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Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	398,852	407,492	473,077	501,395	523,672	554,538	573,411
0101 Systems Engineering & Integration	226,222	100,033	112,626	116,353	115,984	127,960	141,556
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	27,295	21,161	25,700	26,700	27,700	23,000	23,400
0102 Intelligence and Security	28,152	19,015	23,922	27,437	28,980	39,142	46,600
0103 Producibility & Manufacturing Technology	36,540	32,752	36,921	40,247	43,214	44,112	45,028
0104 BMD Information Management Systems	61,252	111,843	123,175	124,775	127,375	135,375	138,075
0106 Modeling & Simulation	0	92,577	103,419	107,740	109,770	111,222	112,538
0107 Safety, Quality and Mission Assurance	3,206	17,833	25,900	31,800	41,100	40,100	40,500
0602 Program-Wide Support	16,185	12,278	21,414	26,343	29,549	33,627	25,714

Note: In FY05, the funding for Project 0106 Modeling and Simulation appears under Project 0101 Systems Engineering and Integration.

In FY05, additional funding for Project 0107 Safety, Quality, and Mission Assurance in the amount of \$12.0 million is captured in Program Element 0603882C.

In FY06 through FY11, there is an increase in Project 0104 BMD Information Management Systems partially due to the IT budgets from the Computing Infrastructure, Computing and Network Management Services, and Information Distribution Services projects being consolidated from Program Element 0901598C into this Program Element and Project.

A. Mission Description and Budget Item Justification

(0101) SYSTEMS ENGINEERING AND INTEGRATION (SE&I)

SE&I Program Description: The Systems Engineering and Integration (SE&I) mission is to define, manage, and integrate all engineering development for the Ballistic Missile Defense System (BMDS). SE&I activities provide the technical expertise, tools, and facilities to develop an integrated, layered BMDS in a five-phased approach: 1) Test Bed Planning/concept development, 2) Design and Specification, 3) Integration and Implementation, 4) Verification and Assessment, and 5) Operational Integration (fielding) to defend the United States, its friends and allies. This strategy provides core technical efforts to define, design, and assess the BMDS capabilities, and to enhance these capabilities over time through Block upgrades. A cross-cutting System-level engineering effort is integrated with BMDS Elements and components throughout the full system development cycle with increased emphasis on collaborative system engineering activities with BMDS element systems. This strategy also improves efficiency in program execution; defines architectures and critical interfaces; identifies information exchange requirements; reviews technical and

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<p>performance risks and develops mitigation strategies; oversees program development maturity; and manages configuration baselines within Block development cycles to ensure continuous availability of a performance baseline system.</p> <p>SE&I Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): A collaborative relationship with the weapons, sensors, command and control, battle management and communications developers is the foundation for ensuring unity of effort in the development of subsystems and architecture designs to deliver system-level capability. During this development process resources are needed not only for near-term Block requirements, but also for long-range Block developments. SE&I develops a set of time-phased technical goals and objectives to guide the design and development of evolutionary capabilities for the BMDS. The overarching development of individual components and elements to provide a capability for multiple engagements along the entire flight path of threat ballistic missiles is integrated into each Test Bed. Significant and thorough guidance to BMDS elements and components is provided throughout the full system development cycle phases.</p> <p>SE&I employs a Test Bed development approach to set the conditions for ongoing evolutionary improvements to the system. The Test Bed enables MDA to execute configuration management, focus development activities, perform trade-offs, and prioritize investments to ensure end-to-end functionality across a discrete segment of BMDS Elements. BMDS capabilities are matured using a block engineering development process within a Test bed framework. The process is repeated for each successive two-year development Block, and the phases for each development Block do overlap. For example, at the current time Block 2008 planning, Block 2006 design, and Block 2004 test, verification, assessment, and fielding are in progress.</p> <p>SE&I Major Program Goals:</p> <ul style="list-style-type: none">• Function as the MDA responsible engineering organization to execute a comprehensive SE&I effort for the BMDS.• Establish Technical Objectives and Goals for the BMDS and the Elements.• Define BMDS level performance parameters, validate BMDS Element designs, and assess and verify integrated BMDS capability.• Develop the BMDS system design and overarching BMDS technical architecture.• Determine the functionality, capabilities and interfaces required to implement Engagement Sequence Groups into BMDS capabilities.• Develop BMDS level requirements and flowdown to Elements' Interface Control Specifications and ensure that the BMDS functions as an integrated system.• Assess performance gaps in BMDS capabilities and identify improvements required to close those gaps.		

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<p>(0105) COUNTERMEASURES/COUNTER-COUNTERMEASURES (CM/CCM)</p> <p>CM/CCM Program Description: The CM/CCM Program assesses technical risks, identifies mitigation approaches and integrates engineering changes to the baseline BMDS to improve its performance against adversary capabilities, focusing primarily on defeating countermeasures. The CM/CCM Program brings together capabilities from across MDA, to include System, Element, and Component technical experts; to conduct integrated engineering assessments of BMDS performance against countermeasures and the technical risks posed by these countermeasures.</p> <p>The CM/CCM Program is a critical SE&I activity that determines the range of feasible engineering approaches an adversary could use to defeat or degrade the BMDS, and develops conceptual countermeasures to realize those approaches. Working in conjunction with Threat Systems Engineering, the program ensures consistency of these adversary capabilities. These efforts bring together capabilities from across MDA to conduct integrated engineering assessments of BMDS performance against countermeasures and the technical risks posed by these countermeasures. High-risk areas are identified, and counter-countermeasure options are proposed to mitigate these risks. An independent assessment team of senior experts, funded by the CM/CCM Program, reviews the adversary capabilities, BMDS performance analyses, risks, and counter-countermeasure proposals, and provides their assessment to the MDA Director.</p> <p>CM/CCM Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The CM/CCM Program is the primary MDA activity focused on the assessment and improvement of BMDS system discrimination capabilities. The program's adversary engineering teams are a significant component of MDA's threat engineering resources focused on assessing adversary capabilities to employ countermeasures which degrade BMDS performance. The adversary teams establish the feasible engineering range of adversary countermeasures' capabilities through the development of engineering tools and generation of new phenomenological data to increase MDA's understanding of the performance of countermeasures, and the design of countermeasure concepts to realize these adversary capabilities. Selected countermeasure designs are transitioned to MDA Targets and Countermeasures for insertion in BMDS flight test target payloads.</p> <p>The program conducts assessments of BMDS capabilities against countermeasures and develops concepts to improve the robustness of the system's capability to defeat ballistic missiles employing countermeasures. The CM/CCM Program is MDA's principal source of new concepts which improve the discrimination capabilities of the BMDS and mitigate the effects of countermeasures on system performance. The program integrates these concepts into the MDA system engineering process for development and deployment in future blocks of the BMDS.</p>		

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<p>CM/CCM Major Program Goals:</p> <ul style="list-style-type: none">• Complete the characterization of adversary countermeasures against BMDS Boost Phase capabilities and deliver a countermeasure design for a BMDS FY08 critical measurements flight test.• Complete the assessment of BMDS Boost Phase capabilities against ballistic missiles employing countermeasures.• Complete the development of six system discrimination improvement concepts and integrate them into the BMDS Block Program. <p>(0102) INTELLIGENCE AND SECURITY</p> <p>Intelligence and Security Program Description: This project funds three specific efforts focused on maximizing actionable threat information and ensuring the safety of the BMDS, MDA and its personnel: 1) intelligence, 2) counterintelligence, and 3) BMDS information assurance systems certification. Together these efforts provide critical information regarding threat ballistic missile system capabilities (via intelligence); protection of personnel, activities, and technology from espionage and terrorism through active and passive activities (via counterintelligence); and BMDS system vulnerabilities (via BMDS certification).</p> <p>Intelligence and Security Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):</p> <p>1) Intelligence ensures the development, study and exploitation of relevant, actionable threat information, and makes this information available to all MDA organizations. Through this activity, authoritative, current and projected threat data are provided to support BMDS architecture design, testing, modeling, and wargaming activities, and existing/future national technical means are leveraged to enhance the effectiveness of the BMDS. This information reduces risk, improves system performance, and informs the engineering and development process.</p> <p>2) The MDA Counterintelligence Office serves as the MDA focal point for all counterintelligence (CI) matters and external coordination with the Services, the FBI, and other federal criminal investigative organizations. This office ensures that MDA leadership and the entire workforce are apprised of threats posed by Foreign Intelligence and Security Services (FISS) and terrorist groups worldwide.</p> <p>3) BMDS Certification. This activity develops a comprehensive picture of the overall Information Assurance/Computer Network Defense (IA/CND) architecture at all levels of the BMDS.</p> <p>Intelligence and Security Major Program Goals:</p> <ul style="list-style-type: none">• Provide threat support in all MDA sponsored and supported wargames and exercises.• Provide daily intelligence support to the MDA Director, his Principal Staff Officers, and the Missile Defense Operations Center (MOC).		

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<ul style="list-style-type: none">• Develop a certification recommendation on behalf of the BMDS components and overall system to support the increases commensurate with the expansion of the BMDS based on the Block 2008 release, including STSS, upgraded C2BMC backbone, SBX radar, ABL, and THAAD.• Provide operational, investigative and counterintelligence (CI) functional support to the MDA/BMDS Research and Technology Protection programs and test activities through oversight and approval of CI Support Plans, Defense Threat Assessments and Multi-Discipline CI Threat Analyses.		
(0103) PRODUCIBILITY AND MANUFACTURING TECHNOLOGY (MP)		
<p>Producibility and Manufacturing Technology (MP) Program Description: MP is integral to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the implementation of two-year capability blocks. Manufacturing risk assessments are accomplished through Engineering and Manufacturing Readiness Level (EMRL) Assessments, the Producibility and Manufacturing Technology systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes as a factor in the BMDS Risk Management Process. Industrial Capability Assessments (ICAs) are accomplished across the BMDS Industrial Base where trades are performed to assess and analyze the original equipment manufacturers (OEMs), supplier base, and others that produce end items for the system. This project funds a number of key investment areas: 1) Power Systems, 2) Radiation Hardening (RAD HARD), 3) Manufacturing Process Improvements, 4) Electro-Optics/Infrared (EO/IR), 5) Radar and RF, 6) Propulsion, 7) Advanced Materials and Structures, and 8) Anti-Tamper.</p>		
<p>MP Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): MP provides crosscutting BMDS manufacturing risk assessments, industrial capability assessments, and near term (1-3 year) producibility enhancements. Common, integrated programs across the BMDS Elements are provided to ensure mature industrial manufacturing capabilities are available to the Blocks through risk reduction, cost reduction/avoidance, and performance enhancement. MP furthers efforts in commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts.</p>		
<p>MP Major Program Goals:</p> <ul style="list-style-type: none">• Integrate technology refresh and critical supplier results into corporate MDA risk mitigation strategy.• Develop Radiation Hardened (RH) Visible Sensors for missile and satellite surveillance applications.• Continue development in producible materials and technologies to enhance thermal management.• Continue efforts from FY05 and FY06 to address materials and subsystem design and development to reduce cycle time, part count, risk and improve performance of axial and divert propulsion systems for the BMDS.		

