42635	1/2Q	TBD	100404	TBD
BMDS C2BMC Products												
C2/BM/C Products	Various	Various/Various				50075	1/4Q	32020	1/4Q	TBD	82095	TBD
Subtotal Product Development			0	0		107844		74655			182499	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
FFRDC and SETA Support												
FFRDC	Various	Mitre, others/MDA HQ/Arlington, VA				3628	1/2Q	2651	1/2Q	TBD	6279	TBD
SETA	Various	Sparta/CSC/MDA HQ/Arlington, VA				3000	1/2Q	2000	1/2Q	TBD	5000	TBD
Subtotal Support Costs			0	0		6628		4651			11279	

Remarks

Above represents FFRDC and SETA contractor support provided at MDA HQ.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

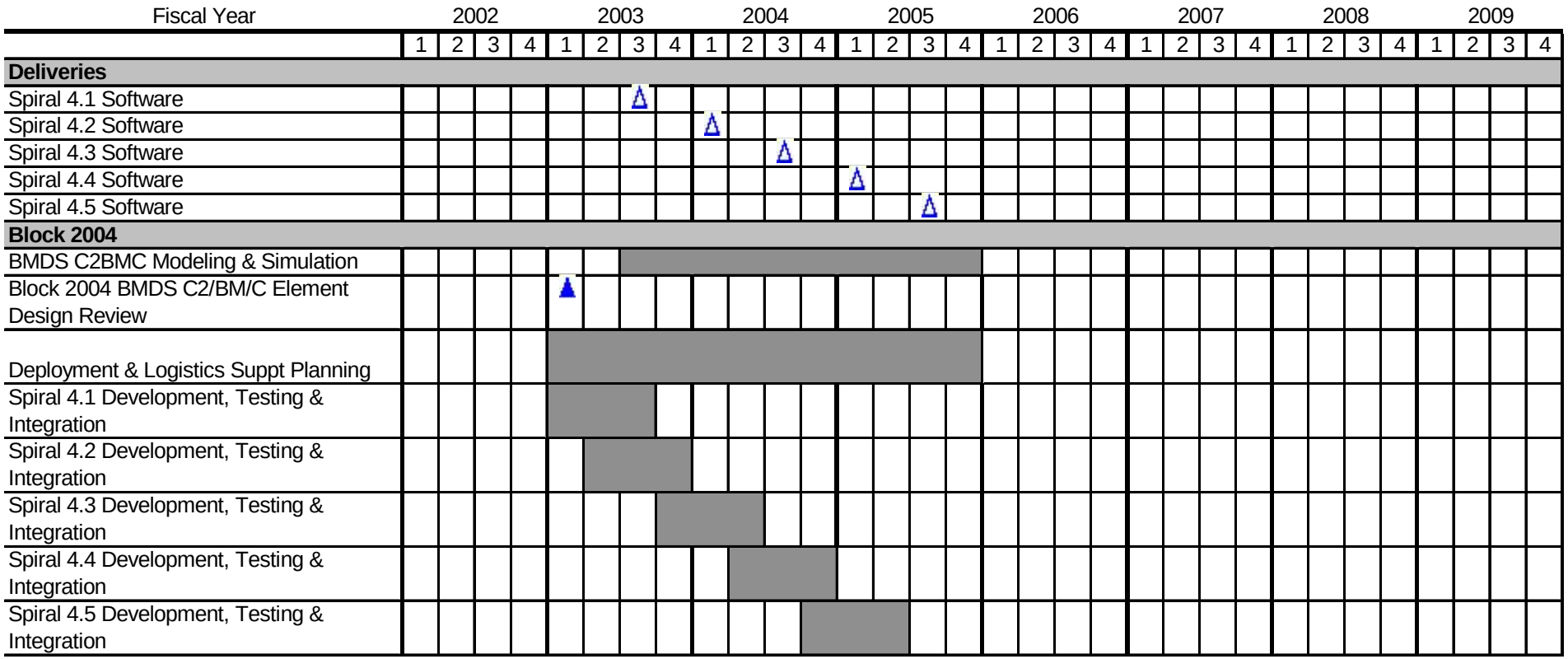
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		114472		79306			193778	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
Spiral 4.1 Software		3Q						
Spiral 4.2 Software			1Q					
Spiral 4.3 Software			3Q					
Spiral 4.4 Software				1Q				
Spiral 4.5 Software				3Q				
Block 2004								
BMDS C2BMC Modeling & Simulation		3Q-4Q	1Q-4Q	1Q-4Q				
Block 2004 BMDS C2/BM/C Element Design Review		1Q						
Deployment & Logistics Suppt Planning		1Q-4Q	1Q-4Q	1Q-4Q				
Spiral 4.1 Development, Testing & Integration		1Q-3Q						
Spiral 4.2 Development, Testing & Integration		2Q-4Q						
Spiral 4.3 Development, Testing & Integration		4Q	1Q-2Q					
Spiral 4.4 Development, Testing & Integration			2Q-4Q					
Spiral 4.5 Development, Testing & Integration			4Q	1Q-2Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603889C Ballistic Missile Defense Products

COST ($ in Thousands)	FY 2002	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	0	53247	104481	115707	0	0	0
RDT&E Articles Qty	0	0	0	2	2	0	0	0

A. Mission Description and Budget Item Justification

The Block 2006 BMDS C2 will build on the previously achieved Block 2004 BMDS C2 architecture and capabilities. Block 2006 C2 capabilities will feature Distributed and Collaborative Planning Tools and evolve from Block 2004 Stand-Alone Planning tools. Specific capabilities may change as a result of annual Block capability reviews.

The Block 2006 BMDS BM will also build on previously achieved Block 2004 capabilities. Planned improvements in Sensor Netting will take Block 2004 Track Correlation capabilities and evolve them into true Radar and Dissimilar Sensor Fusion for improved discrimination capability.

Similarly, Block 2006 BMDS Communications efforts will build on and expand on existing Block 2004 Communications networks and capabilities. Specifically, a dedicated BMDS Discrimination Network will emerge as well as real-time BMDS network monitoring. Finally, communications networks of friends and allies will begin to be connected to the BMDS communications grid.

Communications efforts with the Joint Range Extension (JRE) long-haul communications capability will continue. The Communication network(s) will connect BMDS assets and link them with other applicable DoD and non-DoD networks and assets as required.

More specific desired Block 2006 capabilities are as follows:

- C2: Automated Coordination Of Collateral Missions; Automated Dynamic BMDS Replanning in Minutes; Automated Aids for Weapons Release and Control.

- BM: Post-Commit GTOM to GMD, THAAD & SM-3 KVs; Data Fusion from Multiple RF Sensors for Improved Discrimination; Bidding Scheme for Engagement Coordination, and Launch on Remote.

- Comms: BMDS Discrimination Network in-place; Real-time BMDS Network Monitoring; Quality of Service (QoS) Implemented.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Missile Defense National Team BMC2/C			34562	39560
RDT&E Articles (Quantity)				2

RDT&E Articles: BMDS C2BMC Element Spirals 6.1 software delivery; and the creation of another BMDS C2BMC Suite.

The Missile Defense National Team for BMC2/C (MDNTB(I)) will accelerate Block 2006 BMDS C2BMC Element planning, and spiral development. 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 of initial defensive operations; 3) support demonstrations and experiments; 4) define the approach to support 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

FY 2004:
- 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. Work on Block 2006 will accelerate with the development of Block 2006 Advance Study Notices (ASNs) and Advance Change Notices (ACNs) to support BMDS elements integration. Initial ASNs and ACNs will focus on the planned production of initial Spiral 6.1 (FY 2005) and Spiral 6.2 (FY 2006) software deliveries. Work on the Objective Architecture shall be accomplished as necessary.

- Support will begin on Advance Change Notice (ASN) development for initial integration of allied missile defense systems. This may change due to annual Block capability reviews.

- Support will be ongoing for the C2BMC Integration Test Center and C2BMC-X Battle lab in accordance with MDNTB directed updates, interfaces and connectivity requirements and software purchases and licenses. Hardware and software modernization program will be ongoing for the above mentioned labs as well as for the Huntsville, AL, and Colorado Springs, CO, software Development, Testing and Integration laboratories.

FY 2005:
- Continue to develop and refine the Block 2006 BMDS C2BMC system architecture and operational architecture description data to include C2BMC element and interface data for each BMDS element. Work on Block 2006 continues to accelerate with the initial development and testing of Spiral 6.1 software products and preliminary spiral content trades for Spiral 6.2. Work on the Objective Architecture shall be accomplished as necessary.

- Continue efforts on Advance Change Notice (ASN) development for initial integration of allied missile defense systems. This may change due to annual Block capability reviews.

- Continue support for the C2BMC Integration Test Center and C2BMC-X Battle lab in accordance with MDNTB directed updates, interfaces and connectivity requirements and software purchases and licenses. Hardware and software modernization program will be ongoing for the above mentioned labs as well as for the Huntsville, AL, and Colorado Springs, CO, software Development, Testing and Integration laboratories.

	FY 2002	FY 2003	FY 2004	FY 2005
BMDS C2BMC Products				31335
RDT&E Articles (Quantity)				

BMDS C2BMC Products funds BMDS complimentary efforts of non-MDNTB(I) elements and agencies to support and/or integrate with BMDS and C2BMC.

The Block 2006 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 2006 sensors and Block 2006 weapon systems. It will continue to leverage and incorporate the data from multiple sensors (sensor netting) to improve track correlation quality and target discrimination.

- Develop dissimilar source fusion capability focusing on track fusion and discrimination fusion.

- Continue integration of Sensor Netting and Early Warning capabilities into the Block 2006 BMDS 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

- 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.

- Extend development of the BMC2C Test Bed to support operational exercises/initial defensive operations at JNIC for the Block.

- Develop and/or Procure HW/SW systems required to support the communications segment.

- Conduct studies and initiate development of Beyond Line of Sight capability in Joint Tactical Radio System.

- Continue to develop long-haul communications for the BMDS and the Global Command System. Support DISA efforts to implement DISN as part of the GIG and to interconnect the BMDS elements and the Combatant Commanders at the JNIC to support the Block.

- Continue BMDS Information Assurance/Computer Network Defense effort and initiate efforts to develop a CNA capability to enhance BMDS hard kill capabilities.

- Continue solicitation for C2BMC new technology experiments in the C2BMC-X laboratory.

- Continue ISC2 program integration engineering analysis and implementation.

	FY 2002	FY 2003	FY 2004	FY 2005
Algorithm Engineering & Validation			16279	29376
RDT&E Articles (Quantity)				

This funding will be used for engineering and validation of Sensor Netting and Integrated Fire Control/Battle Management algorithms and concepts to develop capabilities for the BMDS C2BMC Suites. These requirements and changes needed in other elements will drive Advance Change Notices (ACNs) and Engineering Change Proposals (ECPs) to the elements. Specific activities to be funded include:

- Combined National Team-B research and development work with Project Hercules to adapt algorithms for C2BMC use.

- Experimentation and data analysis in a live Test Bed scenario utilizing IFT and other shots as appropriate and including multiple sensor elements utilizing the Project Hercules sidecars as well as the C2BMC Test Bed node and capabilities from the GMD element. These test are complementary to and build upon Project Hercules work and will extend the Project Hercules tests into a realistic BMDS environment including both simulated and live data. Relative test complexity will grow significantly from 2004 to 2005, and the number of algorithms to be tested will double in that timeframe.

- Appropriation of these results into BMDS requirements for C2BMC Suites spirals and ACNs and ECPs for sensor element updates.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

	FY 2002	FY 2003	FY 2004	FY 2005
FFRDC			1522	2252
RDT&E Articles (Quantity)				

Represents FFRDDC technical assistance provided to MDA HQ in support of Block 2006 efforts. Support shifts towards Block 2006 as effort intensifies.

	FY 2002	FY 2003	FY 2004	FY 2005
SETA			884	1958
RDT&E Articles (Quantity)				

Represents SETA assistance provided to MDA HQ in support of Block 2006 efforts. Level of support increases as Block 2006 efforts ramp up.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

D. Acquisition Strategy

Command & Control, Battle Management and Communications (C2/BM/C) will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

The design and development of a BMDS Command and Control, Battle Management and Communication Architecture and System Specifications is a collaborative effort. The strategy is to require the Missile Defense National Team BM/C2/C (MDNTB(I)) to perform the engineering and delivery of an executable C2/BM/C Test Bed, C2/BM/C Block capability specifications, design specifications and interface control documents for the BMDS. The MDNT will be composed of two industry teams (MDNTB(I) & MDNTS(I)), 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 contractors, 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. BMDS 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 BMC2/C												
MDNTB(I)	SS/CPAF	LLMC/Arl, VA				34562	1/2Q	39560	1/2Q	TBD	74122	TBD
BMDS C2BMC Products												
C2BMC	Various	HQ/Arl, VA						31335	1/4Q	CONT.	31335	CONT.
Algorithm Engineering & Validation												
Algorithm Eng. & Validation	Various	Various/MDA HQ/MDNTB(I)/Arlington, VA				16279	1/2Q	29376	1/3Q	TBD	45655	TBD
Subtotal Product Development			0	0		50841		100271			151112	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
FFRDC												
FFRDC	Other	Various/MDA HQ, Arlington, VA				1522	1/2Q	2252	1/2Q		3774	
SETA												
SETA	Various	Sparta, CSC/MDA HQ, Arlington, VA				884	1/2Q	1958	1/2Q		2842	
Subtotal Support Costs			0	0		2406		4210			6616	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

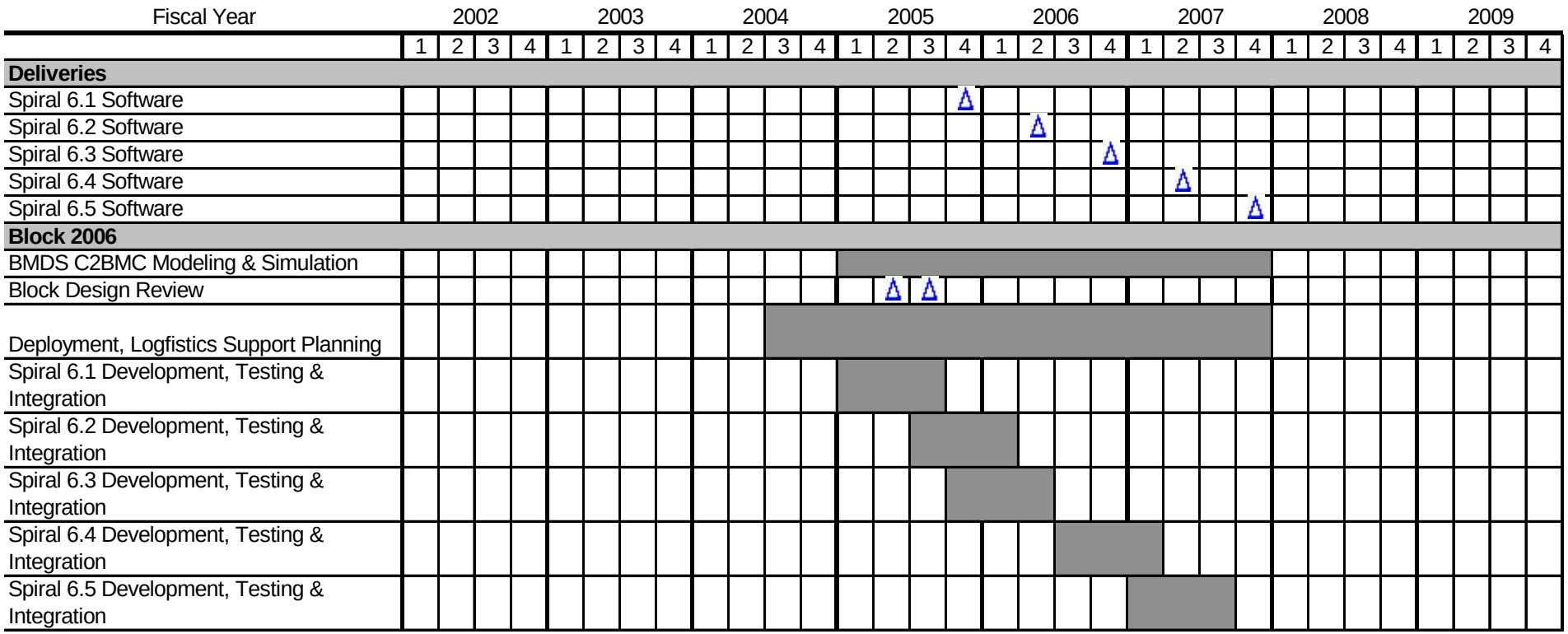
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		53247		104481			157728	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
Spiral 6.1 Software				4Q				
Spiral 6.2 Software					2Q			
Spiral 6.3 Software					4Q			
Spiral 6.4 Software						2Q		
Spiral 6.5 Software						4Q		
Block 2006								
BMDS C2BMC Modeling & Simulation				1Q-4Q	1Q-4Q	1Q-4Q		
Block Design Review				2Q,3Q				
Deployment, Logistics Support Planning			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Spiral 6.1 Development, Testing & Integration				1Q-3Q				
Spiral 6.2 Development, Testing & Integration				3Q-4Q	1Q			
Spiral 6.3 Development, Testing & Integration				4Q	1Q-2Q			
Spiral 6.4 Development, Testing & Integration					3Q-4Q	1Q		
Spiral 6.5 Development, Testing & Integration						1Q-3Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	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	0	736	11662	27070	144464	144988	146638
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Block 2008 BMDS C2 will build on the previously achieved Block 2006 BMDS C2 architecture and capabilities. Block 2008 C2 will feature Dynamic Re-Planning and evolves from the Block 2006 Distributed and Collaborative Planning capabilities. Specific capabilities may change as a result of annual Block capability reviews.

The Block 2008 BMDS BM will also build on previously achieved Block 2006 capabilities. Planned improvements in Sensor Netting will take Block 2006 Dissimilar Sensor Fusion and add Multi-spectral Data Fusion for improved discrimination capability, and add Engage-On-Remote to the war fighter's toolkit.

Similarly, Block 2008 BMDS Communications efforts will build on and expand on existing Block 2006 Communications networks and capabilities. Specifically, a Global Reach BMDS with Broadband SATCOM will be added to the existing BMDS Discrimination Network. Efforts will continue to connect allies and friends to the BMDS net.

Current desired Block 2008 capabilities are as follows:

- 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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Missile Defense National Team BMC2/C				10683
RDT&E Articles (Quantity)				

The Missile Defense National Team for BMC2/C (MDNTB) will initiate BMDS C2BMC element definition, system design, planning for the Block 2008 content. Block 2008 activities planned include: commence initial Block 2008 BMDS C2BMC Element capabilities description and draft an evolutionary plan for achieving those capabilities; support Block 2008 BMDS C2BMC preliminary demonstrations and experiments; and develop draft approach to support an initial defensive operations capability.

To achieve the above objectives, the MDNTB shall initiate development of a draft Block 2008 BMDS 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. Work on the Objective Architecture shall be accomplished as requirements are defined.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Support will be ongoing for the C2BMC Integration Test Center and C2BMC-X Battle lab in accordance with MDNTB directed updates, interfaces and connectivity requirements and software purchases and licenses.

Continue analysis of current deployment capabilities and logistics requirement of the C2BMC element and impact analysis for deploying the C2BMC element for an initial defensive operations capability and the production version of the deployable system.