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<ul style="list-style-type: none">Continue to focus on advanced materials in radiation hardening, structures, mirrors, thermal management and propulsion that could assist modular or scalable efforts on kill vehicles and missile structures that reduce cycle times and enhance BMDS performance. <p>(0104) BMD INFORMATION MANAGEMENT SYSTEMS</p> <p>BMD Information Management Systems Program Description: The Ballistic Missile Defense (BMD) Information Management Systems Project integrates and supports every aspect of the BMD System (BMDS) by providing a secure and reliable Information Technology (IT) infrastructure and the Information Management/Information Technology (IM/IT) services necessary to enable the BMDS Elements and operators to collaborate and share information which is essential to accomplishing the complex integrated BMDS mission. The MDA IM/IT assets are administered, acquired, managed and operated in compliance with, and meet the goals of, existing statutes and DoD regulations, in particular the President's Management Agenda, the Clinger-Cohen Act, the E-Government Act of 2002, the Government Paperwork Elimination Act, and the Office of Management and Budget (OMB) requirements to align IT investments with the Federal Enterprise Architecture (FEA). The BMD Information Management Systems project, executed by the Information Management and Technology Operations Office (MDA/DOC), includes the following Task areas:</p> <ul style="list-style-type: none">Enterprise Architecture and Engineering,Enterprise Applications,Enterprise Plans and Policies,MDA Communications Infrastructure,Enterprise Information Assurance (IA),Service IM/IT for Executing Agents,Computing and Network Management Services (National Capital Region (NCR) Operations),Virtual Data Centers,MDA Video Teleconferencing Services,Computing Infrastructure (Enterprise),ITO South Computing Infrastructure,Information Management Services. <p>BMD Information Management Systems Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The BMD Information Management Systems project is an essential and integral component because it funds the Agency's communications backbone and infrastructure that enables all the Projects in all the Program Elements to communicate in a safe, secure and affordable manner.</p>		

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<p>BMD Information Management Systems Major Program Goals:</p> <ul style="list-style-type: none">• Develop designs and improvement plans for MDA priority projects.• Develop, update, coordinate and publish policies, guidelines and processes in accordance with applicable legislation, DoD and MDA guidance.• Upgrade networking equipment to meet the demands of the BMDS information sharing environment.• Provide system security planning, engineering and test support to the spiral development of BMDS Blocks 2006 and 2008 configurations. <p>(0106) MODELING AND SIMULATION (M&S)</p> <p>M&S Program Description: The mission of MDA's Modeling and Simulation (M&S) program is to establish a tool set for planning, engineering, testing and operating an integrated ballistic missile defense system. Specific modeling and simulation products map to the six agency venues: 1) ground tests, 2) flight tests, 3) war games, 4) analysis, 5) training, and 6) element testing. For each of these venues and their stakeholders, M&S defines, designs, develops, deploys and maintains system simulations, including their constituent subsystem, threat and environment models, and provides user and analytical support services. In addition, M&S is responsible for requirements' development, configuration control, verification, validation and accreditation, facility and infrastructure planning, information assurance and risk management.</p> <p>M&S Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The BMDS exploits maturing capabilities to build an integrated, highly capable defense. As new capabilities are brought to the war fighter, the ``plug and fight`` missile defense system increases its effectiveness through the use of new engagement sequence groups. These engagement sequences take advantage of air, land, sea and space components to maximize the probability of kill, expand the area that can be defended and decrease the area from which the enemy can launch, as well as minimize, the number of weapons needed in the inventory. Likewise, a M&S framework is being developed that reflects the open architecture envisioned for the BMDS.</p> <p>M&S Major Program Goals:</p> <ul style="list-style-type: none">• Modify and sustain legacy tools, develop an integrated simulation open architecture and framework, define a Common Environment and Threat Model, and build a foundation of international missile defense initiatives.• Promote MDA's simulation-based acquisition of the BMDS.• Develop, proliferate, and maintain common standards across the enterprise including the architecture, framework, models, interfaces and quality assurance.		

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(0107) SAFETY, QUALITY AND MISSION ASSURANCE (SQMA)		
<p>SQMA Program Description: The mission of the Safety, Quality, and Mission Assurance (SQMA) Directorate is to develop and implement BMDS-wide policies, perform engineering and technical studies, and to foster and ensure MDA system-wide safety, quality and mission assurance. Responsibilities are functionally allocated to four groups: 1) Assurance Integration, 2) Mission Assurance, 3) Quality Assurance, and 4) Safety. In addition, the SQMA directorate supports the MDA/Elements and their prime contractors, sub-contractors and suppliers through direct on-site support and through emergent/surge requirements as dictated by technical/quality issues throughout the fiscal year to meet evolving requirements. This support includes embedding mission assurance specialists at supplier and government locations, as well as at program element sites; standing up independent technical review teams; and providing independent technical assessments.</p> <p>SQMA Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS): The SQMA efforts enable the development, testing, and fielding of an effective, reliable, and safe missile defense capability. The SQMA support includes advising senior management on the viability of industry to meet contractual requirements, oversight and insight into current manufacturing safety support for all launch facilities and industry, and an overall Agency-wide BMDS quality perspective to ensure requirements are met to achieve a cohesive BMDS.</p> <p>In addition, SQMA is responsible for implementing Section 804 of the 2003 Defense Authorization Act, which requires MDA to establish and implement a program to improve the software acquisition process. Software acquisition improvement activities encompass the development, engineering, testing, production, and fielding of BMDS Elements under the cognizance of MDA. SQMA has also been given the responsibility for developing and implementing an MDA High Reliability Parts (HRP) management program to identify key parts/materials issues to ensure overall MDA and BMDS success.</p> <p>Safety, Quality and Mission Assurance (SQMA) Major Program Goals:</p> <ul style="list-style-type: none">• Conduct independent Safety Assessments/Reviews of MDA programs and Elements to enhance BMDS safety.• Provide technical support to MDA Programs and BMDS to develop and implement required safety, quality and mission assurance requirements.• Implement the Software Acquisition Program Improvement Plan (SAIP).• Develop an MDA Software Acquisition training/education program.• Maintain/update the integrated MDA Metrics Program to provide information on the health of the BMDS to MDA management.		

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<u>A.4 Major Events Schedule and Description</u>		
Major Event	Project	Timeframe
Ground Test		
Modeling and Simulation		
GTC 06-1	0106	2Q FY 2006
Delivery		
Modeling and Simulation		
BMDS SIM v2.0 Release	0106	1Q FY 2007
Other		
BLOCK 2006		
Test Bed System Specifications (TBSS)	0101	3Q FY 2005
Test Bed Description Document (TBDD)	0101	4Q FY 2005
BLOCK 2008		
Test Bed Description Document (TBDD)	0101	4Q FY 2006
Test Bed System Specifications (TBSS)	0101	3Q FY 2007
Block 2010		
Test Bed Description Document (TBDD)	0101	4Q FY 2007
Milestones		
Technical Objectives & Goals / Updates	0101	1Q FY 2006
Technical Objectives & Goals / Updates	0101	3Q FY 2007
Technical Objectives & Goals / Updates	0101	3Q FY 2009
Technical Objectives & Goals / Updates	0101	3Q FY 2011
Enterprise Information Assurance		
Issue BMDS Block 04 ATO	0104	2Q FY 2006

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B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006 PB)	399,829	447,006	538,442
Current President's Budget (FY 2007 PB)	398,852	407,492	473,077
Total Adjustments	-977	-39,514	-65,365
Congressional Specific Program Adjustments	0	-26,854	0
Congressional Undistributed Adjustments	0	-12,660	0
Reprogrammings	5,435	0	0
SBIR/STTR Transfer	-6,412	0	0
Adjustments to Budget Years	0	0	-65,365

FY05 Reduction of \$0.977 million includes the SBIR/STTR Transfer and MDA reprogrammings.

FY06 Reduction of \$39.514 million includes Congressional specific program adjustments and a portion of the MDA Congressional undistributed adjustment.

FY07 Reduction of \$65.365 million includes adjustments to accommodate current MDA priorities and achieve overhead/infrastructure reductions.

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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0101 Systems Engineering & Integration	226,222	100,033	112,626	116,353	115,984	127,960	141,556
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: In FY05, funding for the Modeling and Simulation program appears under Project 0101. Starting in FY06 the funding for this effort is in Project 0106.

A. Mission Description and Budget Item Justification

Systems Engineering and Integration (SE&I) employs integrated working groups to achieve broad engineering collaboration across the Missile Defense Agency (MDA). Significant and thorough guidance to Ballistic Missile Defense System (BMDS) elements and components is provided throughout the full system development cycle phases, i.e., planning/concept development, system design and specification, integration and implementation, verification and assessment and operational integration (fielding). BMDS capabilities are matured using a block engineering development process within a Test Bed framework. During this development process resources are needed not only for near-term Block requirements, but also for long-range Block developments. The Test Bed represents two-year blocks for maturation, integration, and test of Elements contributing to a time-phased improvement of BMDS capability. The SE&I process is repeated through each successive two-year Block development cycle and the process phases for each development block do overlap. For example, at the current time Block 2008 planning, Block 2006 design, and Block 2004 test, verification, assessment, and fielding (operational integration) are in progress. The Test Bed is a management framework enabling MDA to execute configuration management, focus development activities, perform trade-offs, and prioritize investments to ensure end-to-end functionality across a discrete segment of BMDS Elements. While top level system engineering activities are focused on integrating the various Elements to provide an end-to-end seamless BMDS capability, additional systems engineering activities are focused on integrating advanced technologies to improve performance of available defensive capabilities. These efforts include new interceptor technology, improved discrimination and tracking algorithms, counter-countermeasures, enhanced battle management and decision support systems, and improved kill vehicles (KVs). These technology efforts will generate enhanced ESGs and also lead to new ESGs.

It is an enormous challenge to coordinate developments across several interrelated programs employing several prime contractors, combined with the requirement for the BMDS to operate as a unified system stretched across nine time zones. The MDA SE&I Team defines architectures and critical interfaces, identifies information exchange requirements, reviews technical and performance risks and develops mitigation strategies, oversees program development maturity across segments and manages configuration baselines within block development cycles to ensure continuous availability of a proven performance baseline system for defense of the United States, friends, allies and deployed forces. System Engineering is tasked to assess feasibility of BMDS evolutionary development concepts and make performance trade-offs and investment recommendations through the collaborative system engineering process. The system engineering process, which defines required system-wide behavior, validates Element

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system designs, and assesses and verifies system capability, involves five-phases: 1) Test Bed planning/concept development; 2) design and specification; 3) integration and implementation 4) verification and assessment, and 5) operational integration (fielding). It enables functional allocation of required capabilities across Elements in a time-phased approach focused on delivery and improvement of the BMDS system capability. The process is temporally organized within two-year development Test Beds which enable the SE&I function to define a baseline system architecture and set time-phased technical goals and objectives to guide the design, development, and delivery of evolutionary enhanced BMDS capabilities. Additionally, this engineering process includes Advanced Systems; Force Structure Integration and Deployment; Producibility and Manufacturing Technology; Targets and Countermeasures; and other functional areas. Collaborative Engineering ensures that components (weapons, Sensors, C2BMC), and the Elements are part of an integrated system design.

Test Bed Planning determines technology needs, develops concept descriptions (CDs), and defines Engagement Sequence Groups (ESGs). Test Bed Planning also finalizes recommended ESG assignments to Test Bed development levels. The Test Bed Planning function begins with an assessment of the threats to be countered by the BMDS. The broad scope of feasible threats is detailed in the Adversary Capability Document (ACD) which defines threat capabilities in three ways: limited by the physically possible, limited by current engineering capabilities, and limited by current intelligence capabilities. In addition to the ACD, an Adversary Data Package (ADP) is generated for each version of the Test Bed System Specification (TBSS). The ADP defines the specific threats and scenarios to be used for assessing BMDS performance with the associated TBSS.

The Test Bed Planning process continues by assessing additional inputs, such as maturing technology possibilities, and candidate concepts that enhance the capability of the BMDS. Inputs include the previous Test Bed system specifications, Element configurations, gap analysis, technical objectives and goals, technology assessments, Countermeasures/Counter-Countermeasures (CM/CCM) program inputs, international participation and director's guidance. The planning team writes and annually updates the Technical Objectives and Goals (TOG), which provides the overall development goals and metrics used to judge system capability and progress. These concept descriptions and their ESGs are the foundation for the improvements to the BMDS and form the building blocks for the Element programs. Test Bed Planning also produces the Test Bed Description Document (TBDD), the basis for engineering guidance through Decision Memoranda issued to the Elements by MDA which documents the concepts demonstrating the most potential for improving BMDS effectiveness and integrates them into BMDS program planning. Without the identification of these concepts and the associated ESG improvements, the Elements would not have the interface requirements necessary to make ESGs operational. Approved ESGs are incorporated in BMDS design and description documentation to ensure Element programs include required hardware, interfaces and information exchange requirements to support attainment of ESG capability within desired timeframe. This process is executed collaboratively with the BMDS Element system engineers, and other stakeholders to include the warfighter. The result is the disciplined flow-down of requirements to BMDS system specifications.

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BMDS design allocates the functions required to execute all ESGs to individual Elements and components in the BMDS specifications and interface control documents. In turn, the Elements perform detailed design of their portions of the system. Approved system architectures and operational concepts are documented in the BMDS Test Bed System Specifications (TBSS). These documents provide a common set of requirements and design parameters to facilitate development of subordinate Element designs and component specifications, and the specifications drive Element designs ensuring integration across Elements within the Test Bed. The system engineering performed during the Design and Specifications phase develops functional requirements, information exchange requirements, interfaces, and key interoperability requirements to ensure successful attainment of desired functionality among BMDS Elements. Individual Element designs and specifications are coordinated and approved through the SE&I process.

Integration describes those system engineering activities and events required to structure and implement an integrated and ``seamless`` end-to-end BMDS capability composed of Elements working alone and in conjunction with other Elements to effect a ballistic missile defense engagement. The Integration phase begins with the building of a time-phased Master Integration Plan (MIP). The MIP defines phases within the Block, which become the building blocks to achieve final capability, and allocates the ESG functionality captured in the system specification and interface documents to those phases. Integrated functionality is then tested and verified in accordance with the Responsible Test Organization's Integrated Master Test Plan (IMTP) and the system engineering Capabilities Assessment Plan (CAP). During the ``Build Phase``, the System Engineering led integration team participates in Element level design reviews including document review and conducts system level design reviews to ensure system specifications are being properly implemented. In addition to design reviews, system engineering conducts routine program execution and technical reviews with MDA leadership to ensure subordinate system engineering activities remain within the BMDS engineered parameters to describe functionality within the planned timeframe. Engineering studies and analysis are conducted to explore alternative approaches to attaining an ESG, assessing feasibility and affordability. During the test planning and execution phase, the integration team works closely with the Responsible Test Organization (RTO), MDA's Test program leader, to ensure test data required for system verification, assessment and model validation is collected.

System Verification and Assessment verifies the ``as built`` system is compliant with the system specification and assesses performance of the delivered capability. Emerging BMDS capabilities are critically assessed against the established Technical Objectives and Goals (TOG). Together with military utility assessments (MUA) and operational test and evaluation assessments (OTA), the warfighter obtains technical knowledge of the system's capabilities that facilitates development and deployment decisions by the Department of Defense (DoD). The assessment of the BMDS is highly dependent on analysis and grounded in the use of accredited system models. Ground and flight tests data anchor system models which in turn are used to determine the effectiveness of the system under realistic scenarios. BMDS performance is described in terms of ESGs to provide a common lexicon to measure the performance of various combinations of the sub-systems, and to simplify the complexities and interactions of the system. System verification is accomplished through a methodical allocation and tracing of all system-level requirements to the specifications of

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MDA elements and components. Additionally, system issues are identified during BMDS test and verification activities and are either assigned to be worked to resolution within the current block, or are acknowledged as limitations and allocated for resolution in future blocks. The plans and status of these three items, 1) BMDS Verification, 2) BMDS Performance Assessment and 3) BMDS Issues, are reported periodically during the year. A formal report is published each January to summarize the verification and assessment activities of the previous year accomplishments. Verification at the component level is then rolled up to a system-level assessment. The results of system level tests and assessments are captured in interim and final (end-of-block) Capability Assessment Reports (CAR). DoD then uses CAR information to determine whether the ESG capability is ready for transition to operations, to production, or to the next stage of development.

The Operational Integration and Support Team provides the link between the warfighting community and the SE&I team before, during and after transition of Available Defensive Capability. The Operational Integration and Support function accomplishes the transition of an available defensive capability to the warfighter by providing the principal interface between the system engineering directorate and the user. This ensures successful transition of operational BMDS capability. The BMDS user handbooks, Concept of Operations (CONOPs), operator and leader training on system performance and operation are key operational integration activities. Through sustaining engineering the SE&I team is providing the warfighter operational support. The SE&I team obtains feedback from the warfighter through simulations and training exercises to refine system interfaces, CONOPs, and to enhance system reliability, maintainability, suitability and effectiveness. As-built system-level hardware and software products are managed within the Operational Configuration Baseline. Operational tests conducted by the Responsible Test Organization (RTO) are an important data source for lessons learned.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Test Bed Planning	16,830	12,346	12,916
RDT&E Articles (Quantity)	0	0	0

The Test Bed planning phase is a continuous process of assessing and choosing BMDS technical alternatives that can be included in the BMDS Test Bed. The planning process includes the synthesis of emerging technology and concept input, assessment of these concepts against agency metrics and goals using gap analysis and adversary capabilities, and production of formal Concept Descriptions (CDs). Concepts demonstrating the most potential for improving BMDS effectiveness are integrated into BMDS program planning and documented in the Test Bed Description Document (TBDD), Level 2 and 3. Without the identification of these concepts and the associated ESG improvements, the Elements would not have the interface requirements necessary to make these ESGs operational. The planning function enables the MDA to review system integration maturity across the individual Element programs, assess Element maturity, and to provide tailored program direction consistent with the readiness of a specific

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<p>Element for BMDS integration. Test Bed Planning also conducts threat system engineering and lethality assessment to characterize current and emerging threat system performance to ensure BMDS efforts keep pace with threat developments.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none">• Delivered the update to the Technical Objectives and Goals (TOG) that guides the development of the BMDS.• Finalized the formal planning process, documented in Decision Memorandum #1, for Block 2006 Level 2 and 3 ESGs.• Finalized Test Bed 2006 and drafted Test Bed 2008 Test Bed Description Document (TBDD) which provide BMDS Elements with Concept Descriptions and Engagement Sequence Group improvements demonstrating the most potential for improving BMDS effectiveness.• Facilitated Design Review Boards.• Updated Test Bed 2006 and Test Bed 2008 Performance Gap Analysis.• Oversaw Countermeasures/Counter-Countermeasures (CM/CCM) Program, using outputs to generate new Concept Descriptions.• Oversaw the international program and analyzed effects on future capability. <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Deliver the update to the Technical Objectives and Goals (TOG).• Draft Engineering Guidance, Decision Memorandum #1, for Block 2008 requesting Element planning and programming for designated ESGs.• Draft the TBDD for Block 2008 and Decision Memorandum #2 directing the Elements to develop supporting specifications.• Facilitate Design Review Boards.• Produce Concept Descriptions and ESGs for BMDS Test Bed 2010 Planning.• Initiate Test Bed 2010 Performance Gap Analysis.• Oversee CM/CCM Program.• Oversee international program and analyze effects on future capability.• Continue kill assessment investigation and obtaining information on post-impact debris signatures. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Deliver the update to the Technical Objectives and Goals (TOG).• Produce Concept Descriptions and ESGs for BMDS Test Bed Evolution Planning.• Draft the Test Bed 2010 TBDD.• Facilitate Design Review Boards.		

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<ul style="list-style-type: none"> • Complete Test Bed 2010 Performance Gap Analysis. • Oversee CM/CCM Program. • Oversee international program and analyze effects on future capability. 			
	FY 2005	FY 2006	FY 2007
BMDS Design & Specification	11,050	10,508	13,970
RDT&E Articles (Quantity)	0	0	0
<p>BMDS Design and Specification continues the SE&I process and uses the data developed during the Test Bed Planning process, along with existing Element specifications, to develop system specification and interface requirements documented in the BMDS Test Bed System Specifications (TBSS). The TBSS provides a common set of requirements and design parameters to facilitate Element design and component specification development that drive the integration across the participating Elements within the Test Bed. Furthermore, Element designs and specifications drive strategies for verification and assessment of Element performance and capability. The objective is to make enhanced capabilities available for Additional Defensive Capability by the end of the Operational Block for which it is planned. The end state is an approved architecture design and resulting ESGs which form the basis for test bed engineering and testing activities.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Finalized the Design and associated Specification and Interface requirements for Test Bed 2006 capabilities. • Initiated the development of the System Specification and associated interface requirements for the Test Bed 2008 capabilities. • Refined BMD Core Technical Standards that capture the environmental, design, and construction constraints. • Completed adherence planning for the Test Bed 2006 Core Standards that include waivers and deviations. • Incorporated refined approach for Reliability, Maintainability, and Availability (RMA) values as thresholds and goals in the Test Bed System Specifications (TBSS). • Incorporated refined Information Assurance approach for the BMDS. • Refined numbers associated with Engagement Performances in the TBSS. • Incorporated refined safety approach in the TBSS. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Complete the Design and associated Specification and Interface requirements for Test Bed 2006 capabilities including Information Assurance. 			

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- Initiate the design and associated specification and interface requirements and update the Adversary Data Package for the Test Bed 2008 capabilities.
- Finalize the Test Bed 2008 and draft the Test Bed 2010 Test Bed Description Documents (TBDD).
- Refine BMD Core Technical Standards to capture the environmental, design, and construction constraints.
- Complete adherence planning for the Test Bed 2008 Core Standards that include waivers and deviations.
- Convene the Interface Control Working Group on a regular basis to collaboratively coordinate, control and manage BMDS interface activities.

FY07 Planned Program:

- Finalize the Design and associated Specification and Interface requirements for Test Bed 2010 capabilities.
- Initiate the development of the System Specification and associated interface requirements for the Test Bed 2012 capabilities.
- Refine BMD Core Technical Standards that capture the environmental, design, and construction constraints.
- Complete adherence planning for the Test Bed 2010 Core Standards that include waivers and deviations.

	FY 2005	FY 2006	FY 2007
Test Bed Integration & Implementation	10,120	9,606	13,068
RDT&E Articles (Quantity)	0	0	0

Test Bed Integration and Implementation focuses on the system-level engineering activities during the SE&I process that are needed to successfully combine the individual parts of the Elements, components, and subsystems into one seamless interoperable BMD system. Emphasis is on Element-to-Element interfaces and functionality with cross Element dependencies and readiness to support system-level tests; participation in Element Design Reviews to ensure technical compliance with system specifications and standards; and conducting System Design Reviews to assess maturity and readiness to proceed to Block build, integration and test phase. Additionally, integration produces tools and products to facilitate the understanding and monitoring of BMDS capabilities by the Combatant Commands.

FY05 Accomplishments:

- Updated Block 2004 Master Integration Plan (MIP), which defines how the BMDS will be integrated, to incorporate new program content.
- Conducted Block 2004 Interim Capability Assessment / Review (ICAR) to determine whether the Engagement Sequence Group (ESG) capability is ready for transition to operations, to production, or to the next stage of development.
- Drafted Director's Instructions to Elements to execute Block 2004 in accordance with specifications, drawings, and integration and test plans.
- Built Block 2006 MIP and delivered to Element developers and Test and Verification Communities.

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<ul style="list-style-type: none">• Maintained MIP Planning Allocation Matrix (PAM) tool for Block 2004 and built integration database for Block 2006.• Provided Technical and System Integration documentation to USNORTHCOM and USSTRATCOM to support training and end of Block 2004 capability (e.g. provide source data for BMDS users handbook, Operations Capability/Systems Capability (OPSCAP/SYSCAP) tool, and BMDS top-level drawings).• Served as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Change Board (TCCB) to coordinate test events and schedules and determine impact of delays in the integration process.• Tracked system interfaces and related documentation and provided monthly status to the Executive Knowledge Database, the Director's database of information to support decision making at specific knowledge points. <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Conduct Block 2006 System Design Review to assess maturity of plans and readiness to execute Block 2006, with emphasis on first phase of integration.• Draft Director's Instructions to Elements to execute Block 2006 in accordance with specifications, drawings, and integration and test plans.• Update 2006-2007 MIP to reflect changes in program execution plans.• Maintain MIP information to support 2006-2007 test, assessment and verification activities.• Provide system test objectives, scenarios, and required test article configurations for system test events.• Conduct System Engineering Integration Working Group meetings to vet, assign and work Block 2006 implementation issues.• Provide Technical and System Integration documentation to USNORTHCOM and USSTRATCOM to support training and early Block 2006 integration Source Data for BMDS Users Handbook.• Track system interfaces and related documentation and provide status to the Director's Executive Knowledge Database.• Serve as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Change Board (TCCB) to coordinate test events and schedules and determine impact of delays in the integration process.• Begin advance planning for 2008-2009 MIP. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Conduct Block 2006 In-Progress Technical Reviews for Integration Phase II to ensure system specifications are properly implemented.• Update 2006-2007 MIP to incorporate any changes in planned delivery of Block 2006 program content.• Build 2008-2009 MIP and deliver to Element developers and Test and Verification Communities.• Conduct Block 2008 Integration Design Review following Element Preliminary Design Reviews.		

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- Provide system test objectives, scenarios, and required test article configurations for system test events.
- Maintain MIP Planning Allocation Matrix (PAM) tool for Block 2006 and build integration database for Block 2008.
- Provide Technical and System Integration documentation to USPACOM, USNORTHCOM and USSTRATCOM to support training and late Block 2006 integration; Source Data for BMDS Users Handbook; BMDS top-level Drawings.
- Track system interfaces and related documentation and provide monthly status to the Director's Executive Knowledge Database.
- Serve as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Change Board (TCCB) to coordinate test events and schedules and determine impact of delays in the integration process.