	FY 2002	FY 2003	FY 2004	FY 2005
FFRDC			736	979
RDT&E Articles (Quantity)				

Represents FFRDC support provided to MDA HQ in support of Block 2008 and beyond efforts.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		

D. Acquisition Strategy

Command & Control, Battle Management and Communications (C2/BM/C) will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

The design and development of a BMDS Command and Control, Battle Management and Communication Architecture and System Specifications is a collaborative effort. The strategy is to require the Missile Defense National Team BM/C2/C (MDNTB(I)) to perform the engineering and delivery of an executable C2/BM/C Test Bed, C2/BM/C Block capability specifications, design specifications and interface control documents for the BMDS. The MDNT will be composed of two industry teams (MDNTB(I) & MDNTS(I)), 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 contractors, 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. BMDS 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 BMC2/C												
MDNTB(I)	SS/CPAF	MDNTB(I)/Rosslyn , VA						10683	1Q	TBD	10683	TBD
Subtotal Product Development			0	0		0		10683			10683	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
FFRDC												
FFRDC	Various	Various/MDA HQ/Arlington, VA				736	1Q	979	1Q	TBD	1715	TBD
Subtotal Support Costs			0	0		736		979			1715	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

IV. Management Services Cost ($ in Thousands)

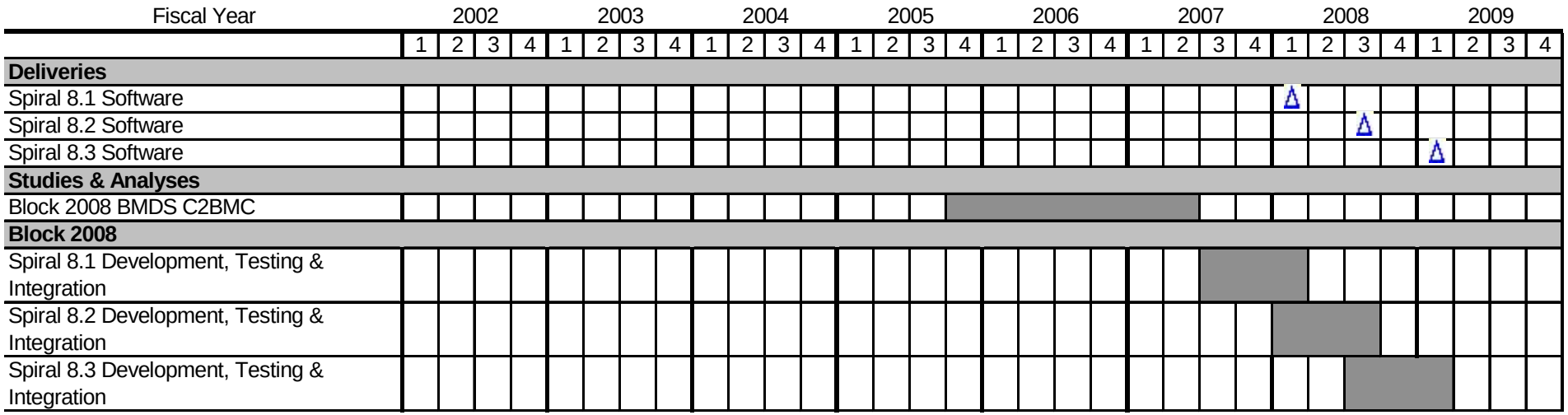
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		736		11662			12398	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
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-2Q		
Block 2008								
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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0702 Hercules Block 2004	0	0	18161	27427	0	0	0	0
RDT&E Articles Qty	0	0	4	4	0	0	0	0

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, which 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 for developing algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

This project was created as part of an approved program restructure starting in FY 2004. FY 2003 and prior funding was captured under PE 0603880C Project 1053.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Algorithm Productization and Test			8539	7843
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding has been set aside to allow Algorithm Productization and Testing for integration into the Elements. The effort will involve the fielding of discrimination algorithms and advanced decision support systems to track objects, discriminate decoys from reentry vehicles in uncertain environments, and to fuse multi-source information.

	FY 2002	FY 2003	FY 2004	FY 2005
Project Hercules			9622	19584
RDT&E Articles (Quantity)			4	4

Project Hercules' Planned Accomplishments for FY 2004 and FY 2005 include:

1) three midcourse radar discrimination algorithms

2) three algorithms for Forward Based Radar discrimination

3) two algorithms for radar-to-radar and radar-to-kill vehicle handover and track association using feature data

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

C. Other Program Funding Summary

	FY 2002	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	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

D. Acquisition Strategy

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

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

Capabilities 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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												
Hercules	Various	HQ/Arl, VA				2406	1Q	2353	1Q	CONT.	4759	CONT.
Project Hercules												
Army SMDC	Various	Army/Huntsville, AL				6488	1Q	16629	1Q	CONT.	23117	CONT.
Hercules	CPFF	Raytheon/Boston, MA				1000	1Q	1000	1Q		2000	
Subtotal Product Development			0	0		9894		19982			29876	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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												
Hercules	Various	HQ/Arl, VA				6133	1Q	5490	1Q	CONT.	11623	CONT.
Project Hercules												

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Army SMDC	Various	Army/Huntsville, AL				2134	1Q	1955	1Q	CONT.	4089	CONT.
Subtotal Test and Evaluation			0	0		8267		7445			15712	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		18161		27427			45588	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Fiscal Year	2002				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	1	2	3	4
Hercules																																
Algorithms to Test																																
Decision Architecture Prototype																																
Post Flight Test Data Analysis																																

MDA Exhibit R-4A Schedule Detail	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Hercules								
Algorithms to Test			1Q-4Q	1Q-4Q				
Decision Architecture Prototype			1Q-4Q	1Q-4Q				
Post Flight Test Data Analysis			1Q-4Q	1Q-4Q				

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0802 Hercules Block 2006	0	0	19481	17893	44729	44669	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

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, which 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 for developing algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

This project was created as part of an approved program restructure starting in FY 2004. FY 2003 and prior funding was captured under PE 0603880C Project 1053.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Project Hercules			19481	17893
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 for use by forward based sensors, the Decision Architecture, and difficult threat complexes.

Specific Block 06 goals for these developments include:

1) Forward Based Sensor capabilities are to be enhanced with expanded algorithm suites for forward base radars and forward based passive optical sensors,

2) to introduce the first algorithms for clutter mitigation

As requested by the MDA National Team, Decision Architecture emphasis in Block 06 will be on the first deployment of the Decision Architecture System Model, a discrimination fusion engine providing an enhanced capability to fuse multiple phenomenology data across sensors, interceptors and phases of missile flight. Hercules productization and test funds are focused on this initial DA integration.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

C. Other Program Funding Summary

	FY 2002	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	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

D. Acquisition Strategy

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

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

Capabilities 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				13611	1Q	12426	1Q	CONT.	26037	CONT.
Hercules	CPFF	Raytheon/Boston, MA				1000	1Q	1000	1Q	CONT.	2000	CONT.
Subtotal Product Development			0	0		14611		13426			28037	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Subtotal Support Costs			0	0		0		0			0	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				4870	1Q	4467	1Q	CONT.	9337	CONT.
Subtotal Test and Evaluation			0	0		4870		4467			9337	

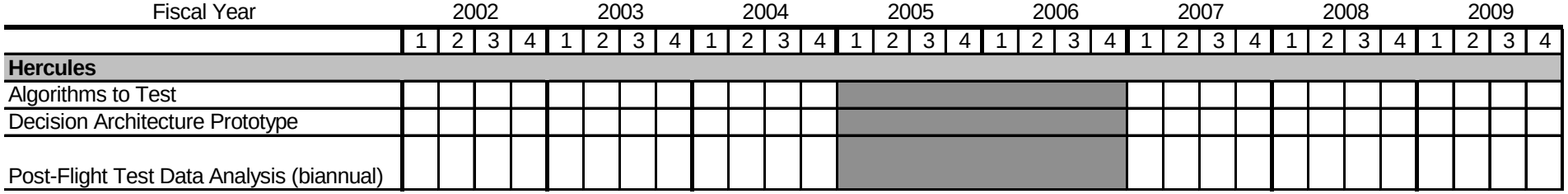
Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Subtotal Management Services			0	0		0		0			0	
Remarks												
Project Total Cost			0	0		19481		17893			37374	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Hercules								
Algorithms to Test				1Q-4Q	1Q-4Q			
Decision Architecture Prototype				1Q-4Q	1Q-4Q			
Post-Flight Test Data Analysis (biannual)				1Q-4Q	1Q-4Q			

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0902 Hercules Block 2008	0	0	18810	17276	16905	16883	62342	60255
RDT&E Articles Qty	0	0	0	0	0	0	0	0

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, which 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 for developing algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

This project was created as part of an approved program restructure starting in FY 2004. FY 2003 and prior funding was captured under PE 0603880C Project 1053.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Project Hercules			18810	17276
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 for use by forward based sensors, the Decision Architecture, and difficult threat complexes.

Specific Block 08 goals for these developments include:

1) Forward Based Sensor capabilities are to be enhanced with expanded algorithm suites for forward base radars, and forward based optical sensors

2) Forward Based Sensor Fusion algorithms will be introduced

3) an expanded algorithm suite for mitigating countermeasures

As requested by the MDA National Team, Decision Architecture emphasis in Block 08 will be on the enhancement of the System Model, a discrimination fusion engine providing an enhanced capability to fuse multiple phenomenology data across sensors, interceptors and phases of missile flight. Hercules will also provide the initial fielding of the Decision Architecture Global Planner, a BMDS level tools for enhancing command and control and battle management (C2/BM) capabilities across all nodes within the BMDS. Hercules productization and test funds are focused on DA integration with the current BMDS C2/BM element.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

C. Other Program Funding Summary

	FY 2002	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	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

D. Acquisition Strategy

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

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

Capabilities 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				13108	1Q	11962	1Q	CONT.	25070	CONT.
Hercules	CPFF	Raytheon/Boston, MA				1000	1Q	1000	1Q	CONT.	2000	CONT.
Subtotal Product Development			0	0		14108		12962			27070	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Subtotal Support Costs			0	0		0		0			0	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				4702	1Q	4314	1Q	CONT.	9016	CONT.
Subtotal Test and Evaluation			0	0		4702		4314			9016	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

IV. Management Services Cost ($ in Thousands)

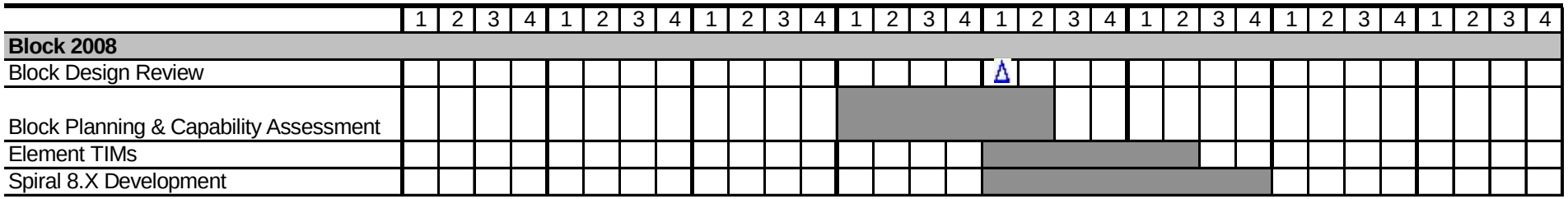
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Hercules												
Subtotal Management Services			0	0		0		0			0	

Remarks

Project Total Cost			0	0		18810		17276			36086	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2008								
Block Design Review					1Q			
Block Planning & Capability Assessment				1Q-4Q	1Q-2Q			
Element TIMs					1Q-4Q	1Q-2Q		
Spiral 8.X Development					1Q-4Q	1Q-4Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0703 Joint Warfighter Support Block 2004	0	0	24139	12861	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Beginning in FY 2004, funding for this effort will transition from BMD Systems Program Element (PE) (0603880C-Project 1055) to the new Ballistic Missile Defense Products PE (0603889C-Project 0703).

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 also supports planning for initial defensive operations, integration of SPACECOM/NORTHCOM 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. TR will work with the Services and Combatant Commanders to develop a BMD Support Structure to provide support for fielded capabilities.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Warfighter Support			15602	7595
RDT&E Articles (Quantity)				

FY 2004:
Funding for the Joint Warfighter Project transitions from Project 1055 to Project 0703 beginning in FY 2004

-Develop Tactics, Techniques & Procedures (TTP) and Rules of Engagement (ROE) to integrate BMDS elements into Operational Community for Block 04 BMDS.

-Refine BMDS and BMC2 concepts/options through studies, seminars, Senior Warfighters Forums (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.

FY 2005:
-Continue to refine TTP and ROE to integrate BMDS Elements into Operational Community for Block 04 BMDS.

-Continue refining BMDS and BMC2 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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Staff & Service Liaison			7801	3797
RDT&E Articles (Quantity)				

FY 2004:
-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.

-Manage Services Boards of Directors' (BOD) curriculum to build knowledge base with Combatant Commanders' 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, Air Force).

-Develop and coordinate deployment of BMDS initial defensive operations capabilities with the Joint Staff, the Services and the Combatant Commanders.

-Develop a BMD Support Structure for transitioned capabilities, train/assist training the Force, provide logistics support for fielded capabilities.

FY 2005:
-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.

-Continue to manage Services Boards of Directors' (BOD) curriculum to build knowledge base with Combatant Commanders' 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, Air Force).

-Continue to develop and coordinate deployment of BMDS initial defensive operations capabilities with the Joint Staff, the Services and the Combatant Commanders.

-Continue to develop a BMD Support Structure for transitioned capabilities, train/assist training the Force, provide logistics support for fielded capabilities

	FY 2002	FY 2003	FY 2004	FY 2005
SETA			736	1469
RDT&E Articles (Quantity)				

Scientific, Engineering, Technical and Assistance support provided to MDA HQ in support of Block 2004 efforts.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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	Various	Various/MDA HQ/Arlington, VA				736	1Q	1469	1Q		2205	
Subtotal Support Costs			0	0		736		1469			2205	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Joint Warfighter Support	Other	Combatant Commanders/Various				15602	1/4Q	7595	1/4Q	CONT.	23197	CONT.
Subtotal Test and Evaluation			0	0		15602		7595			23197	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

IV. Management Services Cost ($ in Thousands)

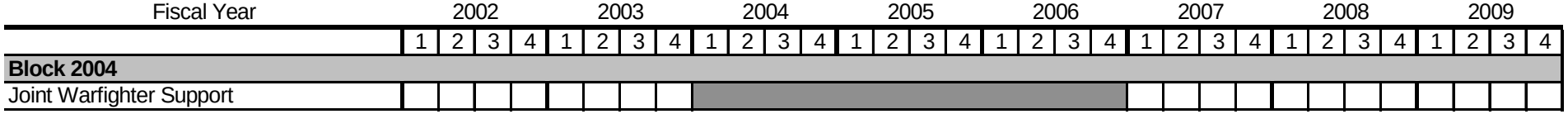
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Joint Staff & Service Liaison												
Joint Staff & Service Liaison	Various	Various/Various				7801	1/4Q	3797	1/4Q	TBD	11598	TBD
Subtotal Management Services			0	0		7801		3797			11598	

Remarks

Project Total Cost			0	0		24139		12861			37000	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2004								
Joint Warfighter Support			1Q-4Q	1Q-4Q	1Q-4Q			

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0803 Joint Warfighter Support Block 2006	0	0	0	11784	23644	12292	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 also supports planning for initial defensive operations, integration of SPACECOM/NORTHCOM 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.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Warfighter Support				7595
RDT&E Articles (Quantity)				

FY 2006:
-Develop preliminary CONOPS, TTP and ROE and integrate broad offense/defense with the Operational Community for Block 06 BMDS.

-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 initial defensive operations 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).

-Develop BMD operational concepts and associated operational architecture that will enable rapid integration of the BMDS elements into the Combatant Commanders Warfighting capability.

-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).

FY 2007:
-Continue to refine preliminary CONOPS, TTP and ROE and integrate broad offense/defense with the Operational Community.

-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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

-Build initial defensive operations plans to protect against ballistic missile threats to the U.S., U.S. deployed forces and our allies and friends.

-Continue to develop BMD operational concepts and associated operational architecture that will enable rapid integration of the BMDS elements into the Combatant Commanders Warfighting capability.

-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).

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Staff and Service Liaison				3797
RDT&E Articles (Quantity)				

FY 2006:
-Develop and coordinate deployment of BMDS initial defensive operations capabilities with the Joint Staff, the Services and the Combatant Commanders.

FY 2007:
-Continue to develop and coordinate deployment of BMDS initial defensive operations capabilities with the Joint Staff, the Services and the Combatant Commanders.

	FY 2002	FY 2003	FY 2004	FY 2005
SETA				392
RDT&E Articles (Quantity)				

Represents Scientific, Engineering, Technical and Assistance support provided to MDA HQ in support of Block 2006 efforts.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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	Various	Various/MDA HQ/Arlington, VA						392	1Q	TBD	392	TBD
Subtotal Support Costs			0	0		0		392			392	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Joint Warfighter Support	Various	Various/Various						7595	1/4Q	TBD	7595	TBD
Subtotal Test and Evaluation			0	0		0		7595			7595	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

IV. Management Services Cost ($ in Thousands)

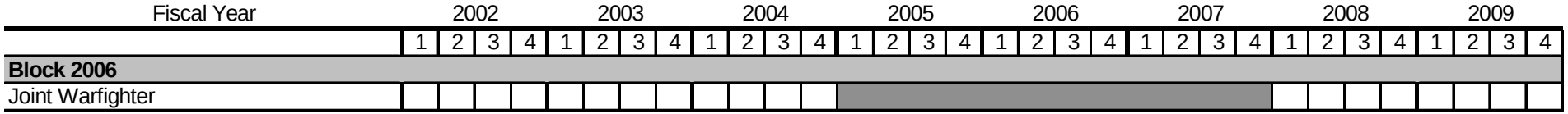
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Joint Staff and Service Liaison												
Joint Staff & Service Liaison	Various	Various/Various						3797	1/4Q	TBD	3797	TBD
Subtotal Management Services			0	0		0		3797			3797	

Remarks

Project Total Cost			0	0		0		11784			11784	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2006								
Joint Warfighter				1Q-4Q	1Q-4Q	1Q-4Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0903 Joint Warfighter Support Block 2008	0	0	0	0	0	12292	28530	30502
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 also supports planning for initial defensive operations, integration of SPACECOM/NORTHCOM 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.

B. Accomplishments/Planned Program

Not Applicable.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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 the Military Utility Assessment.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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
Funding in this project is not programmed until FY 2007.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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
Funding in this project is not programmed until FY 2007.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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
Funding in this project is not programmed until FY 2007.

IV. Management Services Cost ($ in Thousands)

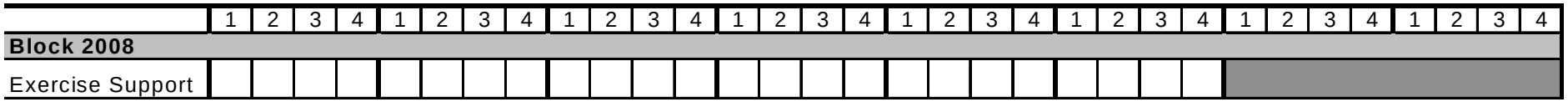
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks
Funding in this project is not programmed until FY 2007.

Project Total Cost												

Remarks
Funding in this project is not programmed until FY 2007.

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2008								
Joint Warfighter							1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603889C Ballistic Missile Defense Products

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0204 Joint National Integration Center (JNIC)	0	0	79122	85876	85236	92228	91283	99443
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Beginning in FY 2004, funding for this effort will transition from BMD Systems Program Element (PE) (0603880C-Project 1056) to the new Ballistic Missile Defense Products PE (0603889C-Project 0204).

The mission of the JNIC is to function as the key-operating component of the BMDS Test Bed. As such, the JNIC will design, implement, and maintain both integration and test environments, as well as experimentation, demonstration, and exercise laboratories. In turn, the execution of the Test Bed design will allow the JNIC to provide initial defensive operations (IDO) using both the Ground-based Midcourse Missile Defense Battle Management, Command, Control, and Communications (GBMC3) and the BMDS Command and Control, Battle Management, and Communications (C2BMC).

As the key-operating element of the BMDS Test Bed, the JNIC is a critical component of BMDS Block 04/06 development that:

- Serves as an operating element of the BMDS Test Bed;
- Provides the common environment for essential integration and testing of the BMDS;
- Develops BMD modeling and simulation for both the developers and users of the overall BMDS and its program elements;
- Provides a dedicated facility and infrastructure that supports the full spectrum of activities involved in developing integrated missile defense concepts of operation (CONOPS) and tactics, techniques and procedures (TTP).

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
JNIC Development & Ops			63235	66811
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding for this effort will reside in the BMD Products Program Element (0603889C).

The FY 04 and FY 05 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, a wargaming complex, environmental support, and other capabilities essential for the execution of MDA programs. These efforts include JNIC support to the critical elements of the BMD Test Bed, including the Ground-based Midcourse Missile Defense (GMD) element Mission Control Center (MCC) and the GBMC3 Mission Operations Center (GMOC), operational support and connectivity of the Battle Management Integration and Test Center (BITC) and C2BMC Experiment Laboratory (X-Lab), and infrastructure support of the Satellite Tracking and Surveillance System (STSS) Operations Center and sensor netting Test Bed. 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 will house and sustain a robust, scaleable, and flexible integration and test environment that will provide an EDO capability for both the GBMC3 and BMDS C2BMC. In previous years, required modernization was deferred to support growing missions, resulting in a degradation of infrastructure and information management systems support. The significant budget increase starting in FY04 will repair and replace obsolete technology and correct electrical,

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

mechanical, communications, and architectural code compliance deficiencies. These actions will achieve minimum reliability levels to support BMDS Block 04 integration and test, and to serve as the C2BMC node for an initial defensive operations activation of the BMD Test Bed.

The budget also provides a capability to support the integration of an 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).

	FY 2002	FY 2003	FY 2004	FY 2005
Gov. Project & Support			4203	4377
RDT&E Articles (Quantity)				

These funds provide for salaries and support to government personnel.

	FY 2002	FY 2003	FY 2004	FY 2005
C2BMC Integration, Test and Experimentation			11684	14688
RDT&E Articles (Quantity)				

Beginning in FY 2004, funding for this effort will reside in the BMDS Products Program Element (0603889C).