	FY 2005	FY 2006	FY 2007
Verification & Assessment Engineering	8,700	5,677	5,854
RDT&E Articles (Quantity)	0	0	0

The Verification and Assessment phase completes the SE&I cycle, provides feedback for the next phase of development, and gives the warfighter objective technical knowledge of the system's capabilities. Verification of system performance is accomplished primarily by allocating all performance requirements in the design phase to subsystem specifications, then testing and verifying performance to those specifications through analysis, modeling and simulation, demonstration, ground tests and flight tests, and finally rolling up all the subsystem verification results into a comprehensive set of system-level capability verification groups. Maintaining a complete and accurate specification trace therefore becomes critical to providing an accurate assessment of BMDS performance verification. The BMDS overall system performance is assessed against the Statement of Goals and Objectives which were established by the Agency during the initial block planning phase. This assessment is completed in part by using distributed ground tests, but it primarily uses models which were validated and accredited by using the results of the test program.

FY05 Accomplishments:

- Developed/provided BMD System Test Objectives, including overlays on Element Test Objectives to support the MDA's test planning process.
- Updated Block 2004 Capability Verification and Assessment Plan (CVAP) Annex, providing detailed verification planning data to support the system specifications cross reference matrix.
- Developed Block 2006 CVAP Annex, providing detailed verification planning data to support the system specifications cross reference matrix.
- Developed Block 2004 Modeling and Simulation (M&S) requirements.
- Developed/provided Interim Capability Verification and Assessment Reports to document the results of system level tests prior to final (end-of-block) assessment report.
- Developed/provided Capability Verification and Assessment Report Addenda for individual test events.
- Provided Verification and Assessment status to BMDS Readiness Reviews.

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FY06 Planned Program:

- Publish the CY 2005 Interim Capability Assessment Report (ICAR) to report assessments of BMDS performance demonstrated in BMDS system-level testing and analyses.
- Update Block 2006 Capability Assessment Plan (CAP) to describe the plan of action required to assess BMDS system-level technical performance.
- Establish and maintain the Traceability Matrix between system and element specifications.
- Develop Verification Ledger (Dynamic Object Oriented Requirements System (DOORS)-based) for monthly tracking of sub-system verification status.
- Provide System Impact Assessment Reports for significant test events and test campaigns.
- Collect and aggregate Element and Component Block 2006 Assessment Analysis Plans with Modeling and Simulation requirements.
- Draft Block 2008 Analysis Plan for unique system-level Modeling and Simulation requirements.

FY07 Planned Program:

- Publish the CY 2006 ICAR to report assessments of BMDS performance demonstrated in BMDS-level testing and analyses.
- Update Block 2006 CAP to describe the plan of action required to assess BMDS system-level technical performance.
- Maintain the Block 2006 Traceability Matrix and draft Block 2008 Traceability Matrix to map system-level requirements to the specifications of MDA elements and components.
- Draft Block 2008 CAP to describe the plan of action required to assess BMDS system-level technical performance.
- Complete Final Block 2004 Capability Assessment Report (CAR) with supporting subsystem annexes.
- Maintain Block 2006 Verification Ledger (DOORS-based) for monthly tracking of sub-system verification status.
- Provide System Impact Assessment Reports for significant test events and test campaigns.

	FY 2005	FY 2006	FY 2007
System Assessment and Analysis	23,000	17,635	19,143
RDT&E Articles (Quantity)	0	0	0

Systems Assessment and Analysis provides the Director, Missile Defense Agency, and his staff with the technical basis and rationale for developing and balancing the integrated, layered BMDS. It is the only analytic team looking across system block/element/product programs to support the BMDS architecture and systems engineering process with force-on-force effectiveness analyses, identification of system level gaps and shortfalls, formulation of system alternatives and their relative contributions, engineering trade studies, and rapid responses to senior department ``what if``

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questions and scenarios. Without this common and consistent engineering decision support team, the Director would be unable to effectively plan, develop, and execute the BMDS and its constituent elements.

FY05 Accomplishments:

- Conducted BMDS architecture analyses to support development of Technical Objectives and Goals, Test Bed Description Documents, System Specifications, Interface Control, System Implementation Plan, Capabilities Verification and Assessment Plan, and Capabilities Verification and Assessment Report.
- Conducted engineering analyses and performed trade studies for system design and implementation products to include System Specification, Interface Control, Target Capabilities Specification, Information Exchange Requirements and Design Parameters Experiments.
- Conducted Quick reaction analyses in support of the Adversary Capability Document (ACD), Concept-of-Operations (CONOPS) Development, and BMDS Handbook.
- Developed and maintained the Element/Component Characterization Analysis and the analysis knowledge base.
- Developed models and simulation requirements for submission in the MDA modeling and simulation process.

FY06 Planned Program:

- Conduct BMDS architecture analyses to support development of Technical Objectives and Goals, Test Bed Description Documents, System Specifications, Interface Control Documents, System Implementation Plan, Capabilities Assessment Plan, and Capabilities Assessment Report.
- Conduct engineering analyses and perform trade studies for system design and implementation products to include System Specification, Interface Control, Target Capabilities Specification, Information Exchange Requirements and Design Parameters Experiments.
- Conduct Quick reaction analyses, as required.
- Maintain the Element/Component Characterization Analysis and the analysis knowledge base.
- Develop models and simulation requirements for submission to the MDA modeling and simulation process.

FY07 Planned Program:

- Conduct BMDS architecture analyses to support development of Technical Objectives and Goals, Test Bed Description Documents, System Specifications, Interface Control, System Implementation Plan, Capabilities Assessment Plan, and Capabilities Assessment Report.
- Conduct engineering analyses and perform trade studies for system design and implementation products to include System Specification, Interface Control, Target Capabilities Specification, Information Exchange Requirements and Design Parameters Experiments.
- Conduct Quick reaction analyses, as required.

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<ul style="list-style-type: none"> • Develop and maintain the Element/Component Characterization Analysis and the analysis knowledge base. • Develop models and simulation requirements for submission to the MDA modeling and simulation process. 			
	FY 2005	FY 2006	FY 2007
Threat Systems Engineering	12,000	10,509	11,372
RDT&E Articles (Quantity)	0	0	0
<p>Threat Systems Engineering interfaces throughout the SE&I process to define and assess threats to be countered by the BMDS and provides the initial adversary characteristics input to the Test Bed Planning process. It identifies the technically feasible adversary ballistic missile threat and countermeasure capabilities. It documents these threats by producing adversary characterizations products, including the Adversary Capability Document (ACD), the Block specific Adversary Data Packages (ADP) and other special purpose documents. Threat Systems Engineering provides detailed threat analysis and characterization of various chemical agents and their simulants, and obtains information on post-impact debris signatures as they impact the BMDS. It plans, executes and provides resources for the Countermeasures/Counter-Countermeasures (CM/CCM) Black Team; plans, executes, and administers the MDA Corporate Lethality program (CLP); and maintains oversight and liaison with element lethality programs, including system flight test opportunities.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Finalized and published the updated Adversary Capability Document (ACD) Version 5.6 that includes Maneuvering Reentry Vehicle characteristics, and Block 2004 and Block 2006 missile characterization. • Completed characterizations and published the initial draft and two updates to the Block 2006 Adversary Data Package (ADP) to be utilized for the design and assessment of the BMDS. • Established the Lethality Sub-Group at the System Engineering and Integration Council (SEIC) and published FY06 BMDS Lethality Program Plan to identify lethality requirements and system standards. • Continued efforts to obtain actual post-engagement lethality information through data collection and analysis on BMDS Element and system flight test opportunities. • Developed, in conjunction with Targets and Countermeasures (TC), target requirements that reflect current and emerging adversary capabilities. • Supported continuing Quick Reaction studies relating to the design and development of adversary products to support the SE&I development process. • In collaboration with CM/CCM, completed Phases 1 and 2 of a study to establish inter-relationships among individual parameters in the BMDS ACD. 			

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<p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Continue the development and evolution of the ACD to include additional data characterizations of emerging threats and payloads.• Commence efforts associated with the development of the Block 2008 Adversary Data Package (ADP) to be utilized for the design and assessment of the BMDS performance.• Commence technical evaluation of emerging adversary characteristics to be included within future Block-specific ADPs (Block 2010, Block 2012, Block 2014)• Under the direction of the SEIC, ensure the efficient execution of the approved Corporate Lethality Plan (CLP).• Develop and publish the BMDS Corporate Lethality objectives and goals with the FY07 Lethality Program Plan.• Define and publish lethality specific payload characteristics to be utilized in conjunction with the Block-specific 2006-2008 ADP.• Define and develop Adversary Threat Parameter Characterizations and their relationship to BMDS target development.• In collaboration with CM/CCM, integrate the results from Phases 1 and 2 of the ACD Parameters Inter-Relationships Study into the ACD, and initiate Phase 3 to study additional parameter relationships. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Continue the development and evolution of the ACD to include additional data files characterizing the performance of Adversary Missile Characterizations and payloads.• Continue efforts associated with the development of the Block 2008 Adversary Data Package (ADP) to be utilized for the design and assessment of the BMDS.• Continue technical evaluation of emerging Adversary characteristics to be included within future Block-specific ADPs (Block 2010, Block 2012, Block 2014).• Continue the efficient execution of the approved Corporate Lethality Plan (CLP) under the direction of the Systems Engineering and Integration Council (SEIC).• Develop and publish the BMDS Corporate Lethality objectives and goals within the FY08 Lethality Plan.• Define and publish lethality specific payload characterizations to be utilized in conjunction with the Block-specific 2010-2012 ADP.• Define and develop Adversary Threat Parameter Characterizations and their relationship to BMDS target development.• In collaboration with CM/CCM, continue to integrate the results from Phases 1 and 2 of the ACD Parameters Inter-Relationships Study into the ACD, and continue Phase 3 to study additional parameter relationships.		

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	FY 2005	FY 2006	FY 2007
Program Management	42,808	31,699	32,975
RDT&E Articles (Quantity)	0	0	0
<p>Program Management provides overall program operations support to the Missile Defense Agency Systems Engineering and Integration (SE&I) program to include planning, programming, budgeting and execution system (PPBES) support, contract management (including Boeing contract and award fee), correspondence, information and document management, policy and procedures, security, and government human relations functions.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Maintained information library of all official engineering documents and briefings. • Managed personnel and MDA site and information security. • Provided administrative support for SE&I staff and managed formal correspondence. • Provided project program management and control. • Maintained Integrated Master Schedule for System Engineering products in concert with the overall MDA Integrated Program Policy. • Performed contracting officer's representative functions for all project support functions including contract cost oversight. • Managed the project budget. • Launched a comprehensive collaboration strategy to ensure appropriate participation of Agency product and service stakeholders. • Drafted the Systems Engineering Plan (SEP) and Configuration Management Plan (CMP) to maintain collaboration between system-level and sub-system level engineering efforts throughout the BMDS life cycle. • Maintained the BMDS Risk Management Plan. • Maintained the BMD System Risk Management Plan. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Maintain information library of all official engineering documents and briefings. • Manage personnel and MDA site and information security. • Administer SE&I Industry contract renewal and Award-fee plan determination; process self-assessments culminating in award fee to Industry. • Upgrade Test Bed Information sharing for both classified and unclassified environments ensuring timely access for all authorized users. • Implement robust collaboration support system to enable desktop planning and technical coordination throughout the enterprise. • Provide project/program management and control for all SE&I. • Maintain Master Schedule for System Engineering products and coordinate with the overall MDA Integrated Program Policy. 			

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- Update the Systems Engineering Plan (SEP) and Configuration Management Plan (CMP) at the onset of the planning step of the next Block development (even year only).
- Perform contracting officer's representative functions for all project support functions including contract cost oversight.

FY07 Planned Program:

- Maintain information library of all official engineering documents and briefings.
- Manage personnel and MDA site and information security.
- Implement consistent task management across all programs and contracts including performance indicators and regular reporting.
- Provide project/program management and control for all SE&I.
- Maintain Master Schedule for System Engineering products and coordinate with the overall MDA Integrated Program Policy.
- Perform contracting officer's representative functions for all project support functions including contract cost oversight.

	FY 2005	FY 2006	FY 2007
Operational Integration & Support	2,230	2,053	3,328
RDT&E Articles (Quantity)	0	0	0

The Operational Integration and Support team provides the link between the warfighting community and the SE&I team before, during and after transition of Available Defensive Capability. This activity provides sustaining engineering services for support, training, operation and sustainment of BMDS capabilities. It collects, analyzes, and disseminates user input and feedback on the BMDS for incorporation into the collaborative SE&I process by supporting Force Structure Integration and Deployment.