The JNIC provides the architecture, design, facilities, infrastructure, connectivity, and support manpower for the BMD C2BMC Block 04/06 prototype suites and C2BMC experimentation (C2BMC-X) missions. Facilities support includes the operation, maintenance, and upgrade of three integration and test suites of equipment, the X-Lab and modification suite, and administrative offices and conference rooms that host the Missile Defense National Team C2BMC Integration and Test (MDNTB(I)) Integrated Product Team (IPT). The BITC environment also includes a presentation center and server room for rapid test article or experimentation reconfiguration. Each of the four equipment suites is a replica of the prototype produced by the National Team and must be modified or upgraded to reflect development changes. Operations require the resources to configure and operate the prototypes and test support systems during Integration, Test, and Experimentation (IT&E). Infrastructure includes connectivity required for IT&E, local and master test control and network configuration management, communications means internal and external to the JNIC for block capabilities, and interfaces with other BMDS elements. Connectivity changes and upgrades are needed to reflect changes in the prototype, other missile defense elements, and modeling and simulation systems.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)							R-1 NOMENCLATURE: 0603889C Ballistic Missile Defense Products			
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

D. Acquisition Strategy

No Acquisition Strategy required. The Joint National Integration Center (JNIC) is not an acquisition agent, but a field activity working under the auspice of the Missile Defense Agency.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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				1037	1Q	1062	1Q	CONT.	2099	CONT.
Subtotal Support Costs			0	0		1037		1062			2099	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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				55582	2Q	60740	2Q	CONT.	116322	CONT.
C2BMC Integration, Test and Experimentation												
JNIC	C/CPAF	Northrop Grumman Mission Sys./CO				10392	2Q	13332	2Q	CONT.	23724	CONT.
Subtotal Test and Evaluation			0	0		65974		74072			140046	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis | Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

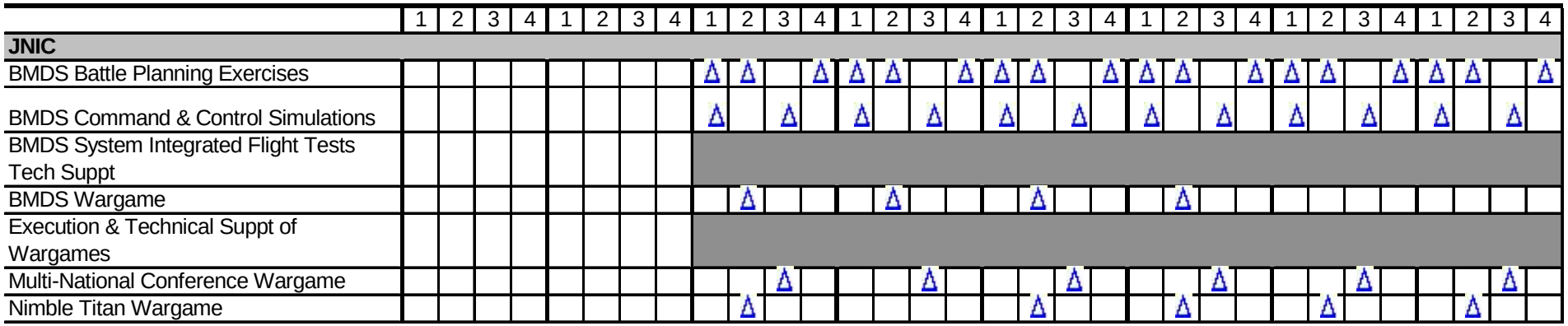
R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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	TBD				4792	3Q	3151	3Q	CONT.	7943	CONT.
JNIC	C/FFRDC	Various				1824	1Q	1858	1Q	CONT.	3682	CONT.
Gov. Project & Support												
JNIC	Other	JNIC/CO				3235	1/4Q	3375	1/4Q	CONT.	6610	CONT.
USN	Other	NRL/MD				968	1/4Q	1002	1/4Q	CONT.	1970	CONT.
C2BMC Integration, Test and Experimentation												
JNIC	C/CPAF	TBD/CO				452	3Q	474	3Q	CONT.	926	CONT.
JNIC	C/FFRDC	Various/CO				840	1Q	882	1Q	CONT.	1722	CONT.
Subtotal Management Services			0	0		12111		10742			22853	
Remarks												
Project Total Cost			0	0		79122		85876			164998	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
JNIC								
BMDS Battle Planning Exercises			1Q,2Q,4Q	1Q,2Q,4Q	1Q,2Q,4Q	1Q,2Q,4Q,4Q	1Q,2Q,4Q	1Q,2Q,4Q
BMDS Command & Control Simulations			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
BMDS System Integrated Flight Tests Tech Suppt			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
BMDS Wargame			2Q	2Q	2Q	2Q		
Execution & Technical Suppt of Wargames			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Multi-National Conference Wargame			3Q	3Q	3Q	3Q	3Q	3Q
Nimble Titan Wargame			2Q,2Q		2Q	2Q	2Q	2Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program Operations	0	0	15476	16197	20345	20619	22192	24113
RDT&E Articles Qty	0	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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel			5159	5399
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603889C Ballistic Missile Defense Products

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support			5159	5399
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements			5158	5399
RDT&E Articles (Quantity)				

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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603889C Ballistic Missile Defense Products**

PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	0	0	483996	522458	604445	628594	703055	706501
0101 System Engineering & Integration	0	0	208048	206320	209436	212972	216911	220588
0201 Command and Control, Battle Management and Communications Core	0	0	15556	16193	68447	83559	87060	89357
0102 Intelligence	0	0	19362	21281	22051	23465	26875	28378
0203 Joint Warfighter Support	0	0	245	1245	3163	3205	3291	3376
0103 Producibility & Manufacturing Technology	0	0	30769	39967	38890	37947	41269	30059
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	0	0	48000	73441	94793	97594	146280	146126
0202 Hercules Core	0	0	24079	22119	21628	21599	22013	25375
0106 Modeling and Simulation	0	0	98173	100199	101881	101650	106151	108060
0104 BMD Information Management Systems	0	0	31364	33161	34378	36562	42759	44300
0602 Program Operations	0	0	8400	8532	9778	10041	10446	10882

A. Mission Description and Budget Item Justification

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.

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 development of a capability-based Ballistic Missile Defense System (BMDS) is built upon core work in Systems Engineering and Integration and Command, Control, Battle Management and Communications (C2BMC). Underpinning these efforts are intelligence support to identify system threats, warfighter support to ensure consideration of military operations, and production/manufacturing technology activities to ensure designed systems are producible by Industry. The engineering design of a BMDS to defeat threats is also dependent upon the identification of threat system countermeasures and the development of counter-countermeasures, as well as kill vehicle discrimination algorithm development. Additionally, models and simulations are maintained, updated and developed to support the design process through the selection and verification of combinations of sensors, interceptors, C2BMC, and sites. Underlying the ability to communicate and design the BMDS in a distributed environment is The Ballistic Missile Defense information management system.

The Ballistic Missile Defense System Core Program Element provides resources to define and integrate the BMDS capable of defending the United States, deployed forces, friends, and allies. 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 Operations.

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.

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. C2BMC will evolve from today's limited autonomous point defense BMDS capability into a global integrated

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

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), University Affiliated Research Centers (UARC) and Scientific Engineering and Technical Assistance (SETA) providers, will develop and deliver a flexible integrated BMDS C2BMC.

The Intelligence Project enables MDA to manage, maintain, analyze, assess, and share intelligence data and information related to various missile threats (traditional and non-traditional). With the rapidly changing world situation, these intelligence efforts and information are even more critical than ever before, and they continue to play a key role in missile defense threat analysis and the overall development of a BMDS that is responsive to the threat.

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 emergency deployments, integration of SPACECOM/NORTHCOM 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.

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.

Countermeasures/Counter-Countermeasures (CM/CCM) 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.

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 which 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 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

Models and Simulations plans, programs, budgets, manages, and executes a comprehensive core modeling and simulation program that characterizes the BMD capability and supports credible decisions with respect to the BMDS. The specific functional responsibilities are: plans, programs, budgets, and manages the development and maintenance of core models and simulations; provides requirements management, configuration management, verification and validation (V&V) for core M&S; supports accreditation decisions for all critical BMDS and element models and simulation applications; develops and promulgates M&S policy, guidance, and best practices; chairs the M&S working group (M&SWG); ensures availability of critical BMDS program data; and develops, sustains, and modernizes M&S infrastructure for the BMDS program to include 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

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

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.

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 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	0	0	483996	522458
Total Adjustments	0	0	483996	522458
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	483996	522458
SBIR/STTR Transfer	0	0	0	0

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0101 System Engineering & Integration	0	0	208048	206320	209436	212972	216911	220588
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under Program Element 0603880C (BMD System), Project 1050 in FY 2002 and FY 2003.

The missile defense program focuses on 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 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 BMDS. SE&I activities provide the technical expertise, tools, and facilities to develop the BMDS.

System Engineering and Integration (SE&I) 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&I 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&I 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&I 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&I 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&I 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. Detailed characterizations of the threat are developed and maintained to support BMDS design, development, and verification activities. Engineering analyses are performed to define technologically feasible threats and develop 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. Modeling and simulation of the ACD data are used to produce benchmark scenarios that illustrate the performance of threat systems in order to support analyses of the BMDS.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Systems Eng & Integration Core			186800	191400
RDT&E Articles (Quantity)				

System Engineering & Integration is a continuous process of assessing and choosing BMDS technical alternatives that form the basis of BMDS Block approach. This process includes:

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

SYSTEM EVOLUTION PLANNING PROCESS TASKS ASSESSMENT

This task involves looking at the system from different perspectives, analyzing its capability and identifying areas of future growth and potential to enhance the system. Once the threat space is established, the candidate elements (both MDA and non-MDA assets) are placed into their respective blocks. Each constituent part of the BMDS is assessed as to how it might contribute to each phase of the layered defense architecture, both singularly and as part of the system as a whole. Program progress and maturity is examined, and potential capability against selected threats is determined.

ELEMENT/COMPONENT CHARACTERIZATION

This task looks at the individual pieces of the BMDS and provides detailed programmatic and technical data for evaluation later in the process.

DEVELOP ALTERNATIVES

This task looks at the current BMDS definition and capability to identify opportunities and challenges faced to evolve the system and reach the objectives and goals set in the TOG. Quick-look assessments are performed to identify infusion points for matured enhancements to fill capability gaps and address technical challenges. Candidate system evolution alternatives are defined that present value added enhancements and/or modifications to the BMDS. A rough order of magnitude assessment done on these alternatives looks at performance, schedule and cost to support prioritization of candidate alternatives and a decision whether to analyze in further detail. Contributors of this task include: MDA/SED to support the physical description of the current system; MDA/TRR to define the current BMDS CONOPs and identify operations concepts for system enhancements for assessment; MDA/AC and SEB will identify candidate element or component concepts, operations concepts, and technologies potential infusion the BMDS development baseline; MDNTS will leverages ongoing system analysis and trade studies to propose candidate system alternatives for detailed assessment.

ASSESS ALTERNATIVES

This task uses the technical performance bounds of specifically engineered ballistic missiles identified for analysis in the Threat Description Document (TDD) and configuration-controlled threat scenarios in the Scenario Description Document (SDD). The threats and scenarios, which may evolve over time, provide a context for evaluating block capability, as well as candidate changes or additions to blocks. System-level trade studies, conducted with approved models and simulations, identify which element and component combinations perform as an effective BMDS.

The integrated assessment task is initiated with a risk assessment that identifies system-level risks and determines their severity. It also identifies mitigation activities needed to reduce system risks to acceptable levels. Additional risk assessments of candidate system alternatives is performed as a reality check and to incorporate the execution results of elements and components that are critical for the current BMDS development baseline.

Technical and programmatic assessments are performed to identify the system performance of candidate alternatives and identify impacts to cost and schedule for the various alternatives being assessed. This task defines the metrics with which system capability will be assessed, identifies the methodology and tools needed to conduct the assessment, and performs the system trades to define the BMDS and predict its capability. The BMDS capability by block is determined by system-level programmatic, operational, and technical assessments utilizing appropriate metrics and tools already identified. It includes activities needed to gather the relevant information from testers or analysts to construct the assessment. It also includes activities needed to document the results of the assessment.

Threat Systems Engineering (TSE) as part of the MDNTS develops, maintains, and provides configuration control of the detailed engineering offensive missile descriptions, behaviors, and presentations necessary to support BMD design, development, and testing. TSE conducts engineering analyses to define technologically feasible threat variations, adversary capabilities, missile characteristics, and countermeasure options. TSE identifies key threat parameters, establishes maximum and minimum parameters values, determines and exploits parameter relationships, assesses the impact of non-parametric factors. This activity includes the investigation of failure modes to examine unintended consequences of off-nominal performance of offensive missile systems. These parametrics and descriptions are documented in the Adversary Capability Document (ACD) to support BMDS development and evaluation of System robustness to unexpected variations in threat presentation. TSE selects and provides threat characterizations for the Adversary Vignette Database via modeling and simulation in both text and digital form. Finally, TSE employs its "adversary perspective" and experience in technologically feasible countermeasures to conduct analysis and perform risk assessments to support focused BMD efforts such as Project Hercules, Targets and Countermeasures, and the Countermeasures/Counter-Countermeasures Program.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY 2004 PLANNED PROGRAM:
- Analyze production off-ramps
- Assess operational risks of fielding and deployment
- Update the Technical Objectives and Goals
- Update the System Evolution Plan
- Block 2006 Verification Plan
- Short and Medium Range RV Concept characterizations
- Countermeasure Parametric Space Exploration
- Provide AVD threat characterizations
- Support BMDS Component threat space definition

FY 2005 PLANNED PROGRAM:
- Update the Technical Objectives and Goals
- Update the System Evolution Plan
- Block 2008 Verification Plan
- AVD and BMDC Component Support
- Completion of CM parametric space definitions
- Comprehensive ACD Release

	FY 2002	FY 2003	FY 2004	FY 2005
Corporate Lethality Program			21248	14920
RDT&E Articles (Quantity)				

This project provides for MDA planning, management, oversight, and execution of a Ballistic Missile Defense System (BMDS) Corporate Lethality Program (CLP) focused on the following objectives:
- Obtain and share data regarding the implications, including adverse effects, of employing the BMDS system
- Assess the capability of the BMDS 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
- Establish a methodology allowing warhead typing based on impact response

The project coordinates and integrates BMD lethality policies and efforts across the BMDS elements and technology communities. This project leverages the ongoing BMDS element lethality efforts and BMDS element/system flight test and evaluation opportunities. The fundamental project efforts include the following:
- Identify, plan, fund and implement experiments to collect lethality data not directly obtainable from element or system test activities
- Establish and implement an MDA BMDS Corporate Lethality policy standard
- Provide a common end-to-end BMDS lethality assessment capability
- Monitor element lethality requirements and performance to ensure consistency and verify compliance with BMDS parameters
- Support MDA decision makers with BMDS lethality technical analyses

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY 2004 PLANNED PROGRAM

In FY 2004, this project provides for a continuation of the focus on resolving lethality questions and concerns for bulk chemical targets while transitioning to a greater focus on validating physical phenomena with full-scale flight-test data.

- 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 BMDS terminal phase intercepts.
- Initiate lethality data and analysis on chemical/biological agents at higher altitude regimes to support high-endoatmospheric and exoatmospheric BMDS 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 BMDS 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.

FY 2005 PLANNED PROGRAM

- Provide data and analysis of actual post-engagement lethality information through "piggy-back" efforts on BMDS 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 BMDS 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 BMDS terminal phase intercepts.
- Provide lethality data and analysis reporting on intercept effects and consequences for various chemical and biological agents

C. Other Program Funding Summary

	FY 2002	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	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

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 (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 MDNTS to ensure successful development of the BMDS through system definition & analyses, capability allocation, block integration, and verification. The execution of detailed system engineering and integration is a collaborative effort that is achieved via integrated product teams comprised of individuals from each component of the MDNTS.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Engineering & Integration												
MDNTS (I)	CPAF	Boeing/VA				113600	2Q	115400	1/3Q	CONT.	229000	
SETA Support	CPAF	Sparta/VA				22400	1/2Q	23000	1/2Q	CONT.	45400	
SETA Support	CPAF	CSC/VA				18700	1/2Q	19600	1/2Q	CONT.	38300	
SETA Support	FFP	VRI/VA				700	1/2Q	800	1/2Q	CONT.	1500	
SETA Support	CPFF	SAIC/VA				200	1Q	200	1Q	CONT.	400	
JNIC	Other	Various/CO				4500	1/3Q	4500	1/3Q	CONT.	9000	
National Labs	MIPR	Various/Various				1500	1/2Q	1500	1/2Q	CONT.	3000	
Corporate Lethality Program												
Corporate Lethality	MIPR	NSWC/VA				1600	1/2Q	1300	1/2Q	CONT.	2900	
Corporate Lethality	MIPR	Battelle/OH				5450	1/3Q	4000	1/2Q	CONT.	9450	
Corporate Lethality	CPAF	UKMOD/UK				550	1/2Q	200	1Q	CONT.	750	
Corporate Lethality	CPAF	SMDC/AL				9366	1/3Q	6395	1/3Q	CONT.	15761	
Corporate Lethality	Various	Various				832	1/2Q	875	1/2Q	CONT.	1707	
Subtotal Support Costs			0	0		179398		177770			357168	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

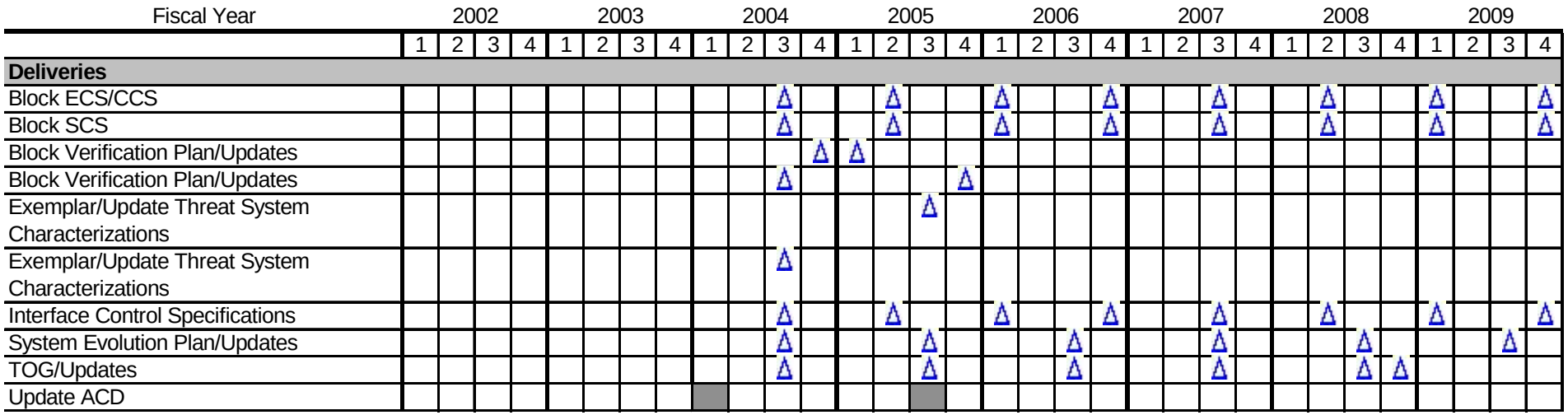
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Engineering & Integration												
FFRDC/UARC/DOE Lab	MIPR	Aerospace/CA				3818	1/2Q	3890	1/2Q	CONT.	7708	
FFRDC/UARC/DOE Lab	MIPR	MIT/LL/MA				2024	1/2Q	2082	1/2Q	CONT.	4106	
FFRDC/UARC/DOE Lab	MIPR	MITRE/VA				2121	1/2Q	2161	1/2Q	CONT.	4282	
FFRDC/UARC/DOE Lab	CPFF	APL/MD				3032	1/2Q	3109	1/2Q	CONT.	6141	
FFRDC/UARC/DOE Lab	MIPR	Various				10005	1/2Q	10458	1/2Q	CONT.	20463	
Government Personnel Spt	Other	WHS/Washington, D.C.				3600		4100		CONT.	7700	
Travel	Other	Various				600		600		CONT.	1200	
Corporate Lethality Program												
Corporate Lethality	FFRDC	NM/CA/MA				3450	1/2Q	2150	1/2Q	CONT.	5600	
Subtotal Management Services			0	0		28650		28550			57200	

Remarks

Project Total Cost			0	0		208048		206320			414368	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
Block ECS/CCS			3Q	2Q	1Q,4Q	3Q	2Q	1Q,4Q
Block SCS			3Q	2Q	1Q,4Q	3Q	2Q	1Q,4Q
Block Verification Plan/Updates			4Q	1Q				
Block Verification Plan/Updates			3Q	4Q				
Exemplar/Update Threat System Characterizations				3Q				
Exemplar/Update Threat System Characterizations			3Q					
Government Verification Management Plan			1Q	1Q				
Interface Control Specifications			3Q	2Q	1Q,4Q	3Q	2Q	1Q,4Q
System Evolution Plan/Updates			3Q	3Q	3Q	3Q	3Q	3Q
TOG/Updates			3Q	3Q	3Q	3Q	3Q,4Q	
Update ACD			1Q	3Q				
Studies & Analyses								
Analyze production off-ramps			2Q	2Q	2Q	2Q	2Q	2Q
Complete alternatives for BMDS Block architecture			2Q					
Complete conceptual design Blk 2010 & BMDS Element			2Q					
Review future design for Block & BMDS Elements			2Q					
Review multiple candidates for Block architecture			2Q					
Decisions								
SEP presented at System Design Review			2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
Milestones								
Assess operational risks			2Q	2Q	2Q	2Q	2Q	2Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0201 Command and Control, Battle Management and Communications Core	0	0	15556	16193	68447	83559	87060	89357
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Projects 1010 and 1020, for FY 2002 and FY 2003.

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.

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. Beginning in FY 2004 this project will provide 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 is 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 engineering, design, development and delivery of an executable BMDS C2/BM/Comm Architecture, BMDS C2/BM/Comm Block capability specifications, and the integration of BMDS Elements into the BMDS C2/BM/Comm Architecture

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
National Team (BC)			13416	13954
RDT&E Articles (Quantity)				

The MDNTB core reflects infrastructure costs, cross-Block and cross-IPT activities. 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. 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.

	FY 2002	FY 2003	FY 2004	FY 2005
FFRDC			245	245
RDT&E Articles (Quantity)				

Beginning in FY 2004 this PE will provide funding in support of Federally Funded Research and Development Center (FFRDC), and University Affiliated Research Center (UARC) providers. The FFRDC personnel are integrated into the MDNTB. The Government continues to provide the overall management of the BMDS program and participates within the MDNTB; and the MDNTB is

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

responsible for the engineering, design, development and prototype delivery of an executable BMDS C2BMC Architecture, BMDS C2BMC Block capability specifications, and the integration of BMDS Elements into the BMDS C2BMC Architecture. The Core FFRDC support identified above represents one Staff Technical Equivalent (STE) level of support.

	FY 2002	FY 2003	FY 2004	FY 2005
Contractor Support			295	294
RDT&E Articles (Quantity)				

Support contracts that support this project per Contract Utilization Board determination of FY 2001. SETA personnel are integrated into the MDNTB. This activity is supported by two prime SETA contracts: Sparta Inc., and CSC, Inc. The Core SETA support identified above represents management support only.

	FY 2002	FY 2003	FY 2004	FY 2005
Gov. Project Personnel & Support			1600	1700
RDT&E Articles (Quantity)				

Support the MDA C2BMC Directorate administration effort. Funding for government salaries.

C. Other Program Funding Summary

	FY 2002	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	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

D. Acquisition Strategy

Command, Control, Battle Management and Communications (C2BMC) will continue to follow the MDA's capability-based acquisition strategy that emphasizes assessment, spiral-development testing and evolutionary acquisition through the definition of two-year capability blocks.

The design and development of a BMDS Command and Control, Battle Management and Communication Architecture and System Specifications is a collaborative effort. The strategy is to require the Missile Defense National Team BM/C2/C (MDNTB(I)) to perform the engineering and delivery of an executable C2BMC Test Bed, C2BMC Block capability specifications, design specifications and interface control documents for the BMDS. The MDNT will be composed of two industry teams (MDNTB(I) & MDNTS(I)), 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 contractors, and the government.

The intent is to develop a fully capable BMDS Test Bed while retaining development capability that can be used for emergency deployment . C2BMC 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
National Team (BC)												
MDNTB(I)	C/CPAF	MDNTB(I)/Gaithersburg, MD				13416	1/2Q	13954	1/2Q	CONT.	27370	CONT.
FFRDC												
FFRDC	C/Various	Various/Various				245	1Q	245	1Q	CONT.	490	CONT.
Contractor Support												
SETA	Various	Sparta, CSC/Arl, VA				295	1Q	294	1Q	CONT.	589	CONT.
Gov. Project Personnel & Support												
Gov`t Personnel	Other	MDA/Arl, VA				1600		1700		TBD	3300	
Subtotal Support Costs			0	0		15556		16193			31749	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

IV. Management Services Cost ($ in Thousands)

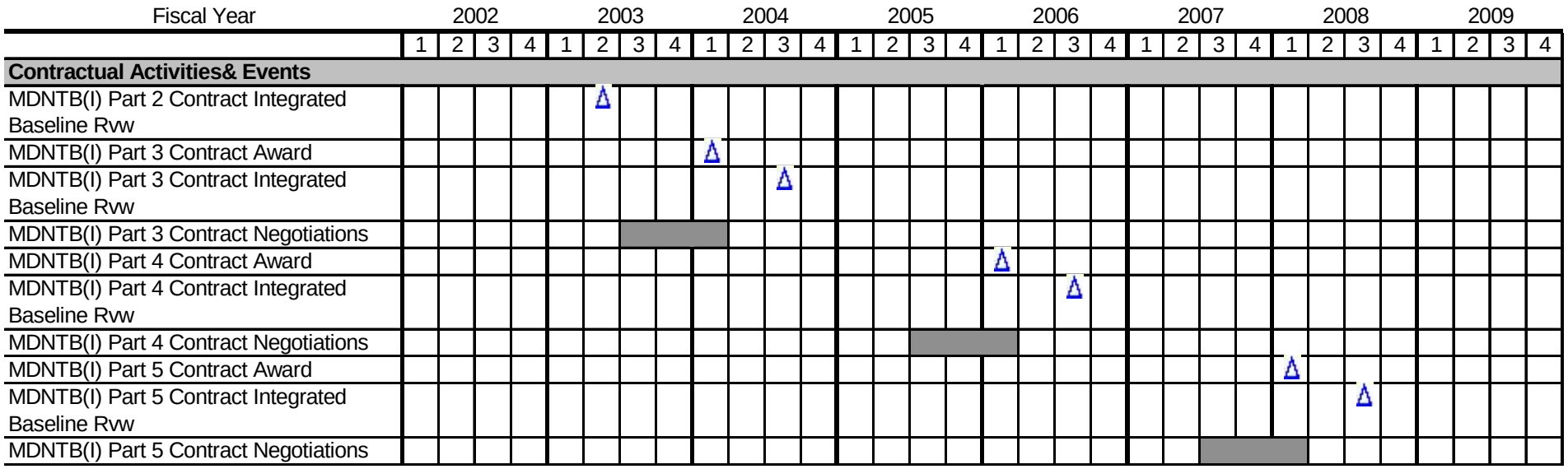
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		15556		16193			31749	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	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 Award			1Q					
MDNTB(I) Part 3 Contract Integrated Baseline Rvw			3Q					
MDNTB(I) Part 3 Contract Negotiations		3Q-4Q	1Q					
MDNTB(I) Part 4 Contract Award					1Q			
MDNTB(I) Part 4 Contract Integrated Baseline Rvw					3Q			
MDNTB(I) Part 4 Contract Negotiations				3Q-4Q	1Q			
MDNTB(I) Part 5 Contract Award							1Q	
MDNTB(I) Part 5 Contract Integrated Baseline Rvw							3Q	
MDNTB(I) Part 5 Contract Negotiations						3Q-4Q	1Q	

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0102 Intelligence	0	0	19362	21281	22051	23465	26875	28378
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Project 1050, in FY 2002 and FY 2003.

This Project is the primary source for managing, analyzing, assessing, and sharing intelligence data and information related to missile threats. This information and its associated products play a key role in missile defense threat analysis and development of a ballistic missile defense system (BMDS) that is responsive to those threats. Critical products include Intelligence Community-validated threat descriptions and associated capstone threat and countermeasures information, e.g., the Missile Defense Threat Assessment (MDTA).

Under this Project, the MDA Intelligence Directorate (MDA/IN) serves as both the 1) principal advisor to the MDA Director and staff on all intelligence matters related to missile defense, and 2) MDA liaison to the Intelligence Community. MDA/IN provides current and projected intelligence information to support all MDA activities (across the boost, midcourse, and terminal phases for capabilities-based acquisition) and defines and documents potential adversary military systems and forces, principally theater and strategic missiles, which the Ballistic Missile Defense System (BMDS) could be expected to confront. Functional areas include: current intelligence, intel assessments, scenarios, wargaming, asymmetric threat, and foreign material acquisition/exploitation.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Intelligence Program			5210	6132
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Under this effort, work closely with the Intelligence Community and the various Ballistic Missile Defense System (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.

FY 2004 PLANNED PROGRAM:
- Conduct intelligence studies aimed at assessing traditional threat capabilities.
- Coordinate/identify threat system design intelligence production requirements used for analysis of missile defense.

FY 2005 PLANNED PROGRAM:
- Conduct intelligence studies aimed at assessing traditional threat capabilities.
- Coordinate/identify threat system design intelligence production requirements used for analysis of missile defense.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2002	FY 2003	FY 2004	FY 2005
Intelligence Applications Program			3477	1451
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Under this effort, conduct threat modeling and threat capabilities studies and analyses. Based on detailed characterizations of threat missile systems, create, maintain, employ, and update all missile defense threat models used for analysis of the BMDS. Conduct studies and analyses based on "surrogate intelligence," i.e., intelligence outside the range of traditional intelligence estimates.

FY 2004 PLANNED PROGRAM:
- Produce four (4) Strategic and Theater Conflict Scenarios (STCS).
- Update the Threat Modeling & Simulation System (TMSS).

FY 2005 PLANNED PROGRAM:
- Produce four (4) Strategic and Theater Conflict Scenarios (STCS).
- Conduct verification, validation, and accreditation (VV&A) of the Threat Modeling & Simulation System (TMSS).

	FY 2002	FY 2003	FY 2004	FY 2005
Special Programs Center (SPC)			2557	3542
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Develop and produce threat scenarios 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.

FY 2004 PLANNED PROGRAM:
- Produce and combine all data necessary to support the Strategic and Theater Conflict Scenarios (STCS) production effort under the Intelligence Applications Program Task.

FY 2005 PLANNED PROGRAM:
- Produce and combine all data necessary to support the Strategic and Theater Conflict Scenarios (STCS) production effort under the Intelligence Applications Program Task.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2002	FY 2003	FY 2004	FY 2005
Wargaming			400	400
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Represent the opposing force in all MDA sponsored wargames and exercises. 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.

FY 2004 PLANNED PROGRAM:
- Provide threat support in all MDA sponsored and supported wargames and exercises.

FY 2005 PLANNED PROGRAM:
- Provide threat support in all MDA sponsored and supported wargames and exercises.

	FY 2002	FY 2003	FY 2004	FY 2005
Intelligence Collections			1711	3693
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

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.

FY 2004 PLANNED PROGRAM:
-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 worldwide missile analysis and reporting cell (MARC) 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.

FY 2005 PLANNED PROGRAM:
-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 false alarms.
-Expand worldwide missile analysis and reporting cell (MARC) to provide for near real-time (NRT) analysis of signature and metric performance data sets to evaluate reporting on threat development, discrimination signature profile matching and system identification confidence building and data base assurance.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2002	FY 2003	FY 2004	FY 2005
Intelligence Analysis			1818	1720
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Apprise the MDA Director and Staff of intelligence-related information. Analyze foreign ballistic missile developments affecting BMDS development. Provide weekly Director's Intelligence Update. Prepare special intelligence briefings for the Deputy Director and Technical Director and present monthly intelligence briefings to the MDA Staff. Review MDA Staff actions for accuracy of intelligence-related content. Represent MDA at the Director of Central Intelligence's (DCI) MASINT Committee and Mission Requirements Board.

FY 2004 PLANNED PROGRAM:
- Analyze current intelligence data and information.
- Apprise the MDA and Staff of relevant missile related intelligence.

FY 2005 PLANNED PROGRAM:
- Analyze current intelligence data and information.
- Apprise the MDA and Staff of relevant missile related intelligence.

	FY 2002	FY 2003	FY 2004	FY 2005
Emerging Adversaries			595	640
RDT&E Articles (Quantity)				

In FY 2002 and FY 2003, this effort was funded under Program Element 0603880C (Ballistic Missile Defense System).

Draw on available intelligence (e.g., Intelligence Community reports, defense contractor studies, in-house analyses) to determine how new adversaries could employ missiles as weapons against the U.S. Homeland and U.S. and Allied Forces abroad. In particular, track terrorist activities, including potential use of missiles launched from non-traditional platforms, e.g., merchant vessels and barges. Construct and manage wargames to gain realistic knowledge of unconventional or asymmetric attacks and to better understand defensive requirements. Host an annual conference on emerging adversary capabilities.

FY 2004 PLANNED PROGRAM:
- Conduct various studies based on potential terrorist (or asymmetric) use of missiles against the U.S. and its interests.
- Conduct wargame based on asymmetric threat.
- Conduct scenario development based on emerging adversaries.
- Conduct conference on emerging adversaries with missile capabilities.

FY 2005 PLANNED PROGRAM:
- Conduct various studies based on potential terrorist (or asymmetric) use of missiles against the U.S. and its interests.
- Conduct wargame based on asymmetric threat.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Conduct scenario development based on emerging adversaries.
- Conduct conference on emerging adversaries with missile capabilities.

	FY 2002	FY 2003	FY 2004	FY 2005
Project Management			3594	3703
RDT&E Articles (Quantity)				

C. Other Program Funding Summary

	FY 2002	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	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis | Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Intelligence Program												
SMDC	Various	SMDC/Huntsville, AL	0	0		417	1/2Q	491	1/2Q		908	
USAF	Various	Various	0	0		1719	1/2Q	2024	1/2Q		3743	
MDA	Various	Various	0	0		3074	2Q	3617	2Q		6691	
Intelligence Applications Program												
SMDC	Various	Huntsville/AL	0	0		3268	1/2Q	1364	1/2Q		4632	
MDA	Various	Various	0	0		209	1/2Q	87	1/2Q		296	
Special Programs Center (SPC)												
JNIC	Various	SPC/Colorado Springs, CO	0	0		2557	1/2Q	3542	1/2Q		6099	
Wargaming												
JNIC	Various	SPC/Colorado Springs, CO	0	0		400	1/2Q	400	1/2Q		800	
Intelligence Collections												
MDA	Various	Various	0	0		1711	1/3Q	3693	1/3Q		5404	
Intelligence Analysis												
MDA	Various	Various	0	0		1818	1/3Q	1720	1/3Q		3538	
Emerging Adversaries												
MDA	Various	Various	0	0		595	1/2Q	640	1/2Q		1235	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

Subtotal Support Costs			0	0		15768		17578			33346	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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)

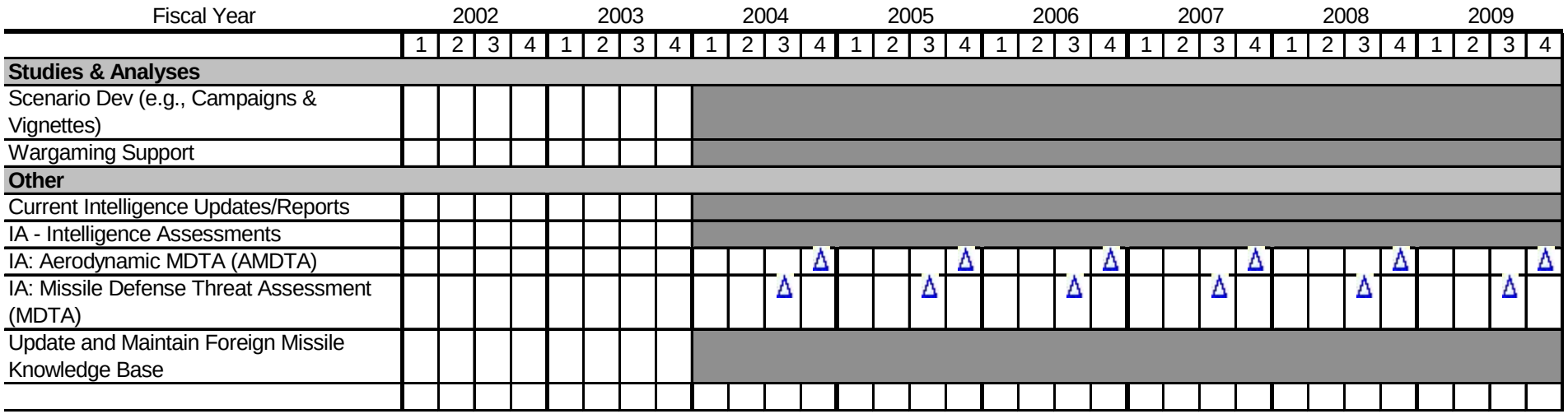
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Management												
Govt Personnel	Other	Various	0	0		194	2Q	203	2Q		397	
Support Contracts	Various	Various	0	0		3400	2Q	3500	2Q		6900	
Subtotal Management Services			0	0		3594		3703			7297	

Remarks

Project Total Cost			0	0		19362		21281			40643	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
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
Other								
Current Intelligence Updates/Reports			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
IA - Intelligence Assessments			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
IA: Aerodynamic MDTA (AMDTA)			4Q	4Q	4Q	4Q	4Q	4Q
IA: Missile Defense Threat Assessment (MDTA)			3Q	3Q	3Q	3Q	3Q	3Q
Update and Maintain Foreign Missile Knowledge Base			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0203 Joint Warfighter Support	0	0	245	1245	3163	3205	3291	3376
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Project 1050, for FY 2002 and FY 2003.

Beginning in FY 2004, funding for a portion of this effort will transition from BMD Systems Program Element (PE) (0603880C-Beginning in FY 2004, funding for this effort will transition from BMD Systems Program Element (PE) (0603880C-Project 1055) to the new Ballistic Missile Defense Products PE (0603887C-Project 0703).

The Joint Warfighter Support program is the integrating function across the Combatant Commanders, the Joint Staff, the Services, Allies and Friends. It is also the function that integrates the Integrated Missile Defense (IMD) Concept of Operations (CONOPS) into the BMDS development. It 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 also supports planning for emergency deployments, integration of STRATCOM/NORTHCOM 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.

This program also provides funds to support the Service Liaison to MDA and the MDA role in the Joint Theater Air and Missile Defense (JTAMD) process in the development of the JTAMD Summary and assessment of associated system architectures.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Warfighter Support			245	1245
RDT&E Articles (Quantity)				

Funding for the Joint Warfighter Project transitions from Project 1055 to Project 0203 beginning in FY 2004.

Facilitate Program transition to Services.

Maintain interactions with transitioned programs.

Develop BMD Support Structure.

Train/Assist training the Force.

Conduct studies to support future capability employment concept.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

IV. Management Services Cost ($ in Thousands)

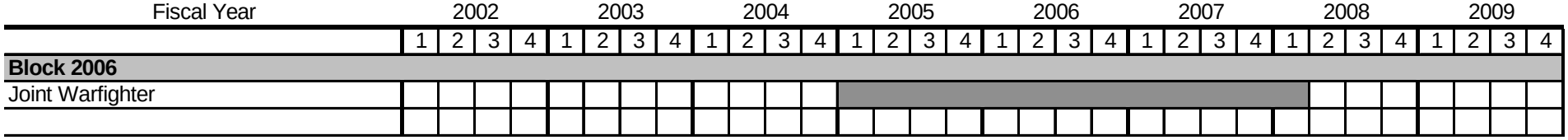
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Joint Warfighter Support												
Joint Warfighter Support	Various	Sparta, CSC, Vanguard/Arl, VA				245	2Q	1245	2Q	TBD	1490	TBD
Subtotal Management Services			0	0		245		1245			1490	

Remarks

Project Total Cost			0	0		245		1245			1490	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block 2006								
Joint Warfighter				1Q-4Q	1Q-4Q	1Q-4Q		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0103 Producibility & Manufacturing Technology	0	0	30769	39967	38890	37947	41269	30059
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under Program Element 0603880C (BMD System), Project 1070, in FY 2002 and FY 2003.

Producibility and Manufacturing Technology (MP) project program provides manufacturing technologies and implementation strategies that benefit the Ballistic Missile Defense System (BMDS). These include near term insertion effort that demonstrate capabilities for multiple applications across the BMDS encompassing risk reduction, cost reduction/avoidance and performance enhancement. These efforts are identified by utilizing systems engineering analyses 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 2002	FY 2003	FY 2004	FY 2005
Producibility & MANTECH			21769	21967
RDT&E Articles (Quantity)				

Project was funded under Program Element 0603880C (BMD System) in FY 2002 and FY 2003.

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 producibility and mantech 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); design component test risk reduction for midcourse Divert and Attitude Control System (DACS) which includes propulsion, lasers and radars; and the initial tests for the Angle-Angle Range Intensity (AARI) Laser Radar (LADAR).