FY05 Accomplishments:

- Supported the Initial Defensive Operations (IDO) Task Force through the remainder of Block 2004.
- Supported Concept of Operations (CONOPS) development.
- Represented the systems engineering interfaces in the Warfighter Involvement Process (WIP) developed by USSTRATCOM.
- Supported warfighter surveys to collect and disseminate user input and feedback on the BMDS for incorporation into the collaborative SE&I process.
- Supported Force Structure Integration and Deployment by working with the Combatant Commanders (COCOMs) in focus groups or integrated process teams involving BMDS SE&I issues.
- Communicated SE&I concepts and analysis to users and stakeholders.

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<ul style="list-style-type: none">• Established, developed and implemented an operational control process for configuration management and served as Chairman and Secretariat for the Operational Configuration Management Board (OCMB).• Participated in BMDS Handbook updates and act as a SE&I liaison for training tools. The BMDS Handbook provides a general understanding of BMDS operational and technical characteristics to enable combatant commanders, staffs and key operators to plan and train for defensive operations.• Participated in the Joint Warfighter Support program and act as a SE&I liaison for joint or service exercises, wargames, and seminars. <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Serve as SE focal point for the MDA Operations Center (MOC).• Support CONOPS updates.• Represent the systems engineering interfaces in the Warfighter Involvement Process (WIP) developed by USSTRATCOM.• Support warfighter surveys to collect and disseminate user input and feedback on the BMDS for incorporation into the collaborative SE&I process.• Support Force Structure Integration and Deployment by working with the COCOMs in focus groups or integrated process teams involving BMDS SE&I issues.• Coordinate an Early Capability Review (ECR) for BMDS components nominated by Decision Memorandum #5 to determine fielding capability.• Communicate SE&I concepts and analysis to users and stakeholders.• Manage operational system configuration control and serve as Chairman and Secretariat for the OCMB.• Participate in BMDS Handbook updates and act as a SE&I liaison for training tools.• Participate in the Joint Warfighter Support program and act as a SE&I liaison for joint or service exercises, wargames, and seminars. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Serve as a focal point for SE&I actions compiled by the MOC.• Support CONOPS updates.• Represent the systems engineering interfaces in the Warfighter Involvement Process (WIP) developed by USSTRATCOM.• Support warfighter surveys to collect and disseminate user input and feedback on the BMDS for incorporation into the collaborative SE&I process.• Support Force Structure Integration and Deployment by working with the COCOMs in focus groups or integrated process teams involving BMDS SE&I issues.		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<ul style="list-style-type: none"> • Communicate SE&I concepts and analysis to users and stakeholders. • Manage operational system configuration control and serve as Chairman and Secretariat for the OCMB. • Participate in BMDS Handbook updates and act as a SE&I liaison for training tools. • Participate in the Joint Warfighter Support program and act as a SE&I liaison for joint or service exercises, wargames, and seminars. 			
	FY 2005	FY 2006	FY 2007
Modeling & Simulation Engineering	99,484	0	0
RDT&E Articles (Quantity)	0	0	0
<p>In order to strengthen the Agency's M&S program, a significant modeling and simulation effort, leveraging existing element models, linked and integrated at the system-level and oriented for future development of the BMDS is essential. Under this Project, legacy modeling and simulation (M&S) tools and simulations will address near-term Initial Defensive Operations (IDO) and Block 2004 objectives and provide warfighter support and sustainment for BMDS. A modeling and simulation open architecture will be established to assess overall BMDS interoperability and performance, and to evolve legacy simulation assets to this standard as appropriate. It will provide development, training and operations at the system-level, and improve the BMDS through incremental improvements and Block upgrades over time.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Initiated and completed Model Assessments. • Assessed Existing Threat and Environment Tools. • Block 2004 System Verification Action Team (SVAT) Report Out. • M&S Open Architecture and Implementation Framework Requirements. • M&S Open Architecture Framework Specification Document. • M&S Open Architecture Model Specification Document. • Began Collaboration with International partners on defining requirements and interfaces for an open system modeling framework. • Released Parametric Endo-Exo Lethality Simulation (PEELS) Update. • Released Post Engagement Ground Effects Model (PEGEM) Update. • Released Kinetic Impact Debris Distribution (KIDD) Update. • Released Performance Assessment Workbench Software (PAWS) Update. • Released CT-Analyst Update. • Released Extended Air Defense Simulation (EADSIM) Update, THAAD Representation Accreditation to support War games. 			

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APPROPRIATION/BUDGET ACTIVITY	R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	0603890C Ballistic Missile Defense System Core	

- Released Battlespace Environment and Signatures Toolkit (BEST) Update.
- Released Strategic Scene Generation Model (SSGM) Update.
- Released Optical Signature Code (OSC) Update.
- Released Missile Defense Wargaming and Analysis Resource (MDWAR) Update.
- Released Missile Defense System Exerciser (MDSE) Update.
- Developed Monthly Technical, Cost and Schedule Reports.
- Developed Reference Manuals, User Manuals, Methodology Manuals, Configuration Manuals, Assessment Reports and Vision Documents.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090

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	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

MDA employs a collaborative, system-centric, capability-based BMDS Test Bed Engineering process that spans many functions and organizations across MDA including System Engineering and Integration (SE&I); Test and Evaluation; and the Element programs System Engineers. The SE&I effort is performed by a team of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and industry contractors. This combination of resources forms an integrated team to accomplish the necessary engineering for the BMD System.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test Bed Planning								
Industry	CPAF	Boeing/ VA	5,272	2,847	1/3Q	2,981	1/3Q	11,100
SETA	CPFF	Sparta/ VA	10,920	1,708	1/3Q	1,787	1/3Q	14,415
SETA	CPFF	CSC/ VA	8,192	1,488	1/3Q	1,557	1/3Q	11,237
FFRDC/UARC	MIPR	Aerospace/ VA, CA	4,750	1,662	1/3Q	1,738	1/3Q	8,150
FFRDC/UARC	FFRDC	JHU/APL/ MD	4,250	1,534	1/3Q	1,604	1/3Q	7,388
FFRDC/UARC	MIPR	MIT/LL/ MA	3,190	1,151	1/3Q	1,204	1/3Q	5,545
FFRDC/UARC	MIPR	MITRE/ VA	1,415	511	1/3Q	535	1/3Q	2,461
FFRDC/UARC	MIPR	LLNL/ NM	1,875	741	1/3Q	775	1/3Q	3,391
FFRDC/UARC	FFRDC	SDL/ UT	585	256	1/3Q	267	1/3Q	1,108

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
FFRDC/UARC	MIPR	CNA/ VA	175	64	1/3Q	67	1/3Q	306
FFRDC/UARC	MIPR	Sandia/ NM	708	256	1/3Q	267	1/3Q	1,231
BMDS Design & Specification								
Industry	CPAF	Boeing/ VA	22,512	7,577	1/3Q	10,086	1/3Q	40,175
SETA	CPFF	Sparta/ VA	3,540	1,396	1/3Q	1,859	1/3Q	6,795
SETA	CPFF	CSC/ VA	2,972	1,386	1/3Q	1,845	1/3Q	6,203
FFRDC/UARC	MIPR	Aerospace, MITRE/ CA, VA	1,358	0	N/A	0	N/A	1,358
Test Bed Integration & Implementation								
Industry	CPAF	Boeing/ VA	18,297	7,328	1/3Q	9,968	1/3Q	35,593
SETA	CPFF	Sparta/ VA	5,472	942	1/3Q	1,282	1/3Q	7,696
SETA	CPFF	CSC/ VA	4,521	1,336	1/3Q	1,818	1/3Q	7,675
FFRDC/UARC	MIPR	Aerospace, JHU/APL/ CA, VA, MD	1,654	0	N/A	0	N/A	1,654
Verification & Assessment Engineering								
Industry	CPAF	Boeing/ VA	13,481	0	N/A	0	N/A	13,481

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core				
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
SETA	CPFF	Sparta/ VA	2,333	1,572	1/3Q	1,448	1/3Q	5,353
SETA	CPFF	CSC/ VA	5,386	2,974	1/3Q	3,019	1/3Q	11,379
FFRDC/UARC	FFRDC	JHU/APL/ MD	1,880	850	1/3Q	1,042	1/3Q	3,772
FFRDC/UARC	MIPR	Sandia/ NM	310	142	1/3Q	174	1/3Q	626
System Assessment and Analysis								
Industry	CPAF	Boeing/ VA	18,321	6,890	1/3Q	7,480	1/3Q	32,691
SETA	CPFF	Sparta/ VA	16,959	8,543	1/3Q	9,273	1/3Q	34,775
SETA	CPFF	CSC/ VA	6,148	2,202	1/3Q	2,390	1/3Q	10,740
FFRDC/UARC	FFRDC	JHU/APL/ MD	3,979	0	N/A	0	N/A	3,979
Threat Systems Engineering								
SETA	CPFF	Sparta/ VA	3,240	1,202	1/3Q	1,302	1/3Q	5,744
SETA	CPFF	CSC/ VA	1,380	1,244	1/3Q	1,346	1/3Q	3,970
SETA	CPFF	Schafer/ VA	0	1,468	1/3Q	1,588	1/3Q	3,056
FFRDC/UARC	MIPR	Aerospace/ CA, VA	600	266	1/3Q	288	1/3Q	1,154
FFRDC/UARC	MIPR	MIT/LL/ MA	750	400	1/3Q	433	1/3Q	1,583

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
FFRDC/UARC	FFRDC	JHU/APL/ MD	2,155	1,066	1/3Q	1,153	1/3Q	4,374
FFRDC/UARC	MIPR	Sandia/ NM	1,570	733	1/3Q	794	1/3Q	3,097
FFRDC/UARC	MIPR	LLNL/ CA, VA	650	294	1/3Q	318	1/3Q	1,262
Other DoD		SMDC/ AL	5,500	1,134	1/3Q	1,227	1/3Q	7,861
Other DoD	MIPR	Battelle/ OH	2,205	846	1/3Q	915	1/3Q	3,966
Other DoD	MIPR	NSWC/ VA	1,950	736	1/3Q	796	1/3Q	3,482
Other DoD	MIPR	AMSC/ VA	400	211	1/3Q	229	1/3Q	840
Operational Integration & Support								
Industry	CPAF	Boeing/ VA	500	628	1/3Q	1,018	1/3Q	2,146
SETA	CPFF	Sparta/ VA	460	422	1/3Q	684	1/3Q	1,566
SETA	CPFF	CSC/ VA	460	580	1/3Q	940	1/3Q	1,980
Modeling & Simulation Engineering								
M&S Tools	CPAF	Northrop Grumman/ JNIC/CO	10,077	0	N/A	0	N/A	10,077
M&S Tools	TM	DSI/ GSA/LA	2,573	0	N/A	0	N/A	2,573

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
M&S Tools	CPAF	Teledyne Brown Eng PEO AMSD/ AL	4,500	0	N/A	0	N/A	4,500
M&S Tools	CPAF	PEO AMSD/ AL	13,066	0	N/A	0	N/A	13,066
M&S Tools	CPAF	JTAGS PEO AMSD/ AL	565	0	N/A	0	N/A	565
M&S Tools	Various	SBIRS/MCS/ Air Force	3,433	0	N/A	0	N/A	3,433
M&S Tools	Various	JNIC/ CO	20,235	0	N/A	0	N/A	20,235
M&S Tools	MIPR	GMD/ AL	800	0	N/A	0	N/A	800
M&S Tools	MIPR	SPAWAR/ CA	4,326	0	N/A	0	N/A	4,326
M&S Tools	Various	USA NET Design Facility/ PEO ASMD, AL	500	0	N/A	0	N/A	500
M&S Tools	MIPR	THAAD/ AL	1,800	0	N/A	0	N/A	1,800
M&S Tools	CPAF	Lockheed Martin/ PA	2,000	0	N/A	0	N/A	2,000
M&S Tools	Various	Patriot	450	0	N/A	0	N/A	450
M&S Tools	MIPR	FBX-T/ VA	800	0	N/A	0	N/A	800
M&S Tools	MIPR	Photon Research Assoc/ VA	10,700	0	N/A	0	N/A	10,700