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

components. Manufacturing Technology focuses on the reduction of risks, costs, and cycle times associated with the development of BMDS elements. MDA/MP leverages DoD, Services, Government Agencies, and Industry programs to assess these processes and determine the viability and impact to the BMDS.

FY 2004 PLANNED PROGRAM:

- AARI LADAR - Perform operational testing at White Sands Missile range using a representative target missile.
- Provide operational data to verify target acquisition, tracking, IR hand-off and target discrimination in a representative combined IR/LADAR system.

- AOP - Complete the development of the 1GHz AOP.
- AOP - Test in representative Radar Systems at MIT/LL and at KMR to image, discriminate, and track simulated and real targets.
- AOP - Verify the capability of the 1GHz AOP that will provide high fidelity range compressed and range-doppler imaging.

- VLWIRFPA - Complete the scale up of a producible 192X192 FPAs for characterization testing.
- VLWIRFPA - Produce five Lots of FPAs to verify lot-to-lot repeatability of the process.

- Two Color IRFPA - Complete the initial pilot production to verify repeatability of the production process.
- Two Color IRFPA - Provide an insertion point with hardware to BMDS elements.

- Composite Canister - Focus on full-scale prototype manufacturing for testing by PAC3 and MEADS.
- Composite Canister - Accomplish modeling and simulation for canister producibility analysis and produce sub-scale parts for optimization of processes.
- Composite Canister - Target THAAD canister components for sub-scale prototyping.

- DACS - Assess and identify producibility and manufacturing technologies associated with developing and producing propulsion components (nozzles, gas generators, injectors and flight controllers etc.) to support the risk reduction development of a DACS for missile defense interceptors.
- DACS - Integrate components into a flight testable unit for hot fire test.
- DACS - Initiate pilot production of SiC/SiC nozzles and components.

FY 2005 PLANNED PROGRAM:

- AARI LADAR - Develop a flight worthy package to be integrated with a passive IR seeker.
- AARI LADAR - Flight test a combined package on a representative interceptor to demonstrate actual IR to LADAR hand-off, target discrimination and aim-point selection from launch through HTK.

- AOP - Insertion point for the 1GHz AOP into the BMD radars.

- VLWIRFPA - Test integrated FPAs with ROICs that meet Radiation Hardening requirements for program elements.
- VLWIRFPA - Test three lots of integrated parts to assure repeatability of process.

- Composite Canister - Develop manufacturing processes for the common canister along with evaluating and optimizing the production process through use of lean manufacturing techniques.
- Composite Canister - Conduct testing of hardware produced under operational conditions.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- DACS - Continue to develop manufacturing technology refinements to the SiC/SiC components for midcourse and boost phase DACS components (nozzles, insulators, gas generators and valves).
- DACS - Support midcourse and boost phase missile interceptor DACS design programs.

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

	FY 2002	FY 2003	FY 2004	FY 2005
Radiation Hardened Electronics			9000	18000
RDT&E Articles (Quantity)				

FY 2004 also begins the Multi-Year Radiation Hardened Electronics (RHE) program. This program will assure MDA of radiation hardened electronic devices circuits required for constructing missile defense systems and assist in the continuation of the U.S. industrial base to design and manufacture these systems.

FY 2004 PLANNED PROGRAM:

- RHE - Reinitiate activities with particular emphasis on analog devices (12/14 bit analog to digital converter and a 256Kbit EEPROM).
- RHE - Initiate two approaches: use of a rad hard foundry and using specialized designs and processes at commercial foundry with smaller design rules to allow higher density electronics.

FY 2005 PLANNED PROGRAM:

- RHE - Continue analog to digital converter work towards better signal precision and lower noise.
- RHE - Initiate effort to develop more powerful rad hard signal processors compared to the current state-of-the-art (603e and RH750)to allow faster processing of more complex algorithms and reduce the number of devices now planned for each of the elements.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Producibility & MANTECH												
AOP	Other	SMDC/AL				3000	2Q	2000		CONT.	5000	CONT.
2ColorIRFPA	Other	Navy/PA				2100	2Q	400	1Q	CONT.	2500	CONT.
VLWIRFPA	Other	SAF/AQ/NW				2000	2Q	0		CONT.	2000	CONT.
LADAR	MIPR	Fibertek, Inc./VA				3000	2Q	5000		CONT.	8000	CONT.
Composites/Composites	Various	Various/Various				3800	1Q	4500	1Q	CONT.	8300	CONT.
Producibility	Various	Services/TBD				1072	2Q	3167	1/2Q	CONT.	4239	CONT.
DACS	Other	Aerojet/CA				1947	2Q	1450	2Q	CONT.	3397	CONT.
SETA	CPAF	Sparta/VA				900	2Q	1000	2Q	CONT.	1900	CONT.
SETA	CPAF	Andrulis/VA				1400	2Q	1500	2Q	CONT.	2900	
Radiation Hardened Electronics												
RHE	Other	TBD/TBD				8900	2Q	17500	2Q	CONT.	26400	CONT.
Subtotal Support Costs			0	0		28119		36517			64636	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Producibility & MANTECH												
DACS	Other	Aerojet/CA				500	2Q	500	2Q	CONT.	1000	CONT.
MANTECH	Various	Various				1600	1/2Q	1500	1/2Q	CONT.	3100	CONT.
Radiation Hardened Electronics												
RHE	Various	TBD/TBD				100	1/2Q	500	2Q	CONT.	600	CONT.
Subtotal Test and Evaluation			0	0		2200		2500			4700	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Producibility & MANTECH												
Gov`t Personnel	Other	Various/VA				300	2Q	800	2Q	CONT.	1100	CONT.
Management Services	Various	Various/Various				150	1/2Q	150	1/2Q	CONT.	300	CONT.
Subtotal Management Services			0	0		450		950			1400	

Remarks

Project Total Cost			0	0		30769		39967			70736	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Fiscal Year	2002				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	1	2	3	4
Producibility & Mantech																																
AOP - Complete Builtup of 1 GHz AOP										Δ																						
Canisters - Fabrication of MRP Prototype															Δ																	
DACS - Flight Test Mid Course TDACS										Δ																						
LADAR - Integrate Passive and Active LADAR											Δ																					
Two Color IRFPA - Conduct Pilot Production									Δ																							
VLWIRFPA - Test 5 lots 192X192 RHE														Δ																		
Radiation Hardened																																
RHE - ADC Fabrication 12 bit 10 MSPS																							Δ									
RHE 2 - SONOS EEPROM Production 265kb										Δ																						

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Producibility & Mantech								
AOP - Complete Builtup of 1 GHz AOP			2Q					
AOP - HWIL Test Report			4Q					
AOP - HWIL Test at LL/MIT on real targets			3Q					
AOP - Insertion Program				2Q				
AOP - MANTECH Program			4Q					
Canisters - Fabrication of MRP Prototype				3Q				
Canisters - Low cost Canister Production for MDAPS			3Q					
DACS - Flight Test Boost Phase TDACS				2Q				
DACS - Flight Test Mid Course TDACS			2Q					
LADAR - Develop Flight LADAR			1Q-2Q					
LADAR - Integrate Passive and Active LADAR			3Q					
Test Prototype MDAPS Insertion Plan			3Q-4Q					
Two Color IRFPA - Conduct Pilot Production			1Q					
VLWIRFPA - Complete 192X192 FPA Hybridization			3Q					
VLWIRFPA - Test 5 lots 192X192 RHE				2Q,3Q,4Q				
Radiation Hardened								
RHE - ADC Fabrication 12 bit 10 MSPS						3Q		
RHE - DAC First Pass Fab 14 bit					1Q			
RHE - SONOS EEPROM Fab 1 Mb					1Q			
RHE -ADC Production 14 bit 10 MSPS					4Q			
RHE 2 - SONOS EEPROM Production 265kb			2Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	0	0	48000	73441	94793	97594	146280	146126
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

The Missile Defense Agency's (MDA) Countermeasures/Counter-Countermeasures Program (CM/CCM) program was established to improve the capability of the Ballistic Missile Defense System (BMDS) against adversary ballistic missiles employing countermeasures. Two adversary teams, Red and Black, assess the BMDS, determine the engineering-feasible range of approaches an adversary could use to defeat or degrade the BMDS, and develop conceptual countermeasure suites to implement those approaches. The two adversary teams operate with different perspectives: the Red Team is restricted to using only information on the BMDS available from open sources, while the Black Team develops countermeasures having complete access to all technical data on the BMDS. The concepts developed by the two adversary teams are reviewed by the White Team, a panel of senior technical experts, and the MDA Management Integration Board (MIB). The White Team provides MDA with an independent assessment of which countermeasures pose a high risk to the BMDS. The MIB may then select some or all of the adversary counter-measures for assessment and counter-countermeasure responses by the Blue Team.

The Blue Team is comprised of BMDS system, element, and component technical experts. The Blue Team uses analytical models to assess the performance and technical risk to the BMDS from the countermeasure concepts. The Blue Team then proposes counter-countermeasures and implementation plans to improve the capability of the BMDS to mitigate the risk posed by each countermeasure. The Blue Team's risk assessments and counter-countermeasures are reviewed by the White Team and the MDA MIB.

The CM/CCM program process allows management flexibility in the implementation of the Blue Team's risk mitigation strategies. The White Team and MIB can recommend action to begin immediate integration of a strategy into the BMDS via the Configuration Control process. The Configuration Control Board can then either direct advanced studies of the concept(s) be conducted, or initiate changes to the BMDS specification to incorporate the counter-countermeasure into the BMDS Block Development Program.

The CM/CCM Program may also initiate a separate development effort for those risk mitigation strategies that are not sufficiently mature to be integrated directly into the BMDS. The Blue Team sponsors counter-countermeasure initiatives, funded by the CM/CCM Program, to rapidly develop and demonstrate counter-countermeasure concepts. The program's Tan and Green teams provide support to the Blue Team in testing and demonstrating the performance of its counter-countermeasures. The Tan Team develops and builds targets and payloads to implement the adversary teams' countermeasure concepts. The Green Team develops test plans, plans for test resources, executes tests, analyzes test results, and provides an independent assessment of the demonstration. Counter-countermeasures that successfully demonstrate a strong potential capability to mitigate the effects of countermeasures may then be brought to the Configuration Control process for integration into the BMDS Block Development Program.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Red Team			3000	3000
RDT&E Articles (Quantity)				

FY 2004 PLANNED PROGRAM
- Update and maintain the open-source database on the BMDS

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

- Generate two sets of countermeasures against the open source system architecture
- Conduct up to two special studies on feasibility, deployment, and characterization of ROW countermeasure concepts

FY 2005 PLANNED PROGRAM
- Continue to update and maintain the open-source database on the BMDS
- Generate two sets of countermeasures against the open source system architecture
- Conduct up to two special studies on feasibility, deployment, and characterization of ROW countermeasure concepts

	FY 2002	FY 2003	FY 2004	FY 2005
Blue Team			33400	48841
RDT&E Articles (Quantity)				

FY 2004 PLANNED PROGRAM
Core Support:
- Initiate support from Element Program Offices and Contractors to Blue Team and CM/CCM Program activities

Analysis and Planning:
- Perform advanced studies to develop CCM mitigation options
- Prepare and Conduct Advanced Study Notices and Advanced Change Notices for review by Configuration Control Board

CCM Initiatives:
- Begin preliminary development for one CCM initiative to mitigate risk due to a selected adversary team CM

FY 2005 PLANNED PROGRAM
Core Support:
- Continue to support from Element Program Offices and Contractors to Blue Team and CM/CCM Program activities

Analysis and Planning:
- Continue to perform advanced studies to develop CCM mitigation options
- Prepare Advanced Study Notices and Advanced Change Notices for review by Configuration Control Board

CCM Initiatives:
- Continue development of the first CCM initiative to mitigate risk due to a selected adversary team CM
- Initiate development of 2-3 CCM initiatives to mitigate high-risk adversary team CMs

	FY 2002	FY 2003	FY 2004	FY 2005
Black Team			6400	6400
RDT&E Articles (Quantity)				

FY 2004 PLANNED PROGRAM
- Update the technical description of the baseline BMDS

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Generate two sets of countermeasures with threat risk assessments
- Modify and incorporate Red Team countermeasure concepts into Black Team countermeasures sets and MDA Adversary Capability Document
- Support Tan Team design of CM suite for the Critical Measurements Program's CMCM1 and CMCM2 flight tests in FY 2005
- Perform two cycles of BMDS assessment by Independent Scientific and Engineering Group (ISEG) to identify system weaknesses, technical concerns, and block transition issues.

FY 2005 PLANNED PROGRAM
- Continue to update the technical description of the baseline BMDS
- Generate two sets of countermeasures with threat risk assessments
- Continue to modify and incorporate Red Team countermeasure concepts into Black Team countermeasures sets and MDA Adversary Capability Document
- Support Tan Team design of CM suite for the Critical Measurements Program's FY 2006 flight tests
- Perform two cycles of BMDS assessment by Independent Scientific and Engineering Group (ISEG) to identify system weaknesses, technical concerns, and block transition issues

	FY 2002	FY 2003	FY 2004	FY 2005
White Team			600	600
RDT&E Articles (Quantity)				

FY 2004 PLANNED PROGRAM
- Review the adversary teams' countermeasures and Blue Team responses
- Provide independent assessments of teams' products to MDA Director

FY 2005 PLANNED PROGRAM
- Continue to review the adversary teams' countermeasures and Blue Team responses
- Continue to provide independent assessments of teams' products to MDA Director

	FY 2002	FY 2003	FY 2004	FY 2005
Tan Team			4600	9600
RDT&E Articles (Quantity)				

FY 2004 PLANNED PROGRAM
- Perform feasibility assessments of adversary teams' CM concepts is support of threat risk assessments
- Develop Level 2 design of a CM payload for the Critical Measurements Program FY 2006 flight tests

FY 2005 PLANNED PROGRAM
- Continue to perform feasibility assessments of adversary teams' CM concepts is support of threat risk assessments
- Develop and build CM payload for the Critical Measurements Program's CMCM1 and CMCM2 flight tests
- Develop Level 2 design of a CM payload for the Critical Measurements Program's FY 2007 flight tests

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2002	FY 2003	FY 2004	FY 2005
Green Team			0	5000
RDT&E Articles (Quantity)				

FY 2005 PLANNED PROGRAM
- Support planning and test execution of Critical Measurements Program's CMCM1 and CMCM2 flight tests

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

The Black, Red, Blue, and Tan Teams' execution of program activities is a collaborative effort 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). In addition, the Black and Blue Teams require extensive involvement by the major defense contractors responsible for the development of the BMDS, Elements, and major components. The involvement of industry is performed through the Blue Team. Blue Team CCM initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems Deputate. The Green Team is composed primarily of Government and SETA support from the MDA Test and Evaluation Deputate. Development of Tan Team target payloads is performed through the MDA Targets Prime Contractor.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Tan Team												
Payload Design/Development	MIPR	MDA Targets Prime				2000	1Q	7000	1Q	CONT.	9000	
Green Team												
Green Team	MIPR	Various						5000	1/2Q	CONT.	5000	
Red Team												
Red Team	CPAF	CSC/VA				3000	2Q	3000	2Q	CONT.	6000	
Black Team												
Black Team	CPAF	Sparta/VA				1200	1/2Q	1200	1/2Q	CONT.	2400	
Black Team	FFP	Vanguard/VA				2100	1/2Q	2100	1/2Q	CONT.	4200	
Black Team	CPAF	CSC/VA				375	1Q	375	1Q	CONT.	750	
Black Team	Various	Various				1250	1/2Q	1250	1/2Q	CONT.	2500	
Blue Team												
Blue Team Core Support	MIPR	Various				17200	1/3Q	17200	1/3Q	CONT.	34400	
Blue Team Analysis & Planning	MIPR	Various				7800	1/3Q	10000	1/3Q	CONT.	17800	
Blue Team CCM Initiatives	MIPR	Various				1400	1Q	14641	1/3Q	CONT.	16041	
Subtotal Support Costs			0	0		36325		61766			98091	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

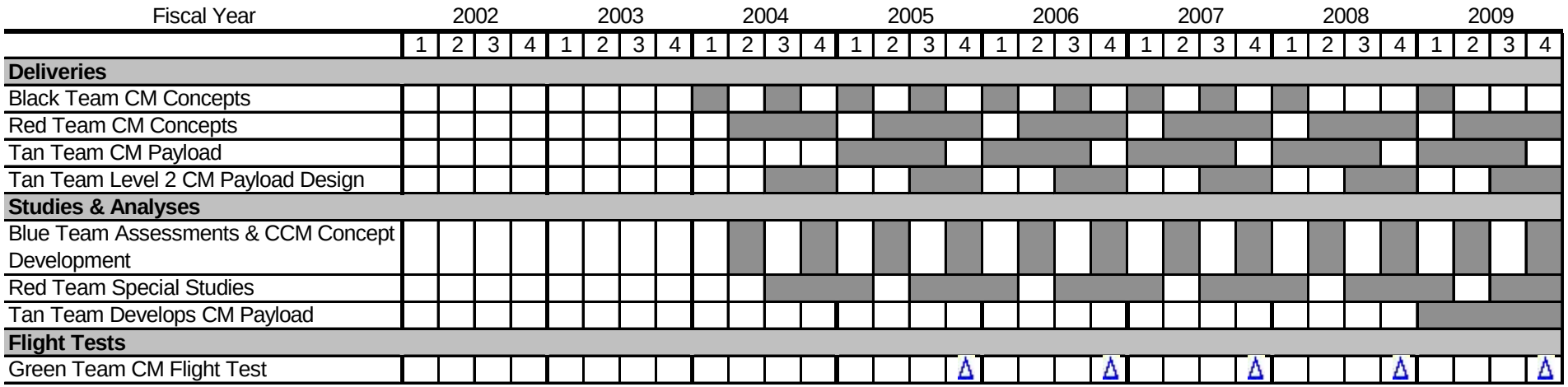
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Tan Team												
Feasibility Panel	FFRDC	NM/CA/MA				2600	1Q	2600	1Q		5200	
Black Team												
Black Team	FFRDC	NM/CA/MA/VA				1475	1/2Q	1475	1/2Q	CONT.	2950	
Blue Team												
Blue Team Analysis & Planning	FFRDC	MIT/LL/MA				7000	1/3Q	7000	1/3Q	CONT.	14000	
White Team												
White Team	MIPR	IDA/VA				600	1Q	600	1Q		1200	
Subtotal Management Services			0	0		11675		11675			23350	

Remarks

Project Total Cost			0	0		48000		73441			121441	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Deliveries								
Black Team CM Concepts			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q	1Q
Black Team to Provide Level 1 Designs to Tan Team			2Q	2Q	2Q	2Q	2Q	2Q
Blue Tm Prvd Perfrm Impacts to Threat Risk Assessm			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
Red Team CM Concepts			2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q
Red Team to Deliver Special Studies Report				1Q	1Q	1Q	1Q	1Q
Tan Team CM Payload				1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Tan Team Level 2 CM Payload Design			3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q
White Provide Independent Assessments to MDA			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
Studies & Analyses								
Black Team to Conduct Threat Risk Assessment			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
Blue Team Assessments & CCM Concept Development			2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
Blue Team Develops CCM Concepts & Plans			2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q
Blue Team to Conduct Performance Assessments			2Q,2Q,4Q,4Q	2Q,2Q,2Q,4Q	2Q,4Q	2Q	2Q,2Q,4Q	2Q,4Q
Red Team Special Studies			3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q
Tan Team Develops CM Payload				1Q-2Q	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Tan Tm Assess Feasibility of Black TM CM			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q
Flight Tests								
Green Team CM Flight Test				4Q	4Q	4Q	4Q	4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0202 Hercules Core	0	0	24079	22119	21628	21599	22013	25375
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Project 1050, for FY 2002 and FY 2003.

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, which 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 for developing algorithms for forward based sensors, the Decision Architecture, and mitigating countermeasures. Hercules develops algorithms to enhance BMDS element capabilities in Block 04, 06, 08 and beyond and will provide these algorithms to the BMDS elements for insertion into their respective programs.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Project Hercules			24079	22119
RDT&E Articles (Quantity)				

Project Hercules Core activities include the collection and analysis of flight tests, systems engineering, the Hercules Test Bed infrastructure and the development of models and simulations particular to the data projects ongoing within Hercules.

1) Hercules collects and analyzes flight data from throughout the MDA and channels this data into algorithm development by Hercules teams.

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.

3) Models and simulations are developed 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.