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
M&S Tools	CPFF	NRL/ DC	2,300	0	N/A	0	N/A	2,300
M&S Tools	CPFF	AFRL-PR/ CA	800	0	N/A	0	N/A	800
M&S Tools	CPFF	SMDC/ AL	21,828	0	N/A	0	N/A	21,828
M&S Tools	CPFF	AFRL-VS/ MA	200	0	N/A	0	N/A	200
M&S Tools	CPFF	AFRL-MN/ FL	100	0	N/A	0	N/A	100
M&S Tools	CPFF	AFRL-SN/ OH	100	0	N/A	0	N/A	100
M&S Tools	MIPR	NASIC/ OH	200	0	N/A	0	N/A	200
M&S Tools	MIPR	MSIC/ AL	200	0	N/A	0	N/A	200
M&S Tools	FFP	SPARTA/ CA	294	0	N/A	0	N/A	294
M&S Tools	CPIF	Teledyne Brown Eng SMDC/ AL	1,840	0	N/A	0	N/A	1,840
M&S Tools	MIPR	ITT GSA/ GA	3,265	0	N/A	0	N/A	3,265
M&S Tools	FFP	CSC SMDC/ GA	860	0	N/A	0	N/A	860
M&S Tools	FFP	Dynetics SMDC/ GA	250	0	N/A	0	N/A	250
M&S Tools	MIPR	Miltec GSA/ GA	1,225	0	N/A	0	N/A	1,225

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
M&S Tools	MIPR	BAE GSA/ GA	2,769	0	N/A	0	N/A	2,769
M&S Tools		NRL/ DC	475	0	N/A	0	N/A	475
M&S Framework	CPAF	TBD	20,163	0	N/A	0	N/A	20,163
M&S Tools		DSI, GSA/ AL	295	0	N/A	0	N/A	295
M&S Tools	CPIF	Teledyne Brown Engineering, SMDC/ AL	300	0	N/A	0	N/A	300
M&S Tools	MIPR	Sparta/ VA	380	0	N/A	0	N/A	380
Computational Facilities		Various/ VA	23,429	0	N/A	0	N/A	23,429
SETA		Booze Allen/ VA	6,335	0	N/A	0	N/A	6,335
Other DoD	MIPR	Navy	2,812	0	N/A	0	N/A	2,812
Industry		Boeing/ AL	2,331	0	N/A	0	N/A	2,331
Other DoD		Aegis/ VA	2,995	0	N/A	0	N/A	2,995
Subtotal Support Costs			363,846	66,586		77,497		507929

Remarks

FY06-11 funding for Modeling and Simulation Engineering appears in Program Element 0603890C, Project 0106

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Test Bed Planning								
FFRDC/UARC	MIPR	LLNL/ CA, VA	375	128	1/3Q	134	1/3Q	637
BMDS Design & Specification								
FFRDC/UARC	MIPR	CNA/ VA	0	149	1/3Q	180	1/3Q	329
Verification & Assessment Engineering								
FFRDC/UARC	FFRDC	JHU/APL/ MD	300	139	2Q	171	2Q	610
Threat Systems Engineering								
SETA	CPFF	Sparta/ VA	1,200	394	1/3Q	426	1/3Q	2,020
SETA	CPFF	CSC/ VA	1,050	381	1/3Q	412	1/3Q	1,843
FFRDC/UARC	MIPR	LLNL/ CA, VA	0	134	1/3Q	145	1/3Q	279
Program Management								

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Industry	CPAF	Boeing/ VA	71,497	23,340	1/3Q	24,279	1/3Q	119,116
SETA	CPFF	Sparta/ VA	7,367	2,254	1/3Q	2,345	1/3Q	11,966
SETA	CPFF	CSC/ VA	6,174	1,685	1/3Q	1,753	1/3Q	9,612
FFRDC/UARC	MIPR	Aerospace/ VA	553	152	1/3Q	158	1/3Q	863
Govt Personnel		WHS/ DC	20,812	3,941	2/4Q	4,100	2/4Q	28,853
Travel			1,235	240	2/4Q	250	2/4Q	1,725
SETA	FFP	Paradigm/ VA	190	87	1/3Q	90	1/3Q	367
Operational Integration & Support								
Other DoD		SMDC/ AL	900	277	1/3Q	450	1/3Q	1,627
FFRDC/UARC	MIPR	CNA/ VA	0	146	1/3Q	236	1/3Q	382
Modeling & Simulation Engineering								
SETA	FFP	MDA/ VA	2,810	0	N/A	0	N/A	2,810
FFRDC/UARC	FFRDC	JHU/APL/ MD	4,045	0	N/A	0	N/A	4,045
FFRDC/UARC	FFRDC	Aerospace/ CA	480	0	N/A	0	N/A	480
FFRDC/UARC	FFRDC	MIT/LL/ MA	790	0	N/A	0	N/A	790

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
FFRDC/UARC	FFRDC	MITRE/ VA	1,220	0	N/A	0	N/A	1,220
FFRDC/UARC	FFRDC	Torch Technologies/ VA	58	0	N/A	0	N/A	58
Govt Personnel		WHS/ DC	2,900	0	N/A	0	N/A	2,900
Travel			300	0	N/A	0	N/A	300
Subtotal Management Services			124,256	33,447		35,129		192832

Remarks

FY06-11 funding for Modeling and Simulation Engineering appears in Program Element 0603890C, Project 0106

Project Total Cost			488,102	100,033		112,626		700,761
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Remarks

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Milestones																																
Technical Objectives & Goals / Updates					▲						▲								▲												▲	
Master Integration Plan (MIP)	▲		▲			▲				▲								▲												▲		
Adversary Capability Document / updates			▲							▲				▲					▲			▲								▲		
Interim Capability and Assessment Report (ICAR)						▲				▲				▲					▲			▲								▲		
Initial Defensive Operations																																
IDO Capability Verification & Assessment Report			▲																													
BLOCK 2004																																
Capability Verification and Assessment Plan/update		▲				▲																										
Capability Assessment Report (CAR)											▲																					
BLOCK 2006																																
Test Bed Description Document (TBDD)				▲																												
Test Bed System Specifications (TBSS)			▲																													
Interface Control Document (ICD)				▲																												
Adversary Data Package (ADP)			▲				▲				▲																					
Capability Assessment Report (CAR)															▲																	

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BLOCK 2006																																
Capability Assessment Plan (CAP) / update						▲																										
BLOCK 2008																																
Test Bed Description Document (TBDD)								▲																								
Test Bed System Specifications (TBSS)											▲																					
Interface Control Document (ICD)											▲																					
Adversary Data Package (ADP)							▲				▲				▲																	
Capability Assessment Plan (CAP) / update											▲																					
Capability Assessment Report (CAR)																								▲								
Block 2010																																
Test Bed Description Document (TBDD)												▲																				
Test Bed System Specifications (TBSS)															▲																	
Interface Control Document (ICD)															▲																	
Adversary Data Package (ADP)															▲					▲				▲								
Capability Assessment Plan (CAP) / update																				▲												

Legend

<ul style="list-style-type: none"> Significant Event (complete) Milestone Decision (complete) Element Test (complete) System Level Test (complete) Complete Activity 	<ul style="list-style-type: none"> Significant Event (planned) Milestone Decision (planned) Element Test (planned) System Level Test (planned) Planned Activity
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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Milestones							
Technical Objectives & Goals / Updates		1Q	3Q		3Q		3Q
Master Integration Plan (MIP)	1Q,3Q	2Q	2Q		2Q		2Q
Adversary Capability Document / updates	3Q		1Q	1Q	1Q	1Q	1Q
Interim Capability and Assessment Report (ICAR)		2Q	2Q	2Q	2Q	2Q	2Q
Initial Defensive Operations							
IDO Capability Verification & Assessment Report	3Q						
BLOCK 2004							
Capability Verification and Assessment Plan/update	2Q	2Q					
Capability Assessment Report (CAR)			4Q				
BLOCK 2006							
Test Bed Description Document (TBDD)	2Q,4Q	4Q					
Test Bed System Specifications (TBSS)	3Q						
Interface Control Document (ICD)	4Q						
Adversary Data Package (ADP)	3Q	3Q	3Q				
Capability Assessment Report (CAR)				3Q			
Capability Assessment Plan (CAP) / update		2Q					
BLOCK 2008							
Test Bed Description Document (TBDD)		4Q					
Test Bed System Specifications (TBSS)			3Q				
Interface Control Document (ICD)			3Q				
Adversary Data Package (ADP)		3Q	3Q	3Q			
Capability Assessment Plan (CAP) / update			3Q				
Capability Assessment Report (CAR)						3Q	
Block 2010							
Test Bed Description Document (TBDD)			4Q				
Test Bed System Specifications (TBSS)				2Q			
Interface Control Document (ICD)				2Q			
Adversary Data Package (ADP)				3Q	3Q	3Q	
Capability Assessment Plan (CAP) / update					3Q		

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Modeling and Simulation							
Analysis Event 1	1Q-2Q						
Analysis Event 2	1Q-4Q						
EADSIM v12	1Q						
IMD 05-1	1Q-2Q						
IMD 05-2	1Q-3Q						
IMD 05-4	1Q-4Q						
KIDD: Version 5.6, 6.0 Release	1Q,3Q						
Legacy Maintenance	1Q-4Q						
Legacy Model Assessment	1Q-2Q						
MDIE 05a	1Q-2Q						
MDIE 05b	1Q-3Q						
CT-Analyst: Version 3	2Q						
Develop T1, T2, T3, and CETM	2Q-4Q						
FLITES	2Q						
IMD 05-5	2Q-4Q						
Make or Buy Decision Based on Model Assessments	2Q						
Studies & Analyses							
E/CCA	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
POM 06 & ESG Analysis	1Q						
Other							
BMDS Technical Performance and Risk Summary	1Q						
BMDS Technical Risk Summary	1Q						
Risk Assessment Management Plan	2Q						
Contractual Activities & Events							
MDNTS(I) Phase 4 Contract Award	1Q						
SE Technical Support	2Q						
OTA Contract Award		1Q					
MDNTS(I) Phase 5 Contract Award				1Q			
General Milestones							
Adversary Engineering	1Q	1Q	1Q	1Q	1Q	1Q	1Q

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Special Adversary Capability Studies	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Perform Intel Threat Analysis	2Q	2Q	2Q	2Q	2Q	2Q	2Q
Missile Characterizations	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Countermeasure Characterizations	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Lethality							
Perform Studies Chem./Bio - Agents at Altitudes	1Q	1Q	1Q	1Q	1Q	1Q	1Q
Analyze Missile Payload Lethality	2Q	2Q	2Q	2Q	2Q	2Q	2Q
Analyze Post Engagement Lethality Data	2Q	2Q	2Q	2Q	2Q	2Q	2Q
Kill Assessment Phenomenology	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Submunition Properties	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Viscoelastic Fluid Properties	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Chem-Bio Threats - Report	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Integration							
Integration Monthly Report	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Block 2006 Integration Design Review	3Q						
Block 2008 Integration Design Review			2Q				

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	27,295	21,161	25,700	26,700	27,700	23,000	23,400
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Missile Defense Agency's (MDA) Countermeasures/Counter-Countermeasures (CM/CCM) Program assesses technical and performance risks, identifies mitigation strategies and integrates engineering changes to the baseline Ballistic Missile Defense System (BMDS) to improve its performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures. The CM/CCM Program conducts tailored threat system engineering to support BMDS capability improvement and works collaboratively with the Threat Systems Engineering Team to synchronize and integrate development efforts. These efforts ensure the representation of adversary capabilities is consistent with the MDA Adversary Capability Document (ACD).

The CM/CCM Program brings together capabilities from across MDA; to include System, Element, and Component technical experts; to conduct integrated engineering assessments of BMDS performance against countermeasures and the technical risks posed by these countermeasures. An independent team of senior experts, funded by the CM/CCM Program, reviews the adversary capabilities, BMDS performance analyses, risks, and counter-countermeasure proposals and provides their assessment to the MDA Director.

Acting through the Systems Engineering and Integration (SE&I) team, the CM/CCM Program employs collaborative engineering throughout the entire engineering process from concept through development to operational integration to ensure that its solutions are part of the integrated system design.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Adversary Engineering	12,625	9,088	11,450
RDT&E Articles (Quantity)	0	0	0

The Adversary Engineering effort determines the range of feasible engineering approaches an adversary could use to defeat or degrade the BMDS, identifies gaps and risk in BMDS performance, and develops conceptual countermeasures to exploit these potential shortfalls. The adversary engineering is performed by two teams, each operating with a different perspective of adversary capabilities. The Red Team, restricted to using only

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<p>information on the BMDS available from open sources, provides an outside perspective, analogous to an actual adversary. The Black Team develops countermeasures based on complete access to all technical and design data on the BMDS.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none">Continued characterization of adversary countermeasure capabilities and phenomenology related to countermeasure design, deployment, and performance.Updated and developed detailed parametric descriptions of specific countermeasure suites and selected regimes of the adversary capability space.Delivered engineering descriptions for three conceptual countermeasure suites in support of BMDS risk assessments.Completed a Level 1 design for a countermeasure suite slated for an FY06 MDA experimental flight test.Completed, in collaboration with Threat Systems Engineering, Phases 1 and 2 of a study to establish the inter-relationships among individual parameters in the BMDS Adversary Capability Document (ACD) which will improve the ability of threat engineers to rapidly develop and assess new countermeasure concepts and designs. <p>FY06 Planned Program:</p> <ul style="list-style-type: none">Characterize adversary countermeasures capabilities and phenomenology related to countermeasure design, deployment, and performance.Update and continue development of detailed parametric descriptions of the adversary capability space and countermeasures.Deliver engineering descriptions for conceptual countermeasure suites in support of BMDS risk assessments.Conduct phenomenology studies on employment techniques for a range of countermeasure suites.Integrate, in collaboration with Threat Systems Engineering, results from Phases 1 and 2 of the ACD Parameters Inter-Relationships Study into the ACD, and initiate Phase 3 to study additional parameter relationships. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">Continue characterization of adversary countermeasures capabilities and phenomenology related to countermeasure design, employment, and performance.Update and continue development of detailed parametric descriptions of the adversary capability space and countermeasures.Deliver engineering descriptions for conceptual countermeasure suites in support of BMDS risk assessments.Integrate, in collaboration with Threat Systems Engineering, results from Phase 3 of the ACD Parameters Inter-Relationships Study into the ACD, and initiate Phase 4 to study additional parameter relationships.		

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	FY 2005	FY 2006	FY 2007
Independent Assessment	930	650	930
RDT&E Articles (Quantity)	0	0	0
<p>Independent Assessment supports a series of annual analyses by a panel of senior experts, the White Team, of adversary capabilities and conceptual countermeasures posed by the Black and Red Teams, and the risk assessments and mitigation approaches presented by the Blue Team. The White Team presents to the MDA Director their independent assessments of performance risks associated with countermeasures and recommended priorities for MDA investments in counter-countermeasures that have a strong potential to mitigate these risks.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Conducted annual reviews of CM/CCM Program Red and Black Team countermeasures and Blue Team risk assessments, and proposed mitigation options. • Provided independent assessments of CM/CCM Program products and recommendations to the MDA Director. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Conduct annual reviews of CM/CCM Program Red and Black Team countermeasures and Blue Team risk assessments, and proposed mitigation options. • Provide independent assessments of CM/CCM Program products and recommendations to the MDA Director. <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Conduct annual reviews of CM/CCM Program Red and Black Team countermeasures and Blue Team risk assessments, and proposed mitigation options. • Provide independent assessments of CM/CCM Program products and recommendations to the MDA Director. 			
	FY 2005	FY 2006	FY 2007
BMDS Risk Assessment and Mitigation Engineering	13,740	11,423	13,320
RDT&E Articles (Quantity)	0	0	0
<p>BMDS Risk Assessment and Mitigation Engineering funds the Blue Team, comprised of BMDS system, element, and component technical experts, to perform integrated performance and risk assessments of the BMDS against projected adversary capabilities and conceptual countermeasures, to identify and characterize counter-countermeasure options to mitigate BMDS risks posed by these adversary capabilities and countermeasures, and to perform the system-level engineering required to identify the BMDS baseline changes to implement and integrate the options into the operational</p>			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<p>system baseline. In order to integrate Blue Team counter-countermeasure concepts into the design of the BMDS, a collaborative engineering process that spans many organizations across MDA to include the BMDS Elements, Systems Engineering and Integration, Test and Evaluation and others is employed. Utilizing integration councils and task oriented working groups, collaborative products, e.g., specifications, interfaces, standards etc. that define the design, assessment, and integration into the BMDS are produced.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none">• Completed system analysis to develop the strategy to improve midcourse target designation capabilities, focused on the assessment of required sensor functions and capabilities and the battle management functions required to integrate the improvements into the BMDS fire control.• Completed system analysis to develop the strategy to improve the discrimination databases deployed on current and future BMDS sensors.• Performed system engineering required to enable critical discrimination functions for Test Bed Blocks 2006 and 2008 capabilities.• Identified critical discrimination functions that generate the functional sequences required to enable BMDS Engagement Control Sequences.• Allocated critical discrimination functions to appropriate Elements for implementation/execution.• Provided alternative Block evolution paths/schedules for test and implementation of critical discrimination functions.• Completed assessment of midcourse discrimination risks and identified five risk mitigation approaches for concept engineering beginning in FY06 for insertion in the BMDS beginning in Block 2008. <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Conduct system analyses to establish the sensor requirements, discrimination techniques, and information fusion required for a BMDS Discrimination Architecture.• Identify evolutionary strategy options for implementing the BMDS Discrimination Architecture.• Develop a concept description to implement improvements to BMDS midcourse target designation capabilities for integration into the BMDS Test Bed beginning in Block 2008.• Develop a concept description to implement improvements in BMDS lethality for integration into the BMDS Test Bed beginning in Block 2008.• Develop a concept description to implement improvements in the discrimination databases deployed on current and future BMDS sensors for integration into the BMDS Test Bed beginning in Block 2008.• Develop a concept description to implement an advanced discrimination initiative for integration into the BMDS Test Bed beginning in Block 2008.• Conduct assessments of BMDS performance against projected adversary capabilities and conceptual countermeasures posed by the Red and Black Teams to identify and evaluate performance risks and gaps.		

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- Identify and characterize counter-countermeasures to mitigate BMDS risks posed by Black and Red Team conceptual countermeasures.

FY07 Planned Program:

- Perform design trades and initial engineering to implement the specifications and standards for a BMDS Discrimination Architecture, midcourse target designation capabilities, lethality improvements, discrimination databases, information fusion, and an advanced discrimination initiative.
- Conduct assessments of BMDS performance against projected adversary capabilities and conceptual countermeasures posed by the Red and Black Teams to identify and evaluate performance risks and gaps.
- Identify and characterize counter-countermeasures to mitigate BMDS risks posed by Black and Red Team conceptual countermeasures.
- Conduct advanced studies to determine the engineering changes to the baseline BMDS required to integrate counter-countermeasure initiatives proposed by the Blue Team.

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100

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

D. Acquisition Strategy

The 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) Science Engineering and Technical Assistance (SETA), and Industry. In addition, extensive involvement by the major defense contractors responsible for the development of the BMDS, Elements, and major components is required. CM/CCM initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems directorate and BMDS Element Program Offices.

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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Adversary Engineering								
SETA	CPFF	SPARTA/ VA	2,367	1,568	1/3Q	1,714	1/3Q	5,649
SETA	CPFF	CSC/ VA	483	509	1/3Q	551	1/3Q	1,543
Other DoD		SMDC/ AL	850	335	1/3Q	742	1/3Q	1,927
Other DoD	MIPR	ARL/ NM	1,442	956	1/3Q	1,030	1/3Q	3,428
Other DoD	MIPR	Battelle/ OH	783	445	1/3Q	486	1/3Q	1,714
FFRDC/UARC	MIPR	MIT/LL/ MA	1,250	225	1/3Q	277	1/3Q	1,752
FFRDC/UARC	MIPR	IDA/ VA	960	350	1/3Q	400	1/3Q	1,710
Red Team		Various	6,656	3,300	2Q	3,400	2Q	13,356
Other DoD		MDA Elements	3,125	1,400	1/3Q	2,850	1/3Q	7,375
BMD Risk Assessment and Mitigation Engineering								

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
SETA	CPFF	CSC/MA	500	500	1/3Q	500	1/3Q	1,500
Industry	CPAF	Boeing/NM	5,700	2,300	1/3Q	2,300	1/3Q	10,300
Industry	CPAF	Raytheon/AL	4,950	2,000	1/3Q	2,000	1/3Q	8,950
FFRDC/UARC	MIPR	MIT/LL/MA	3,455	1,200	1/3Q	1,300	1/3Q	5,955
Other DoD	MIPR	NSWC/IN	2,000	1,000	1/3Q	1,000	1/3Q	4,000
Collaborative Engineering		MDA Elements	13,434	1,922	1/3Q	2,692	1/3Q	18,048
Assessment and Concept Development Support		MDA Elements	3,383	2,251	1/3Q	3,278	1/3Q	8,912
Subtotal Support Costs			51,338	20,261		24,520		96119

Remarks

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

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

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Independent Assessment								
FFRDC/UARC	MIPR	IDA/ VA	2,235	650	1/3Q	930	1/3Q	3,815
BMDS Risk Assessment and Mitigation Engineering								
SETA	CPFF	CSC/ VA	500	250	1Q	250	1Q	1,000
Subtotal Management Services			2,735	900		1,180		4815

Remarks

Project Total Cost			54,073	21,161		25,700		100,934
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Adversary Engineering																												
Deliver Countermeasure Concepts		▲	▲	▲		▲		▲		▲		▲		▲		▲		▲		▲								
Deliver Special Studies Report	▲				▲							▲				▲												
Independent Assessment																												
Provide Independent Assessments to MDA		▲		▲		▲		▲	▲	▲			▲	▲			▲	▲										
Legend																												
▲ Significant Event (complete) ★ Milestone Decision (complete) ◆ Element Test (complete) ▼ System Level Test (complete) ▲-▲ Complete Activity														▲ Significant Event (planned) ☆ Milestone Decision (planned) ◇ Element Test (planned) ▼ System Level Test (planned) ▲-▲ Planned Activity														

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Adversary Engineering							
Award Missile Defense Center Contract	2Q	2Q	2Q	2Q	2Q		
Develop Countermeasure Concepts	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q	1Q,2Q,3Q		
Deliver Countermeasure Concepts	2Q,3Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q		
Conduct Special Studies	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q		
Deliver Special Studies Report	1Q	1Q	1Q	1Q	1Q		
BMDS Risk Assessment and Mitigation Engineering							
Assess Performance Against Countermeasures	1Q,2Q	1Q,2Q	2Q,3Q	2Q,3Q	2Q,3Q		
Develop and Analyze CCM Concepts	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q		
Conduct Studies to Ident Eng Changes to Implem CCM	4Q	1Q	1Q	1Q	1Q		
Perform Collab Eng to Integrate CCM into BMDS TB		2Q,3Q	2Q,3Q	2Q,3Q	2Q,3Q		
Independent Assessment							
Provide Independent Assessments to MDA	2Q,4Q	2Q,4Q	1Q,4Q	1Q,4Q	1Q,4Q		
Review Black and Red Team Countermeasure Concepts	3Q,4Q	2Q,4Q	1Q,2Q	1Q,2Q	1Q,2Q		
Review Blue Team CCM Concepts and Plans	3Q,4Q	2Q,3Q	3Q,4Q	3Q,4Q	3Q,4Q		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0102 Intelligence and Security	28,152	19,015	23,922	27,437	28,980	39,142	46,600
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: As addressed below, this Project has been restructured to incorporate the Counterintelligence effort and the BMDS Certification effort. Prior to these realignments, the efforts were contained under PE 0901598C (MDA Management Headquarters).

A. Mission Description and Budget Item Justification

In the FY05 President's Budget, this Project consisted of the MDA Intelligence program and was entitled the Intelligence Project. However, this project has been restructured to more accurately capture similar efforts focused on 1) maximizing actionable threat information (whether pertaining to threats the BMDS is designed to counter or threats posed by Foreign Intelligence and Security Services (FISS) and terrorist groups) and 2) ensuring the security of the BMDS. As a result, the Project now captures three specific areas: 1) intelligence, 2) counterintelligence, and 3) BMDS information assurance systems certification. Together these efforts provide critical information regarding threat ballistic missile system capabilities (via intelligence); protection of personnel, activities, and technology from espionage and terrorism through active and passive activities (via counterintelligence); and BMDS system vulnerabilities (via BMDS certification).