4) Hercules maintains Test Beds for extensive characterizing of algorithms by a Hercules test team independent from the Hercules developers.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

D. Acquisition Strategy

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

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

Capabilities 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				10539	1Q	9560	1Q	CONT.	20099	
Subtotal Support Costs			0	0		10539		9560			20099	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
Army SMDC	Various	Army/Huntsville, AL				10540	1Q	9559	1Q	CONT.	20099	CONT.
Subtotal Test and Evaluation			0	0		10540		9559			20099	

Remarks

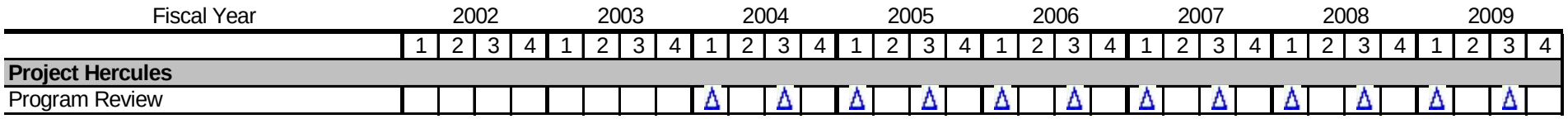
MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
SETA	Other	Sparta/Rosslyn, VA				2000	1Q	2000	1Q	CONT.	4000	
SETA	Other	CSC/Rosslyn, VA				1000	1Q	1000	1Q	CONT.	2000	
Subtotal Management Services			0	0		3000		3000			6000	
Remarks												
Project Total Cost			0	0		24079		22119			46198	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Hercules								
Program Review			1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q	1Q,3Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0106 Modeling and Simulation	0	0	98173	100199	101881	101650	106151	108060
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Project 1060, in FY 2002 and FY 2003.

The BMD System Level Core Model and Simulation (M&S) Project provides for the development, maintenance, upgrades, verification and validation functions integrated into an MDA evolutionary block upgrade strategy for developing new missile defense capabilities and a responsive spiral development process within the block to support the evolutionary BMD capability-based process. BMD System level core models include 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 Ballistic Missile Defense System (BMDS). BMD System level core Hardware-in –the-Loop Tools (HWILT) support Missile Defense Integration Exercises (MDIE), and the engineering, development, and testing of BMDS integration and interoperability. Human/Operator-in-the-loop (HIL/OIL) tools support wargaming exercises and the development of new missile defense doctrine, Concepts of Operations (CONOPS) and Tactics, Techniques and Procedures (TTPs). Highly aggregated constructive models along with medium and high fidelity constructive models provide 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 funds the development of applicable standards, improved automated support tools, information assurance, vulnerability assessments, a standards-based verification and validation (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.

A comprehensive BMD System-level Core Model and Simulation program that manages the life cycle of a verified and validated set of approved Core Models and Simulations (M&S) and system level M&S computational support facilities. These mission-focused BMD System Level Core Models and Simulations are required for experimentation, studies, analysis, pre- and post-test evaluation activities that support the development of the BMDS, the Corporate Test Program and BMDS testing events in all three phases of the BMD development cycle: RDT&E, transition and operations and maintenance. This project provides for the software acquisition management, software engineering, program management, planning, coordination, interoperability, integration, information assurance, vulnerability assessment, verification and validation, and technical oversight of BMD system level M&S.

The International Cooperative Model and Simulation program directly supports the development of two new international M&S initiatives, the Russian Federation and the Israeli ARROW program, and continuing support to fifteen existing international cooperative M&S initiatives. An information assurance program including vulnerability assessment supports all programs.

The System Level Core Model set provides representations of the element systems in virtual and constructive M&S.at the required fidelities and resolutions to support the BMD evolutionary acquisition activities. These verified and validated tools provide the following capabilities: a hardware-in-the-loop simulation that will be expanded from the current theater focus to a system wide assessment tool; a HIL simulation to develop missile defense wargame execution and the development of CONOPS, TTPs, and doctrine supporting military utility; and a family of three constructive simulations to support studies, analysis, Combatant Commander Exercises, Operational test agencies, JTAMDO studies, and the International M&S program. This effort focuses M&S support in three major areas: assessments, development/modification, and program management for BMDS programs. M&S activities also funded by this project include support for the development, enhancement, and maintenance of the system-wide Test Beds and tools that provide the analysis, integration, demonstration, and performance verification for BMD systems, and support for initial defensive operations (IDO).

The System Level Threat, Signature, Environment and Lethality (TSEL) M&S are common-use physics- and engineering-level corporate assets which directly support the development of BMD element systems, sub-systems and components. The Signature Models, Scene Generation, Threat models and Battlespace Environment Signature Tool Kit (BEST) activities will replace existing legacy models and provide high confidence signature prediction capability for active and passive electro-optical (EO) and radio frequency (RF) sensors used in BMD elements and systems. Both empirical and physics-based models and computer codes are developed, verified & validated, maintained, and distributed to provide high-confidence results. Legacy M&S will be maintained until replaced by the BEST and new Scene generation capabilities. These M&S support also test planning, test target design, sensor design/development/test, data and systems analysis, operational test and

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

evaluation, and algorithm development. The Adversarial Capability Document (ACD) Threat capability will be added to all core models. A centralized verification, validation, and accreditation (VV&A) program supports all Core models. The System Level Lethality Model activities provide model and simulation support for the MDA Corporate Lethality Program, test communities, the lethality community, approved operational uses and Homeland Defense. The Lethality program answers are the primary evaluation tools to determine the success or failure of a threat target intercept. This task supports the maintenance and enhancement of lethality models through the development of standard lethality threat-representative targets, the pre-flight prediction of tests and experiments to obtain lethality data and the incorporation of that data into the interceptor/target lethality models' design.

The System level M&S computational support facilities include the computing and networking infrastructure support for the Advanced Research Center/Simulation Center (ARC/SC). This task supports the operations and maintenance of computing resources for multiple Test Beds within the ARC and supercomputers and local and wide area networking capabilities within both the ARC and SC, supporting specific efforts including the concept exploration, development, and test of the BMDS.

This mission common task includes the government salaries and related support costs (e.g. rent, travel, supplies, etc.) for the Service Executing Agent (EA) government technical personnel, other than the PEO, directly supporting and assigned to the Test bed Product Office and the ARC/SC.

This project is conducted in accordance with DoD 5000.59, DoD Modeling and Simulation (M&S) Management, DoD 5000.61, DoD Verification, Validation and Accreditation, and DoD Manual Number 8510.1-M DoD Information Technology Security Certification and Accreditation Process (DITSCAP.)

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
International Co-operative M&S			10910	10993
RDT&E Articles (Quantity)				

Includes International Cooperative M&S which supports the ARROW program's Israeli HWITL M&S tool and initiates a US M&S tool that the Russian Federation can use for ballistic missile modeling.

FY 2004 PLANNED PROGRAM
- Support the Arrow-MDIE test event
- Support the Russian Federation Exercise Program

FY 2005 PLANNED PROGRAM
- Continue to support the Arrow-MDIE test event
- Support the JUNIPER COBRA test events
- Continue to support the Russian Federation Exercise Program

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2002	FY 2003	FY 2004	FY 2005
BMD System Level Core M&S			39589	41180
RDT&E Articles (Quantity)				

Provide BMD System Level M&S support for analysis, assessment, characterization, test, and International Co-operative Support: EADTB (used for PAC3 IOT&E); MDSE (used for HWITL 02a/PAC3 IOT&E); EADSIM (300+ users worldwide); CAPS (multi-users throughout MDA); and MDWAR.

FY 2004 PLANNED PROGRAM
- Incorporate Block 2004 C2BMC capabilities into the BMD System Level M&S
- Incorporate Block 2004 Communication capabilities into the BMD System Level M&S
- Incorporate Block 2004 BMDS Element system representations into the BMD System Level M&S
- Incorporate Block 2004 Target and Countermeasure capabilities into the BMD System Level M&S
- Support expanded M&S Scenario development
- Manage a System Level Core M&S VV&A program
- Support System Engineering and Integration
- Support System Test and Evaluation
- Support International Cooperative M&S programs and Allied support
- Incorporate the ACD into the BMD System Level M&S
- Support Combatant Commanders Exercise program and Joint Warfighter support
- Support Missile Defense Wargames
- Continue to Develop an M&S Information Assurance / Vulnerability Assessment Process

FY 2005 PLANNED PROGRAM
- Continue to incorporate Block 2004 C2BMC capabilities into the BMD System Level M&S
- Continue to incorporate Block 2004 Communication capabilities into the BMD System Level M&S
- Continue to incorporate Block 2004 BMDS Element system representations into the BMD System Level M&S
- Continue to incorporate Block 2004 Target and Countermeasure capabilities into the BMD System Level M&S
- Continue to support expanded M&S Scenario development
- Continue to manage a System Level Core M&S VV&A program
- Continue to support System Engineering and Integration
- Continue to support System Test and Evaluation
- Continue to support International Cooperative M&S programs and Allied support
- Continue to incorporate the ACD into the BMD System Level M&S
- Continue to support Combatant Commanders Exercise program and Joint Warfighter support
- Continue to support Missile Defense Wargames
- Continue to develop an M&S Information Assurance / Vulnerability Assessment Process

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2002	FY 2003	FY 2004	FY 2005
System Level Threat, Signature, Environment and Lethality (TSEL) M&S			28546	28765
RDT&E Articles (Quantity)				

Provides for BMD System Engineering M&S such as: BEST to upgrade legacy models to current S/W methods and processes to include interoperability between the models; incorporating the ACD into the threat models, scene generation, Lethality models (Peels/PEGEM/Kidd) used throughout MDA; and Process and V&V activity (S/W acquisition) in support of IN/SPC (JNIC).

FY 2004 PLANNED PROGRAM
- BMD System Level TSEL M&S support to development of Block 2004 C2BMC capabilities
- BMD System Level TSEL M&S support to development of Block 2004 BMDS Element systems
- BMD System Level TSEL M&S support to development of Block 2004 Target and Countermeasure capabilities
- BMD System Level TSEL M&S support to development of expanded M&S Scenario development
- System Level Core M&S VV&A program supporting development of the System Level TSEL M&S
- TSEL M&S support to System Engineering and Integration
- TSEL M&S support to System Test and Evaluation
- TSEL M&S support to International Cooperative M&S programs and Allied support
- Develop an M&S Information Assurance / Vulnerability Assessment Process

FY 2005 PLANNED PROGRAM
- Continue BMD System Level TSEL M&S support to development of Block 2004 C2BMC capabilities
- Continue BMD System Level TSEL M&S support to development of Block 2004 BMDS Element systems
- Continue BMD System Level TSEL M&S support to development of Block 2004 Target and Countermeasure capabilities
- Continue BMD System Level TSEL M&S support to development of expanded M&S Scenario development
- Continue System Level Core M&S VV&A program supporting development of the System Level TSEL M&S
- Continue TSEL M&S support to System Engineering and Integration
- Continue TSELM&S support to System Test and Evaluation
- Continue TSEL M&S support to International Cooperative M&S programs and Allied support
- Continue to Develop an M&S Information Assurance / Vulnerability Assessment Process

	FY 2002	FY 2003	FY 2004	FY 2005
System Model Program Spt			5280	5303
RDT&E Articles (Quantity)				

System Model Program Support provides for VV&A and Anchoring - a corporate approach to VV&A and assisting international partners in anchoring their models using EADSIM, CAPS, MDSE, EADTB, and Lethality M&S.

FY 2004 PLANNED PROGRAM
- Improve / enhance the system Core Model VV&A program

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Improve / enhance the system Core Model Information Assurance / Vulnerability program
- Improve / enhance the system Core Model Data management process for M&S validation

FY 2005 PLANNED PROGRAM
- Continue to improve / enhance the system Core Model VV&A program
- Continue to improve / enhance the system Core Model Information Assurance / Vulnerability program
- Continue to improve / enhance the system Core Model Data management process for M&S validation

	FY 2002	FY 2003	FY 2004	FY 2005
ARC/SC			13848	13958
RDT&E Articles (Quantity)				

Operations and Sustainmnet of the Advanced Research Center/Simulation Center in Huntsville, AL.

FY 2004 PLANNED PROGRAM
- Improve / enhance the ARC support for the BMDS
- Improve / enhance the SC support for the BMDS

FY 2005 PLANNED PROGRAM
- Continue to improve / enhance the ARC support for the BMDS
- Continue to improve / enhance the SC support for the BMDS

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

The majority of M&S support is performed in Huntsville at the ARC/SC, PEO AMD, SMDC, Redstone Arsenal, various BMD program offices, in Colorado at the JNIC, and at other DoD and private sector contractor Test Bed facilities. The ARC/SC contractor operates under a Cost Plus Fixed Fee (CPFF) contract first awarded in June of 1989.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ARC/SC												
ARC/SC	Various	SMDC/AL				12233	1/2Q	12327	1/2Q	CONT.	24560	
Subtotal Support Costs			0	0		12233		12327			24560	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
International Co-operative M&S												
Int`l Coop M&S	Various	PMS422/VA				333	1Q	336	1Q	CONT.	669	
Int`l Coop M&S	Various	PEOAMD/AL				1819	1/2Q	1833	1/2Q	CONT.	3652	
Int`l Coop M&S	Various	MDA/VA				6775	1/2Q	6826	1/2Q	CONT.	13601	
Int`l Coop M&S	Various	JNIC/CO				249	1Q	251	1Q	CONT.	500	
BMD System Level Core M&S												
BMD Sys Level Core M&S	Various	SMDC/AL				9609	1/2Q	10010	1/2Q	CONT.	19619	
BMD Sys Level Core M&S	Various	PMS422/VA				636	1Q	663	1Q	CONT.	1299	
BMD Sys Level Core M&S	Various	AF				530	1Q	553	1Q	CONT.	1083	
BMD Sys Level Core M&S	Various	PEOAMD/AL				6630	1/2Q	6906	1/2Q	CONT.	13536	

MDA Exhibit R-3 RDT&E Project Cost Analysis | Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**

R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

BMD Sys Level Core M&S	Various	NAVY				334	1Q	348	1Q	CONT.	682	
BMD Sys Level Core M&S	Various	MDA/VA				11013	1/2Q	11472	1/2Q	CONT.	22485	
BMD Sys Level Core M&S	Various	JNIC/CO				9102	1/2Q	9481	1/2Q	CONT.	18583	
System Level Threat, Signature, Environment, and Lethality (TSEL) M&S												
System TSEL M&S	Various	SMDC/AL				4025	1/2Q	4055	1/2Q	CONT.	8080	
System TSEL M&S	Various	AF				3881	1/2Q	3911	1/2Q	CONT.	7792	
System TSEL M&S	Various	NAVY				6561	1/2Q	6611	1/2Q	CONT.	13172	
System TSEL M&S	Various	MDA/VA				12345	1/2Q	12440	1/2Q	CONT.	24785	
System Model Program Spt												
Sys Model Prgm Spt	Various	SMDC/AL				618	1Q	618	1Q	CONT.	1236	
Sys Model Prgm Spt	Various	AF				487	1Q	489	1Q	CONT.	976	
Sys Model Prgm Spt	Various	PEOAMD/AL				568	1Q	570	1Q	CONT.	1138	
Sys Model Prgm Spt	Various	MDA/VA				1545	1Q	1549	1Q	CONT.	3094	
Sys Model Prgm Spt	Various	JNIC/CO				328	1Q	329	1Q	CONT.	657	
Subtotal Test and Evaluation			0	0		77388		79251			156639	

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
International Co-operative M&S												
Support Contracts	Various	BAH, VA				1734	1/2Q	1747	1/2Q	CONT.	3481	
BMD System Level Core M&S												
Support Contracts	Various	BAH, VA				1735	1/2Q	1747	1/2Q	CONT.	3482	
System TSEL M&S												
Support Contracts	Various	BAH, VA				1734	1/2Q	1748	1/2Q	CONT.	3482	
System Model Program Spt												
Support Contracts	Various	BAH, VA				1734	1/2Q	1748	1/2Q	CONT.	3482	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

ARC/SC												
Gov`t Personnel	Various	SMDC/AL				1615	1Q	1631	1Q	CONT.	3246	
Subtotal Management Services			0	0		8552		8621			17173	
Remarks												
Project Total Cost			0	0		98173		100199			198372	
Remarks												

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Fiscal Year	2002				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	1	2	3	4
Deliveries																																
Block builds / Spiral Releases of CAPS																																
Block builds / Spiral Releases of MDWAR																																
Block builds / Spiral Releases of EADSIM																																
Block builds / Spiral Releases of EADTB																																
Block builds / Spiral Releases of MDSE																																
Block builds / Spiral Releases of BEST																																
Block builds / Spiral Releases of Threat / ACD																																
Block builds / Spiral Releases of Scene Generation																																
Block builds / Spiral Releases of MDSE-Arrow																																
Block builds / Spiral Releases of Scene Generation																																
Block builds / Spiral Releases of US/RF M&S																																

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Block builds / Spiral Releases of CAPS			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases of MDWAR (HIL)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases EADSIM			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases EADTB			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases MDSE (HWIL)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases BEST			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases of Threat (ACD)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases Lethality Models			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Support ARROW-MDIE events			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Support System Wargame events			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Support US/RF events			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases of Scene Generation			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases of MDSE-Arrow			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Block builds / Spiral Releases of US/RF M&S			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Maintenance Releases of Legacy TSEL M&S			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Studies & Analyses								
Core Model Requirements Call			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
VV&A /M&S Studies, Analysis, Plans, Accreditations			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Vulnerability Assessments (IA Program)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Federation Studies / Analysis			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
International M&S Program Support			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Combatant Commander Exercise Support			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
SIT/CMP/SIFT Data Validation Activities			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Transition Phase Support (OTA Support)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
O&M Phase Support (ILS, Training, Maint)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0104 BMD Information Management Systems	0	0	31364	33161	34378	36562	42759	44300
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This Project was funded under PE 0603880C (BMD System), Project 1050, and PE 0603882C (Midcourse Defense Segment), Project 3050, in FY 2002. In FY 2003, this project was funded under PE 0603880C (BMD System), Project 1050.

The BMD Information Management System (IMS), executed by the Chief Information Office, consists of three major initiative areas: 1) Enterprise Information Management/Information Technology (IM/IT) Architecture and Engineering, 2) Enterprise Information Management, and 3) Enterprise Plans, Policies and Analyses. BMD IMS also supports Executing Agent projects related to MDA Enterprise IM/IT projects.

The Chief Information Office is responsible for planning to improve the management of and access to data, information, and knowledge throughout the Missile Defense (MD) enterprise. The Chief Information Officer (CIO) is responsible to the Director, MDA for the MDA information management and information technology including information architectures, policies, plans, processes, and procedures in accordance with existing statutes and DoD regulations. The CIO assists in acquisition of missile defense systems by:
- Developing enterprise architectures that identify information needs, solutions and standards for both business and mission MD activities;
- Providing guidance, planning, oversight, and monitoring to enable the MD enterprise with IM and IT capabilities to comply with statutes, regulations, directives, and policies;
- Establishing IT/IM policies, processes and infrastructure throughout the MD enterprise that allows IM/IT operations to be performed in an efficient, secure, and effective manner;
- Creating an MD Enterprise Information Management System that allows both information sharing and decision support using web-based technologies;
- Establishing electronic business practices and processes that help achieve more effective and more efficient and secure business and mission activities throughout the MD enterprise; and Improving the IM/IT infrastructure that supports the design, development, and testing of MDA systems.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Enterprise IM/IT Architecture and Engineering			6275	2850
RDT&E Articles (Quantity)				

Discussion: The Enterprise IM/IT Architecture and Engineering initiative focuses on providing architecture and engineering support to design, develop and deploy prototypes of the MD Enterprise Information Management System including designing MD Wide-Area-Network (WAN) improvements, instituting Enterprise Security, and upgrading Virtual Data Center (VDC) global and regional connectivity. The DoD Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Framework is the model being used to develop an MDA Enterprise Information Architecture.

FY 2004 Planned Program:
- Design and transfer MDA network connections from the existing Office of the Secretary of Defense (OSD) backbone to secure network connections to external sites that allow for greater bandwidth and improved access to sites external to MDA in the National Capital Region via the MD WANs.
- Initiate IT Network Prototyping to support the modernization of the MD IT Infrastructure.
- Continue providing enterprise communications and management funding for the Defense Information System Agency (DISA), WAN modernization, Hercules and MDANet costs.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Develop guidance for the MDA Security (MDA/SC)directorate, and the Resource Management Telecommunications (RMT) directorate and the Services to help ensure that Information Assurance (IA) requirements are designed and implemented.

FY 2005 Planned Program:
- Develop a baseline that reflects the existing infrastructure and develop MDA information "target" architectures that are consistent with the Global Information Grid (GIG) architecture.

	FY 2002	FY 2003	FY 2004	FY 2005
Enterprise Information Management			22548	27689
RDT&E Articles (Quantity)				

Discussion: The MD Enterprise Information Management initiative consists of several projects including: design and prototyping of enterprise information applications which will be used to collect, analyze and display essential program status and decision support information; an example is the MD Enterprise Portal project which provides for easy access to MDA Program data, administrative information, collaboration tools, and decision support tools; and the BMD Information Resources Center (BIRC), which contains technical information as well as providing research support for accessing MD information. The MD Data Center Program provides access to the investment of years of vital MD data such as: architecture/systems engineering data; wargaming, 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 made available to the MD community through use of an MD Enterprise Portal using decision support tools and collaboration tools that are constantly evolving and being improved. The function of the VDC is to provide for timely sharing of MD technical data, knowledge and expertise across the MD Community using information technology tools. The VDC extends the physical Data Center infrastructure to provide connectivity to subject matter experts in government and contractor facilities throughout the U.S. using a full spectrum of collaborative tools, web technology, video teleconferencing, visualization tools, and document sharing.

FY 2004 Planned Program:
- Provide funding for the BIRC which serves as a central resource to assist in locating missile defense related scientific and technical information. It is furnished with a fully automated library automated information system (AIS) both classified and unclassified data.
- Provide funding to support expanding the BIRC mission to include a technical library capability with MD information gathering and dissemination throughout the MD community.
- Continue funding the Scientific and Technical Data Centers and Virtual Data Centers (VDC) program for acquiring, storing and distributing relevant BMD mission-related data in a secure manner throughout the MD Enterprise. 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, and the Joint National Integration Center (JNIC). See Section E. "Major Performers" for a description of the Executing Agents' efforts.

FY 2005 Planned Program:
- Continue to provide executing Agents funding for Data Centers and VDC operations.

	FY 2002	FY 2003	FY 2004	FY 2005
Enterprise Plans, Policies, and Analyses			2541	2622
RDT&E Articles (Quantity)				

Discussion: This initiative provides for development and implementation of IM/IT policies and processes to ensure efficient and effective management of information resources in accordance with statutes and DoD policy. It includes planning, budgeting, policies and processes including configuration control, and performance metrics for IM/IT activities.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY 2004 Planned Program:
- Initiate a Capital Planning and Investment Control (CPIC) using OMB guidelines including business case development and assessments.
- Continue to provide assistance in preparing for MDA Corporate Boards and a CIO Advisory Committee (CAC.
- Update the MD Enterprise IM/IT Program Plan

FY 2005 Planned Program:
- Update the Capital Planning and Investment Control (CPIC) using OMB guidelines including business case development and assessments.
- Continue to provide assistance in preparing for MDA Corporate Boards and a CIO Advisory Committee (CAC.
- Review/update the MD Enterprise IM/IT Program Plan

C. Other Program Funding Summary

	FY 2002	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	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

D. Acquisition Strategy

The MD Enterprise Information Management System acquisition strategy 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.

FY 2004 activities will be focused on enhancing the MD Enterprise Information Management System by utilizing emerging technologies to meet requirements for both business and mission information systems. FY 2004 activities will also include deployment of the knowledge management (KM) capability across the enterprise, the refinement of KM repositories, portal access, and security.

FY 2005 and beyond improvements to the BMD Information Management System will be defined based on the Enterprise Information Architecture results.

MDA/CI uses contract support services to manage the development and implementation of the MDA Enterprise IM system. 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). Executing Agent funding is included in the Enterprise Information Management task. The following is a list of the major performers that contribute to the execution of the MDA/CI program.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Enterprise IM/IT Architecture and Engineering												
Ent IM/IT Arch. & Engineering	MIPR	FEDSIM/SRA/VA				5450	1Q	2000	1Q	CONT.	7450	
Ent IM/IT Arch. & Engineering	MIPR	DISA				825	1Q	850	1Q	CONT.	1675	
Enterprise Information Management												
Enterprise Info Mgt	MIPR	FEDSIM/SRA/VA				4299	1Q	9014	4Q	CONT.	13313	
Enterprise Info Mgt	C/CPAF	AMSC/AL				2624	3Q	2401	3Q	CONT.	5025	
Enterprise Info Mgt	C/CPAF	MDDC/AL				4222	2Q	3863	2Q	CONT.	8085	
Enterprise Info Mgt	C/CPFF	JNIC/CO				1966	2Q	1799	2Q	CONT.	3765	
Enterprise Info Mgt	MIPR	Various				587	1/4Q	537	1/4Q	CONT.	1124	
Enterprise Info Mgt	C/CPAF	PEO AMD/AL				1428	1Q	1449	1Q	CONT.	2877	
Enterprise Info Mgt	C/CPAF	SMDC/AL				4628	3Q	4678	3Q	CONT.	9306	
Enterprise Info Mgt	BPA	USAF/VA				624	1Q	948	1Q	CONT.	1572	
Enterprise Info Mgt	C/CPFF	DRC/VA				2170	2Q	3000	2Q	CONT.	5170	
Enterprise Plans, Policies, and Analyses												
Ent. Plans Policies & Analyses	Various	Various				2541	1Q	2622	1Q	CONT.	5163	
Subtotal Support Costs			0	0		31364		33161			64525	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. 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 2003 Cost	FY 2003 Award Date	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)

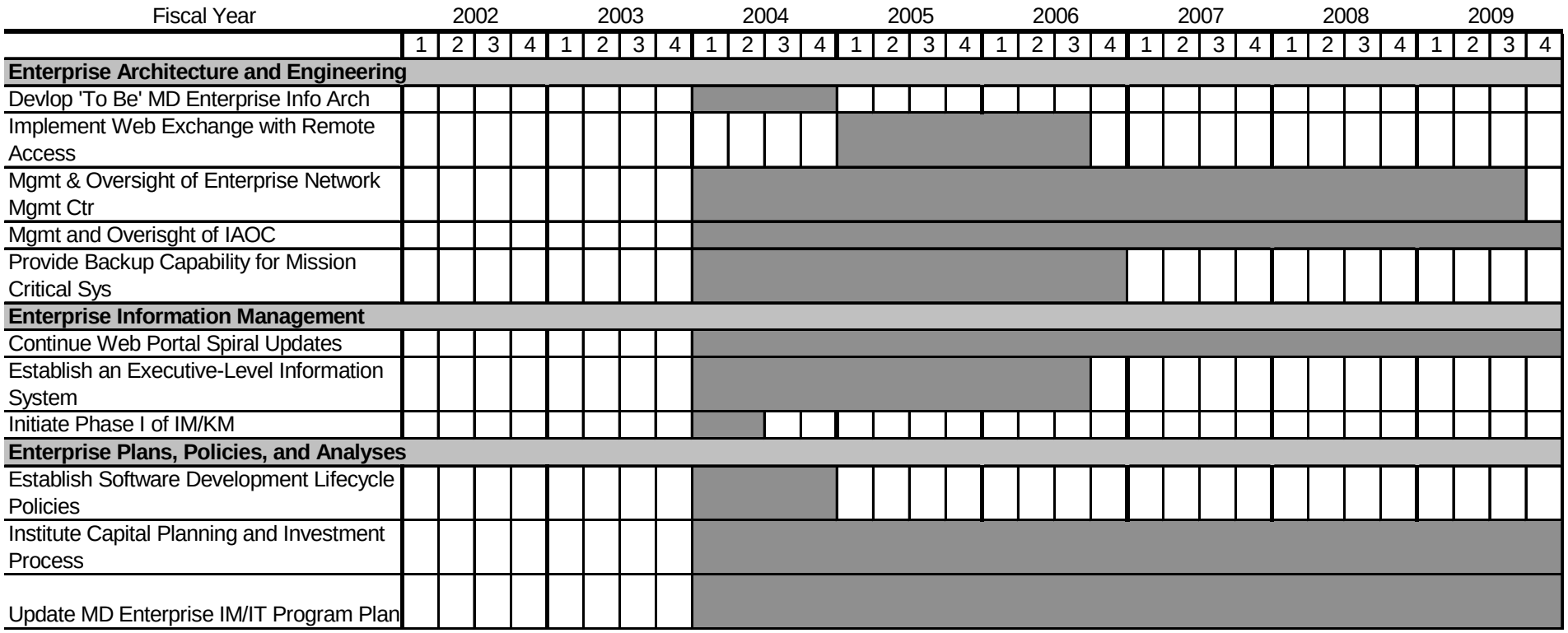
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Management Services												

Remarks

Project Total Cost			0	0		31364		33161			64525	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core



MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Enterprise Architecture and Engineering								
Develop 'To Be' MD Enterprise Info Arch			1Q-4Q					
Implement Web Exchange with Remote Access				1Q-4Q	1Q-3Q			
Mgmt & Oversight of Enterprise Network Mgmt Ctr			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
Mgmt and Oversight of IAOC			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Pilot Test Classified VPN for Windows XP			1Q-4Q	1Q-4Q				
Pilot Test and Evaluate Classified VPN			1Q-4Q					
Provide Backup Capability for Mission Critical Sys			1Q-4Q	1Q-4Q	1Q-4Q			
Transfer MDA Circuits to DISA			1Q-4Q	1Q-4Q	1Q-4Q			
Enterprise Information Management								
Continue Web Portal Spiral Updates			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Establish Infrastructure for IM/KM Sharing			1Q-4Q	1Q-4Q	1Q-3Q			
Establish an Executive-Level Information System			1Q-4Q	1Q-4Q	1Q-3Q			
Expand Virtual Collaboration Toolset			1Q-4Q	1Q-4Q	1Q-4Q			
Expand use of Collaboration Tools			1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q		
Increase Electronic VDC Access to Test Data			1Q-4Q	1Q-4Q				
Initiate Phase I of IM/KM			1Q-2Q					
Integrate BIRC's card catalog and link to IM/KM			1Q-4Q	1Q-4Q				
Interface Add'l Data Ctrs with Existing Data Ctrs			1Q-4Q	1Q-3Q				
Enterprise Plans, Policies, and Analyses								
Establish Software Development Lifecycle Policies			1Q-4Q					
Institute Capital Planning and Investment 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
Update the Data Management Plan			1Q-2Q					

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **4. Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
0602 Program Operations	0	0	8400	8532	9778	10041	10446	10882
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Transferred in from the Ballistic Missile Defense System Segment Program Element 0603880C.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel			2800	2844
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support			2800	2844
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements			2800	2844
RDT&E Articles (Quantity)				

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.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 4. Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core						
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604861C Theater High-Altitude Area Defense System - TMD - EMD**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	818632	888323	0	0	0	0	0	0
2011 Theater High Altitude Area Defense (THAAD)	808017	888323	0	0	0	0	0	0
2090 Program Operations	10615	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The THAAD program was restructured from Project 2260 in FY 2001 to Project 2011 starting with FY 2002. Project 2011 THAAD is transferred to the BMD Terminal Defense Segment Program Element (PE) 0603881C for FY 2004 and out.

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 THAAD Program Element (PE) funds the THAAD developmental efforts for FY 2002 and 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), Medium Extended Air Defense System (MEADS), 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 in its own PE. 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) C2/BM 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 it's ability to engage and negate ballistic missiles in both the late mid-course (exo-atmospheric engagements) and terminal phase (endo-atmoshperic 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 Command & Control/Battle Management (C2BM) and Systems Engineering & Integration will guide the integration of TDS into the BMD System and the BMDS C2BM architecture.

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.

MDA Exhibit R-2 RDT&E Budget Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604861C Theater High-Altitude Area Defense System - TMD - EMD**

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	866530	932171	714679	830204
Current President's Budget (FY 2004 PB)	818632	888323	0	0
Total Adjustments	-47898	-43848	-714679	-830204
Congressional Specific Program Adjustments	-1577	-20000	0	0
Congressional Undistributed Adjustments	-6812	-16131	0	0
Reprogrammings	-20683	-7717	-714679	-830204
SBIR/STTR Transfer	-18826	0	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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2011 Theater High Altitude Area Defense (THAAD)	808017	888323	0	0	0	0	0	0
RDT&E Articles Qty	1	7	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

The Theater High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). TDS allocates resources to support development and selective upgrades of defensive capabilities that engage and negate ballistic missiles in the terminal phase of their trajectory. The mission of the THAAD system is to defend against short to medium range Ballistic Missiles (BMs) and other near-term threats at endo- and exo-atmospheric altitudes. THAAD's capability will protect U. S. and allied armed forces, broadly dispersed assets and population centers against BM attacks. THAAD's capability to intercept at endo- and exo-atmospheric altitudes makes effective countermeasures to THAAD difficult, allows multiple intercept opportunities, and will significantly mitigate the effects of weapons of mass destruction. The THAAD element development phase will refine and mature the system design to ensure component and system performance, producibility, and supportability. 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. The flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in C2BM and Systems Engineering & Integration will guide the integration of THAAD into the BMD System, the BMDS C2BM architecture, and the Ballistic Missile Defense (BMD) Test Bed.

Block 2004: The Block 2004 represents the design and development of a significant, fundamental THAAD capability against short and medium range BMs and demonstration of exo and high endo capability against unitary and separating targets in limited battlespace. The Block 2004 THAAD element will have a radar discrimination and missile infra-red discrimination capability and consists of a Test Missile configuration and C2BM with interactive defense planning and limited interoperability.

Flight testing for Block 2004 begins in 4th quarter, FY 2004, and continues through 1st quarter, FY 2006 with a total of 4 flight tests.

The RDT&E Articles: FY 2002 (Delivery Schedule) includes 1 Engineering Development Unit (EDU) missile. FY 2002 (Buy Schedule): 8 EDU missiles, 2 Ground Test Unit (GTU) missiles, 2 Radars, for a total of 12 RDT&E Articles.

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.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Block 2004 (Contract)	726590	810823		
RDT&E Articles (Quantity)	1	7		

FY02 Accomplishments:

RDT&E Articles: FY02 (Delivery Schedule) included 1 Engineering Development Unit (EDU) missile. FY02 (Buy Schedule) includes 2 GTU missiles, 8 EDU missiles, 2 Radars, for a total of 12 RDT&E Articles.

Modified contract for technical and schedule risk reduction.

Initiated technical and schedule risk reduction efforts to establish early Hardware-In-The-Loop facilities, initiated early component prototype deliveries and prepared for additional flight testing.

Completed Missile Sub-Assembly Preliminary Design Reviews (PDRs) (Mission Computer, Inertial Measurement Unit (IMU), Seeker, Divert and Attitude Control System (DACS), Boost Motor, Avionics).

Completed Missile Engineering development tests (Seeker Gimbal, DACS Thruster Risk Reduction Hot Firing Tests, Booster Static Firing).

Completed C2BM Hardware/Software Build 4.1 Critical Design Reviews (CDRs).

Began Missile sub-assembly brassboard testing.

Began lethality planning and model design.

Proposed THAAD block capability growth strategy.

Completed Radar and 80 percent of the Missile Baseline Production Readiness Risk Assessments (BPRRA).

Initiated Radar #1 and #2 fabrication.

Completed THAAD Missile and System PDRs.

FY 2003 Planned Program:

Continue Missile, Radar C2BM, and Launcher hardware and software development. Complete Missile and Launcher detailed designs and initiate fabrication of Launcher and Missile ground test units. Support range activation and operation activities at White Sands Missile Range (WSMR) and Pacific Missile Range Facility (PMRF). Continue fabrication of Launcher and Battle Manager test beds. Complete assembly of Radar antenna #1 and begin calibration and testing.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

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.

FY 2004 Planned Program: Not applicable (see PE 0603881C).

FY 2005 Planned Program: Not applicable (see PE 0603881C).

	FY 2002	FY 2003	FY 2004	FY 2005
Test Planning and Lethality	4408	5935		
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:
Test Planning - Initiated integration into WSMR and PMRF.

Lethality - Conducted lethality planning, target selection, planning for shot line selection process.

FY 2003 Planned Program:
Test Planning - Continue integration into WSMR and PMRF.

Lethality - Continue lethality simulation code development and validation. Initiate lethality test article development.

FY 2004 Planned Program: Not applicable (see PE 0603881C).

FY 2005 Planned Program: Not applicable (see PE 0603881C).

	FY 2002	FY 2003	FY 2004	FY 2005
Support Costs	77019	71565		
RDT&E Articles (Quantity)				

FY 2002 Accomplishments:
Support Contracts - Continued software independent verification and validation. Continued development of Simulation-Over-Live-Driver (SOLD). Performed technical analysis support.

Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Initiated THAAD range operations at White Sands Missile Range (WSMR) and BMD Test Bed (BTB) at Pacific Missile Range Facility (PMRF) and continued system Hardware-In-The-Loop development efforts. Continued C2BM 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, an FFRDC).

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

National Team - the flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in C2BM and Systems Engineering & Integration will guide the integration of THAAD into the BMD System, the BMDS C2BM architecture, and the Ballistic Missile Defense (BMD) Test Bed.

FY 2003 Planned Program:
Support Contracts - Continue software independent verification and validation. Continue development of simulation-over-live-driver. Perform technical analysis support.

Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Continue THAAD range operations at WSMR and BTB at PMRF and continue system Hardware-In-The-Loop development efforts. Continue C2BM interoperability and simulation efforts. Continue threat vulnerability assessment. Maintain integrated logistics and product assurance efforts. Perform quality and manufacturing technology tasks.

In-house support - Fund 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).

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		

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, Sunnyvale, CA. The Cost Plus Award Fee contract was awarded effective August 2000 and is 34% complete. The program is slightly ahead of schedule and under cost. Other THAAD blocks are discussed in PE 0603881C, Ballistic Missile Defense Terminal Defense System.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **5. 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 2003 Cost	FY 2003 Award Date	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 (Contract)												
THAAD ADV COMPONENT DEV & PROT	SS/CPAF	LMSSC/VARIOUS	726590	810823	1Q						1537413	
Subtotal Product Development			726590	810823		0		0			1537413	

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		Various/Various	36294	31168	1/2Q					CONT.	67462	
In-House Support		Various/Various	20158	21677	1/2Q					CONT.	41835	
Other Government Agencies		Various/Various	17160	15797	1/2Q					CONT.	32957	
Subtotal Support Costs			73612	68642		0		0			142254	

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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		Various/Various	1468	2417	1Q					CONT.	3885	
Lethality		Various/Various	2940	3518	1Q					CONT.	6458	
Subtotal Test and Evaluation			4408	5935		0		0			10343	

Remarks

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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 (Contract)												
MIT/LL	MIPR	Lexington, MA	500	0							500	
MITRE	MIPR	Ft. Monmouth, NJ	2907	2923	1/2Q						5830	
Subtotal Management Services			3407	2923		0		0			6330	
Remarks												
Project Total Cost			808017	888323		0		0			1696340	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

Fiscal Year	2002				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	1	2	3	4
PDR																																
Block 2004 System PDR				△																												

MDA Exhibit R-4A Schedule Detail	Date **February 2003**
APPROPRIATION/BUDGET ACTIVITY **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE **0604861C Theater High-Altitude Area Defense System - TMD - EMD**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
PDR								
Block 2004 System PDR	4Q							
C2BM Hardware Design/Development/Integration	1Q-4Q	1Q-4Q						
C2BM Software Design/Development	1Q-4Q	1Q-4Q						
Launcher Hardware Design/Development/Integ	1Q-4Q	1Q-4Q						
Launcher Software Design/Development	1Q-4Q	1Q-4Q						
Missile Hardware Design/Development/Integ	1Q-4Q	1Q-4Q						
Missile Software Design/Development	1Q-4Q	1Q-4Q						
Radar Software Design/Development	1Q-4Q	1Q-4Q						

Note: For resumption of schedule in FY 2004, refer to PE 0603881C.

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2090 Program Operations	10615	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Transferred to the BMD Terminal Defense Segment Program Element 0603881C for FY 2004 and out.

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

Personnel covers government and 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 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 101-50.

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 Operations efforts.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Personnel	1721			
RDT&E Articles (Quantity)				

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

MDA Exhibit R-2A RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD

	FY 2002	FY 2003	FY 2004	FY 2005
Management Support	4383			
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Fiscal Requirements	380			
RDT&E Articles (Quantity)				

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.

	FY 2002	FY 2003	FY 2004	FY 2005
Information Management/Information Technology (IM/IT)	4131			
RDT&E Articles (Quantity)				

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

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		

MDA Exhibit R-2A RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)							R-1 NOMENCLATURE: 0604861C Theater High-Altitude Area Defense System - TMD - EMD			
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	130630	176155						
2014 PATRIOT Advanced Capability 3 (PAC-3)	130630	176155	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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 2002 and 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), Medium Extended Air Defense System (MEADS), 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 mid-course phases of trajectory. Upon direction of the Ballistic Missile Defense System (BMDS) Command, Control, and Battle Management (C2BM) 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 C2BM and Systems Engineering & Integration will guide the integration of PAC-3 into the BMD System, the BMDS C2BM architecture, and the BMD Test Bed.

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD**

B. Program Change Summary Table	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	128199	0	0	0
Current President's Budget (FY 2004 PB)	130630	176155	0	0
Total Adjustments	2431	176155	0	0
Congressional Specific Program Adjustments	0	180819	0	0
Congressional Undistributed Adjustments	-913	-3196	0	0
Reprogrammings	6030	-1468	0	0
SBIR/STTR Transfer	-2686	0	0	0

The FY 2003 President's Budget of $150.819M was increased by $30.000M for additional testing by the FY 2003 Appropriations Conference to provide for a total of $180.819M. In accordance with the FY 2003 Appropriations Conference, the PAC-3 resources for FY 2003 which were previously addressed in PE 0604865A have been transferred to this PE.

PAC-3 was programmed to transfer to the Army in FY 2003 but per Congressional direction remained with MDA.

The FY 2003 PAC-3 funding was reduced by $3.196M during the appropriations cycle for Congressionally Undistributed Reductions.

The FY 2003 PAC-3 funding was also reduced by $1.468M for inflation.

MDA Exhibit R-2A RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
2014 PATRIOT Advanced Capability 3 (PAC-3)	130630	176155	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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.

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 Objective transition path of the Transformation Campaign Plan (TCP).

No RDT&E articles were required during FY 2003. The articles under test were previously funded, procured, and accepted.

B. Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Complete PAC-3 Missile Engineering and Manufacturing Development (EMD) Program.	50661	0		

Completion of PAC-3 EMD OT Test program and continuation of cost reduction efforts (Advanced IMU, Advanced Master Frequency Generator, and Multiband Radio Frequency Downlink).

	FY 2002	FY 2003	FY 2004	FY 2005
Complete Operational Test & Evaluation	31923	2000		

Flight tests completed 3Q FY 2002 with regression tests conducted 4Q FY 2002.

	FY 2002	FY 2003	FY 2004	FY 2005
Continue PAC-3 Target and Test Support	6390	15560		

Target planning and support to the EMD and follow-on test programs.

MDA Exhibit R-2A RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD

	FY 2002	FY 2003	FY 2004	FY 2005
THAAD/PATRIOT Launcher	9916	0		

Development efforts for THAAD launcher with PATRIOT interface.

	FY 2002	FY 2003	FY 2004	FY 2005
Evolutionary Development	31740	88319		

Development efforts for improvements to system capabilities.

	FY 2002	FY 2003	FY 2004	FY 2005
Block Test Program with LMMFC and Raytheon		70276		

Follow-on Block test program.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2004	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE C49200 PATRIOT PAC-3	0	0	561555	490754	490892	490814	620451	626573		
PE C50700 PATRIOT Mods	24819	148671	176304	52525	30014	47883	50993	27354		
PE CA0267 PATRIOT Modification Initial Spares	722	39946	18426	10763	10746	5379	4842	3935		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

MDA Exhibit R-2A RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD

PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		

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.

MDA Exhibit R-3 RDT&E Project Cost Analysis

Date
February 2003

APPROPRIATION/BUDGET ACTIVITY
5. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Complete PAC-3 Missile Engineering and Manufacturing Development (EMD) Program.												
PAC-3 Missile EMD	SS/CPIF	LMMFC/TX	978342	0							978342	
PAC-3 Missile Integration	SS/CPIF	Raytheon/MA	181545	0							181545	
RDEC		MRDEC/AL	71695	0							71695	
THAAD/PATRIOT Launcher												
T/P Launcher	CPFF	LMSSC/CA	9916	3000							12916	
RSC Integration	CPFF	Raytheon/MA		2000							2000	
Evolutionary Development												
LMMFC ED	CPAF	LMMFC/Dallas	23747	35629							59376	
Raytheon ED	CPAF	Raytheon/MA	13959	21365							35324	
RDEC ED	CPFF	MRDEC/AL	1914	9786							11700	
Block Test Program with LMMFC and Raytheon												
LMMFC FOT	CPAF	LMMFC, Dallas		25380							25380	
RSC Integration	CPAF	Raytheon, MA		15640							15640	
RDEC FOT	MIPR	MRDEC, AL		4214							4214	
Subtotal Product Development			1281118	117014		0		0			1398132	

Remarks

FY 2003 efforts include:
- 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.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Complete PAC-3 Missile Engineering and Manufacturing Development (EMD) Program.												
SETA	CPAF	CAS/AL	54233	0							54233	
OGA/In-House		Various	89865	0							89865	
Engineering Support	SS/CPIF	Raytheon/MA	83875	0							83875	
Evolutionary Development												
SETA	CPAF	CAS/AL	1420	3110							4530	
OGA		PO/AL	200	4000							4200	
Block Test Program with LMMFC and Raytheon												
SETA	CPAF	CAS/AL		4300							4300	
OGA		PO		4882							4882	
Engineering Spt	CPAF			8976							8976	
Subtotal Support Costs			229593	25268		0		0			254861	

Remarks

FY 2003 efforts include:
- 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).

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Complete PAC-3 Missile Engineering and Manufacturing Development (EMD) Program.												
White Sands Missile Range	MIPR	WSMR/NM	106361	0							106361	
ADSAM	MIPR		4668	0							4668	
Impact			3467	0							3467	
Complete Operational Test & Evaluation												
Operational Test Support			67202	2000							69202	
Continue PAC-3 Target and Test Support												
Targets		SMDC/AL	108371								108371	
Lethality		SMDC/AL	37628								37628	
Block Test Program with LMMFC and Raytheon												
White Sands Missile Range	MIPR	WSMR, NM		8520							8520	
Targets	MIPR	SMDC/AL		12534							12534	
Evolutionary Development												
WSMR				5819							5819	
Targets				5000							5000	
Subtotal Test and Evaluation			327697	33873		0		0			361570	

Remarks

FY 2003 efforts include: - Test planning, conduct, preparation, targets, and analysis of the Congressionally directed Ripple Fire Test and future test efforts.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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			1838408	176155		0		0			2014563	

Remarks

MDA Exhibit R-4 Schedule Profile	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD**

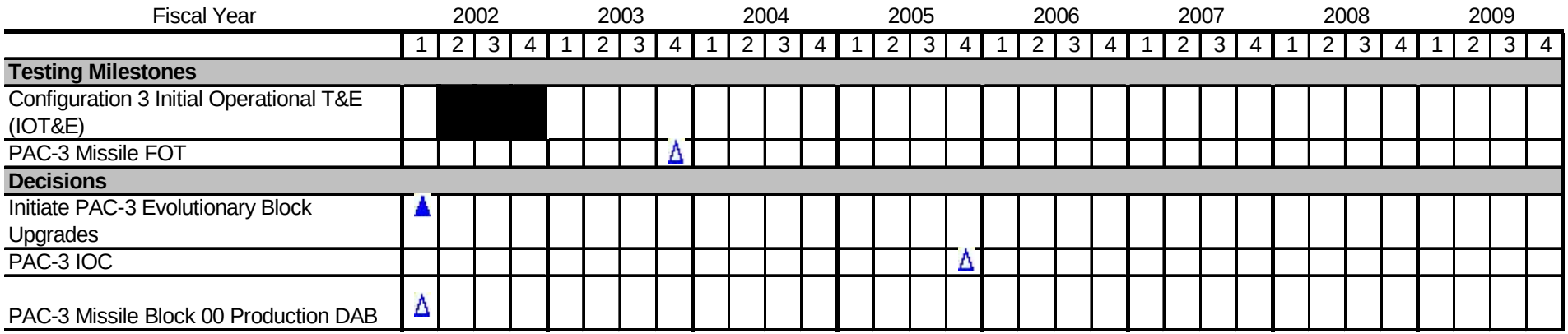


Exhibit R-4 reflects only those decisions/milestones applicable to MDA funding. Future decisions/milestones (FY04-09) are reflected in the Army submission for PE 0604865A.

MDA Exhibit R-4A Schedule Detail	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD**

Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing Milestones								
Configuration 3 Initial Operational T&E (IOT&E)	2Q-4Q							
PAC-3 Missile FOT		4Q						
Decisions								
Initiate PAC-3 Evolutionary Block Upgrades	1Q							
PAC-3 IOC				4Q				
PAC-3 Missile Block 00 Production DAB	1Q							

Exhibit R-4 reflects only those decisions/milestones applicable to MDA funding. Future decisions/milestones (FY04-09) are reflected in the Army submission for PE 0604865A.

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604867C Navy Area Theater Missile Defense - EMD

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	96121	0	0	0	0	0	0	0
2021 Navy Area-Termination	96121	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Navy AREA Theater Ballistic Missile Defense (TBMD) program was planned to provide ballistic missile defense against short to medium range threat missiles. However, on 14 December 2001, OUSD (AT&L) elected to cancel in lieu of certifying the program in accordance with Nunn-McCurdy provision under USC Title 10. Navy AREA TBMD was being built on the national investment in AEGIS ships, AEGIS Weapon Systems (AWS), and Navy Standard Missile II (SM-2) Block IV missiles while retaining the Anti-Air Warfare (AAW) capability. Two classes of ships are deployed with the AEGIS combat system: the CG-47 TICONDEROGA-class cruisers and the DDG-51 ARLEIGH BURKE-class destroyers. Navy AREA TBMD took advantage of the attributes of naval forces including overseas presence, mobility, flexibility, and sustainability in order to provide lower tier protection to debarkation ports, coastal airfields, amphibious objective areas, Allied forces ashore, and other high value sites. Navy assets provided an option for initial TBMD allowing the insertion of additional land-based TBMD assets and other expeditionary forces in an anti access or area denial environment. Navy AREA TBMD was designed to be fully interoperable within the Ballistic Missile Defense System (BMDS).

The funding of 96121 for FY 2002 provided for the Navy Area Program of Record through 14 December 2001 and the termination costs thereafter. Conduct termination of the Navy AREA TBMD program based on the OUSD (AT&L) approved plan of 4 February 2002.

When USD(AT&L) canceled the program, Navy Area was in the process of completing the build of the first of many test interceptors that were in various stages of assembly. The termination activities included the direction to cease any design or material capture efforts resulting in no test articles completed. The piece parts/components have and are being processed through the Material Disposition Steering Group for final disposition.

Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Product Development	63683			

The funding provided for Program of Record product development efforts through 14 December 2001 and the termination costs thereafter. Conduct termination of the Navy Area TBMD program based on the OUSD (AT&L) approved plan of 4 February 2002.

	FY 2002	FY 2003	FY 2004	FY 2005
Support Costs	952			

The funding provided for Program of Record support costs efforts through 14 December 2001 and the termination costs thereafter. Conduct termination of the Navy Area TBMD program based on the OUSD (AT&L) approved plan of 4 February 2002.

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604867C Navy Area Theater Missile Defense - EMD**

	FY 2002	FY 2003	FY 2004	FY 2005
Test and Evaluation	2967			

The funding provided for Program of Record test and evaluation efforts through 14 December 2001 and the termination costs thereafter. Conduct termination of the Navy Area TBMD program based on the OUSD (AT&L) approved plan of 4 February 2002.

	FY 2002	FY 2003	FY 2004	FY 2005
Management Services	28519			

The funding provided for Program of Record management services efforts through 14 December 2001 and the termination costs thereafter. Conduct termination of the Navy Area TBMD program based on the OUSD (AT&L) approved plan of 4 February 2002.

B. Program Change Summary Table	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	99302	0	0	0
Current President's Budget (FY 2004 PB)	96121	0	0	0
Total Adjustments	-3181	0	0	0
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	-954	0	0	0
SBIR/STTR Transfer	-2227	0	0	0

C. Other Program Funding Summary

Not Applicable – program terminated.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604867C Navy Area Theater Missile Defense - EMD

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
a. SM-2 Blk IVA Missile	CPAF	Raytheon/AZ	622543								622543	
b. SM-2 Blk IVA Missile	Other	China Lake/CA	7927								7927	
c. AWS/BMC4I	CPAF	Lockheed Martin/NJ	247084								247084	
d. AWS/BMC4I/SM-2	Other	NSWC/DD/VA	37890								37890	
e. AWS/BMC4I/SM-2	CPFF	JHU/APL/MD	51964								51964	
f. AWS/SM2	MIPR	MIT/LL/MA	4340								4340	
g. AWS/BMC4I	CPFF	TSC/VA	1600								1600	
h. AWS/SM-2/BMC4I	Other	NWAS/CA	3947								3947	
i. VLS/SM-2	CPAF	UNITED DEFENSE/VA	7722								7722	
j. BMC4I	Other	SPAWAR/CA	19111								19111	
k. BMC4I	CPFF	ANTEON/VA	7532								7532	
l. SM-2/AWS/VLS/BMC4I	Various	VARIOUS/VA	66229								66229	
Subtotal Product Development			1077889	0		0		0			1077889	

Remarks

Program terminated.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	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												
a. Sys Architecture/AWS	CPFF	JHU/APL/MD	5980								5980	
b. SM2/AWS/SysArch/VLS	Other	NSWC/DD/VA	19850								19850	
c. VLS/Sys Arch/BMC4I	Various	VARIOUS	18095								18095	
d. AWS		TSC/VA	5483								5483	

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 5. System Development and Demonstration (SDD)	R-1 NOMENCLATURE: 0604867C Navy Area Theater Missile Defense - EMD

e. AWS	Other	NWAS/CA	3880								3880	
f. AWS	MIPR	MIT/LL/MA	5200								5200	
Subtotal Support Costs			58488	0		0		0			58488	

Remarks

Program terminated.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test and Evaluation												
b. Test & Evaluation	CPAF	RAYTHEON/AZ	968								968	
a. T&E/Lethality	CPFF	JHU/APL/MD	8268								8268	
c. VLS	CPAF	Lockheed Martin/NJ	141								141	
d. Test & Evaluation	Other	WSMR/NM	8847								8847	
e. Test & Evaluation	Other	PMRF/HI	2261								2261	
f. T&E/IMPACT/Lethality	Other	NSWC/DD/VA	32716								32716	
g. VLS/T&E	Other	NSWC/PHD/CA	9368								9368	
h. T&E/Lethality	MIPR	MIT/LL/MA	838								838	
i. T&E	Other	COTF/VA	1375								1375	
j. Targets	Other	SMDC Army/AL	94434								94434	
k. T&E/VLS/BMC4I	Various	VARIOUS	7552								7552	
Subtotal Test and Evaluation			166768	0		0		0			166768	

Remarks

Program terminated.

MDA Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **5. System Development and Demonstration (SDD)**	R-1 NOMENCLATURE: **0604867C Navy Area Theater Missile Defense - EMD**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Management Services												
a. SM-2 Blk IVA Missile/AWS	CPAF	BAE Systems/VA	9904								9904	
b. AEGIS Weapon System	CPFF	PCI/VA	2136								2136	
c. Systems Architecture	Other	NAVSEA/VA	14800								14800	
d. T&E/Sys Architecture/AWS	CPFF	ANTEON/VA	5897								5897	
e. SM/BMC4I/SysArc/VLS	Various	VARIOUS	13359								13359	
Subtotal Management Services			46096	0		0		0			46096	

Remarks

Program terminated.

Project Total Cost			1349241	0		0		0			1349241	

Remarks

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **6. RDT&E Management Support**	R-1 NOMENCLATURE: **0605502C Small Business Innovative Research - MDA**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	145102	0	0	0	0	0	0	0
6016 Statutory and Mandated Programs	145102	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

This task 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 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 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.

Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Phase I SBIR Awards	47181			

	FY 2002	FY 2003	FY 2004	FY 2005
Phase II SBIR Awards	87811			

	FY 2002	FY 2003	FY 2004	FY 2005
Phase I STTR Awards	3911			

	FY 2002	FY 2003	FY 2004	FY 2005
Phase II STTR Awards	3495			

	FY 2002	FY 2003	FY 2004	FY 2005
Undistributed Funds	2704			

MDA Exhibit R-2 RDT&E Item Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **6. RDT&E Management Support**	R-1 NOMENCLATURE: **0605502C Small Business Innovative Research - MDA**

B. Program Change Summary Table	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	0	0	0	0
Current President's Budget (FY 2004 PB)	145102	0	0	0
Total Adjustments	145102	0	0	0
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	0	0	0	0
SBIR/STTR Transfer	145102	0	0	0

Funding for SBIR at Congressionally mandated level.

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2004	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		

MDA Exhibit R-2 RDT&E Item Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 6. RDT&E Management Support						R-1 NOMENCLATURE: 0605502C Small Business Innovative Research - MDA				
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

MDA Exhibit R-2 RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **6. RDT&E Management Support**	R-1 NOMENCLATURE: **0901585C Pentagon Reservation**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	6381	7432	14481	13384	12758	12850	13158	13476
1094/0605 PRMRF	6381	7432	14481	13384	12758	12850	13158	13476

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 1094 and Fiscal Years 2004 and out are in Project 0605.

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.

Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
PRMRF	6381	7432	14481	13384
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.

B. Program Change Summary Table	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	6571	7457	7261	7356
Current President's Budget (FY 2004 PB)	6381	7432	14481	13384
Total Adjustments	-190	-25	7220	6028
Congressional Specific Program Adjustments	0	0	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	-190	-25	7220	6028
SBIR/STTR Transfer	0	0	0	0

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		

MDA Exhibit R-2 RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 6. RDT&E Management Support							R-1 NOMENCLATURE: 0901585C Pentagon Reservation			
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0603869C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		

MDA Exhibit R-2 RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **6. RDT&E Management Support**	R-1 NOMENCLATURE: **0901598C Management Headquarters - MDA**

COST ($ in Thousands)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	30191	25365	93441	101373	114107	121743	128972	133499
1095/0601 Management Headquarters	30191	25365	93441	101373	114107	121743	128972	133499

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in project 1095 and Fiscal Years 2004 and out are in project 0601.

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.

Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Civilian Pay & Benefits	24761	19848	25310	27578
RDT&E Articles (Quantity)				

This effort provides funding for civilian payroll; the FY 2003 level represents the Missile Defense Agency response to the DoD requirement to reduce the total authorized FTE's in the Management Headquarters Program Element to 15% below the FY 1999 level.

MDA Exhibit R-2 RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 6. RDT&E Management Support	R-1 NOMENCLATURE: 0901598C Management Headquarters - MDA

	FY 2002	FY 2003	FY 2004	FY 2005
Supplies	1592	1352	1722	1791
RDT&E Articles (Quantity)				

This effort provides for the materials and supplies to support Missile Defense Agency requirements.

	FY 2002	FY 2003	FY 2004	FY 2005
Rents & Utilities	682	945	8749	9095
RDT&E Articles (Quantity)				

The rents and utilities increase is associated with the Missile Defense Agency requirement to move from its existing residence and the cost in leasing commercial office space.

	FY 2002	FY 2003	FY 2004	FY 2005
Travel & Transportation	1532	1628	1657	1723
RDT&E Articles (Quantity)				

Travel and Transportation provides funding for those specific functions for the individuals assigned to Management Headquarters organizations/functions, with the Missile Defense Agency.

	FY 2002	FY 2003	FY 2004	FY 2005
Training	875	872	946	984
RDT&E Articles (Quantity)				

This effort provides funding for the Missile Defense Agency civilian and military career development training.

	FY 2002	FY 2003	FY 2004	FY 2005
Service Contracts	749	720	1349	1349
RDT&E Articles (Quantity)				

These costs are for service contracts such as follows: office machines (copies, facsimile and printers), telephone service, leased vehicles, and various other service contracts.

MDA Exhibit R-2 RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: 6. RDT&E Management Support	R-1 NOMENCLATURE: 0901598C Management Headquarters - MDA

	FY 2002	FY 2003	FY 2004	FY 2005
Information Management/Information Technology (IM/IT)			29170	30802
RDT&E Articles (Quantity)				

In the past this effort has been budgeted and executed in Program Operations projects.

This budget is based on actuals 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.

	FY 2002	FY 2003	FY 2004	FY 2005
Support Contracts			24538	28051
RDT&E Articles (Quantity)				

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.

MDA Exhibit R-2 RDT&E Project Justification	Date: February 2003
APPROPRIATION/BUDGET ACTIVITY: **6. RDT&E Management Support**	R-1 NOMENCLATURE: **0901598C Management Headquarters - MDA**

B. Program Change Summary Table	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003 PB)	23943	27909	28705	28948
Current President's Budget (FY 2004 PB)	30191	25365	93441	101373
Total Adjustments	6248	-2544	64736	72425
Congressional Specific Program Adjustments	0	-2453	0	0
Congressional Undistributed Adjustments	0	0	0	0
Reprogrammings	6248	-91	64736	72425
SBIR/STTR Transfer	0	0	0	0

C. Other Program Funding Summary

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603869C Meads Concepts – Dem/Val;	0	114781	0	0	0	0	0	0		
PE 0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE 0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE 0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE 0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE 0603884C Ballistic Missile Defense Sensors	312973	350436	438242	562752	706514	1043454	1152740	1261906		
PE 0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE 0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		

MDA Exhibit R-2 RDT&E Project Justification								Date: February 2003		
APPROPRIATION/BUDGET ACTIVITY: 6. RDT&E Management Support							R-1 NOMENCLATURE: 0901598C Management Headquarters - MDA			
PE 0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE 0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE 0604861C Theater High-Altitude Area Defense System - TMD - EMD	818632	888323	0	0	0	0	0	0		
PE 0604865C Patriot PAC-3 Theater Missile Defense Acquisition - EMD	130630	176155	0	0	0	0	0	0		
PE 0604867C Navy Area Theater Missile Defense - EMD	96121	0	0	0	0	0	0	0		
PE 0605502C Small Business Innovative Research - MDA	145102	0	0	0	0	0	0	0		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		