To better reflect these changes, the Project name is changed to Intelligence and Security, and the Project now captures the following activities:

1. Intelligence. This activity ensures the development, study and exploitation of relevant, actionable threat information, and makes this information available to all MDA organizations. Through this activity, authoritative, current and projected threat data are provided to support MDA leadership, Ballistic Missile Defense System (BMDS) architecture design, testing, modeling, and wargaming activities, and existing/future national technical means are leveraged to enhance the effectiveness of the BMDS. This information reduces risk, improves system performance, and informs the engineering and development process; it enables MDA program managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make informed decisions and invest limited resources on countering the most significant aspects of potential adversary capabilities. Other aspects of the Intelligence program are designed to gain access to, and leverage, unique, Intelligence Community developed, owned and operated capabilities for the benefit of the Missile Defense Community. Many are highly classified and require both access and expertise to exploit. The Program supports the overarching MDA objectives of BMDS on-Alert, continuing spiral development, and enhanced BMDS capabilities.

2. Counterintelligence. The MDA Counterintelligence Office serves as the MDA focal point for all counterintelligence (CI) matters and external coordination with the Services, the FBI, and other federal criminal investigative organizations. This office ensures that MDA leadership and the

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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entire workforce are apprised of threats posed by Foreign Intelligence and Security Services (FISS) and terrorist groups worldwide. Under this MDA CI activity, a comprehensive CI education program is developed and administered; this includes 1) providing the workforce CI awareness briefings and foreign travel briefings and debriefings as needed, and 2) publishing CI awareness products. Additionally, under this CI activity, operational, investigative and CI functional support are provided to the MDA/BMDS Research and Technology Protection programs and test activities through oversight and approval of CI Support Plans, Defense Threat Assessments and Multi-Discipline CI Threat Analyses.

3. BMDS Certification. This activity develops a comprehensive picture of the overall Information Assurance/Computer Network Defense (IA/CND) architecture at all levels of the BMDS. To accomplish this, the MDA BMDS Certification and Accreditation team must interface with relevant stakeholders, assess documentation and IA/CND design, gain insight into past/present security related issues, and exploit threat/vulnerability assessments to identify trends, understand threats and manage risks to fulfill certification and accreditation related requirements. This office also provides a recommendation to the Designated Approving Authority relating to system certification for the BMDS and its Elements. Additionally, this certification entails engagement in various activities to assess the security posture by 1) identifying opportunities to implement Defense-in-Depth (DiD) in Block 2006 and subsequent versions of the BMDS 2) providing oversight, coordination and management of all processes (e.g., definition and scope of ST&E's, vulnerability assessments, and risk mitigation strategies), and 3) by conducting cyber threat/vulnerability assessments in coordination with the Intelligence Community (IC) in order to influence BMDS risk, vulnerability, and ST&E resolution strategy.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Counterintelligence	4,052	2,643	3,105
RDT&E Articles (Quantity)	0	0	0

The MDA Counterintelligence Office serves as the MDA focal point for all counterintelligence (CI) matters and external coordination with the Services, the FBI, and other federal criminal investigative organizations. This office ensures that MDA leadership and the entire workforce are apprised of threats posed by Foreign Intelligence and Security Services (FISS) and terrorist groups worldwide.

FY05 Accomplishments:

- Developed a Technical Surveillance and Countermeasures (TSCM) Capability
- Developed an automated Travel Net Program
- Initiated an exhaustive counterintelligence (CI) review of Small Business Innovation Research (SBIR) proposals
- Initiated CI Mapping/Matrix Project for MDA Critical Program Information (CPI)
- Established on-site LNO at Defense Security Service

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<ul style="list-style-type: none">• Provided CI Support to PROJECT DOMAIN (FBI) and PROJECT BLUEPRINT (Naval Criminal Investigative Service (NCIS))• Implemented CI support model for MDA/TE• Published CI Threat Assessments and MDCITAs• Expanded and updated CI Database (Primes, SBIR, FBI, Mapping)• Fielded Remote Intelligence Support Capability• Developed/Implemented MDA CI Policy• Implemented CI portal of the MDA classified LAN <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Field Technical Surveillance and Countermeasures (TSCM) Capability• Implement automated Travel Net Program• Develop an MDA Insider Threat Program• Continue review of SBIR proposals• Continue to publish CI Threat Assessments and MDCITAs• Continue to develop, expand and populate CI databases <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Enhance TSCM capability• Enhance automated Travel Net Program• Implement MDA Insider Threat Program• Continue review of SBIR proposals• Continue to publish CI Threat Assessments and MDCITAs• Continue to develop, expand and populate CI databases• Conduct CI Assessments of MDA Test Ranges		

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	FY 2005	FY 2006	FY 2007
BMDS Certification	2,116	1,249	6,096
RDT&E Articles (Quantity)	0	0	0
<p>The BMDS Certification activity develops a comprehensive picture of the overall Information Assurance/Computer Network Defense (IA/CND) architecture at all levels of the BMDS.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Developed a certification recommendation on behalf of the BMDS components and overall system in time to fulfill Block 2004 release dates. • Conducted vulnerability assessments against the block release, to include White Team Assessments (e.g., policy, procedure and process review conducted by an unbiased third party). • Implemented risk management processes across the BMDS elements to prioritize and categorize vulnerabilities. This information helped decision makers understand the risks, select strategies to mitigate threats, and enhance the information systems infrastructure, while improving the security, command and control of essential systems. • Enhanced the confidentiality, integrity and availability of key systems, networks and data through direct participation in information assurance related activities designed to enforce requirements, verified and/or implemented essential processes, controls and procedures required by key systems as part of a defensive strategy. • Characterized existing Information Assurance (IA) related guidance (e.g., DoD 8500.2, Information Assurance Technology Framework (IATF), NSA, and DISA CND requirements) for use by systems engineers and program developers to facilitate incorporation of practices and procedures developed in accordance with emerging IA Technologies. <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Maintain the chartered Certification & Accreditation role and support levels to develop a certification recommendation consistent with the DITSCAP (DIACAP when effective) to support fielded components as well as the Block 06 release, including STSS, upgraded C2BMC `backbone`, SBX radar, ABL, and THAAD. • Provide domain expertise as the independent IA/CND think tank to assess the BMDS IA state and provide on-going IA/CND engineering guidance. • Leverage MDA Element engineering and IA development teams for the National Team and Prime Contractors to perform IA/CND architecture and design studies. • Manage all planning activities designed to support third party assessments (White/Blue/Red) of the BMDS. 			

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FY07 Planned Program:

- Maintain the chartered Certification & Accreditation role and support levels to develop a certification recommendation consistent with the DITSCAP (DIACAP when effective) to support fielded components as well as the Block 06 release, including STSS, upgraded C2BMC backbone, SBX radar, ABL, and THAAD.
- Provide domain expertise as the independent IA/CND think tank to assess the BMDS IA state and provide on-going IA/CND engineering guidance.
- Characterize mission specific and DoD IA/CND doctrine to realize BMDS lifecycle objectives.
- Decompose IA/CND requirements to enhance assessments and traceability.
- Leverage MDA Element engineering and IA development teams for the National Team and Prime Contractors to perform IA/CND architecture and design studies.
- Identify high-return/near-term deployment opportunities for IA/CND Element-level initiatives.
- Manage all planning activities designed to support third party assessments (White/Blue/Red) of the BMDS.

	FY 2005	FY 2006	FY 2007
Intelligence	21,984	15,123	14,721
RDT&E Articles (Quantity)	0	0	0

Note: The External Sensor Program was formerly known as the National Sensor Integration Rapid Prototyping (NSIRP) program and was funded under this PE through FY06. Starting in FY07 the External Sensor Program will be funded as a Block 2010 activity (Project 0011) within the Sensors Program Element (0603884C).

The Intelligence activity ensures the development, study and exploitation of relevant, actionable threat information, and makes this information available to all MDA organizations. Through this activity, authoritative, current and projected threat data are provided to support MDA leadership, Ballistic Missile Defense System (BMDS) architecture design, testing, modeling, and wargaming activities, and existing/future national technical means are leveraged to enhance the effectiveness of the BMDS.

FY05 Accomplishments:

- Expanded MASINT reporting data streams to BMD nodes through increasing number of assets used in warning of potential launch events and co-process these data streams with other assets to bring higher confidence of detection and characterization and reduce the potential for false alarms.
- Expanded worldwide missile event reporting capability to provide for near real-time (NRT) assessment and fusion of signature and metric performance data sets to evaluate reporting on threat ballistic missiles and to support fusion of national technical means.

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<ul style="list-style-type: none">• Enhanced and expanded the Missiles and Rockets Knowledge Base (MARKB).• Enhanced UMPIRE (a universal tool to allow BMDS planners and warfighters to access disparate Intelligence Community (IC) databases using a single interface).• Developed intelligence-based plume and signature data for C2BMC and the COCOMs.• Provided threat support in all MDA sponsored and supported wargames and exercises.• Provided daily intelligence support to the MDA Director, his Principal Staff Officers, and the Missile Defense Operations Center (MOC). <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Further enhance and expand the Missiles and Rockets Knowledge Base (MARKB).• Further develop UMPIRE (a universal tool to allow BMDS planners and warfighters to access disparate Intelligence Community (IC) databases using a single interface).• Develop intelligence-based plume and signature data for C2BMC and the COCOMs.• Provide threat support in all MDA sponsored and supported wargames and exercises.• Provide daily intelligence support to the MDA Director, his Principal Staff Officers, and the Missile Defense Operations Center (MOC).• Upgrade External Sensor Laboratory (ESL) hardware.• Establish development and demonstration hardware configuration.• ESL accreditation.• Establish connectivity to C2BMC.• Demonstrate cueing of Forward Based Sensor. <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Further enhance and expand the Missiles and Rockets Knowledge Base (MARKB).• Further enhance UMPIRE (a universal tool to allow BMDS planners and warfighters to access disparate Intelligence Community (IC) databases using a single interface). Develop intelligence-based plume and signature data for C2BMC and the COCOMs.• Provide threat support in all MDA sponsored and supported wargames and exercises.• Provide daily intelligence support to the MDA Director, his Principal Staff Officers, and the Missile Defense Operations Center (MOC).		

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C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

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D. Acquisition Strategy

In support of acquiring an effective BMDS capability, this project directs various executing agents and leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the military departments, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS.

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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Counterintelligence								
Analysis and Support	C/FFP	Beta Analytics Int'l, Inc./ Wash, DC	3,777	2,343	1/2Q	2,621	1/2Q	8,741
Analysis and Support	Various	Various/ Various	275	300	1/4Q	484	1/4Q	1,059
Intelligence								
Leverage Existing/Future Assets	MIPR	USAF/ SMC, Los Angeles, CA	6,200	1,130	1/4Q	0	N/A	7,330
Leverage Existing/Future Assets	Various	Various/ JNIC, CO; NSWC, VA; USAF, OH	3,271	2,375	1/4Q	0	N/A	5,646
Intelligence Support Center	SS/CPAF	JNIC - Northrop Grumman/ Shriever AFB, CO	2,000	1,350	1/3Q	1,750	1/3Q	5,100
Scenario Applications	Various	SMDC - TSC/ Huntsville, AL	5,067	2,043	1/3Q	2,750	1/3Q	9,860

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Characterization	SS/CPAF	JNIC - Northrop Grumman/ Shriever AFB,CO	4,198	2,000	1/3Q	2,255	1/3Q	8,453
Current Intelligence & Portal	Various	Various/ Various	2,135	1,089	1/3Q	1,606	1/3Q	4,830
Wargaming	SS/CPAF	JNIC - Northrop Grumman/ Shriever AFB,CO	650	380	1/2Q	438	1/2Q	1,468
Studies & Scenario Development	Various	Various/ Various	1,221	419	2/4Q	670	2/4Q	2,310
Subtotal Support Costs			28,794	13,429		12,574		54797

Remarks

Prior to FY05, Counterintelligence funding was contained under PE 0901598C (MDA Management Headquarters).

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

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

Remarks

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IV. Management Services Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
BMDS Certification								
Certification & Validation Support	FFRDC	Multiple/ Los Angeles, CA; Ft Monmouth, NJ	2,116	1,249	1/2Q	6,096	1/2Q	9,461
Intelligence								
Project Management Support	FFRDC	SMC (Aerospace)/ Los Angeles, CA	1,530	960	1Q	990	1Q	3,480
Project Management	C/FFP	BAH/ McLean, VA	10,257	2,349	1/4Q	2,862	1/4Q	15,468
Project Management	SS/TM	PRA/ San Diego, CA	2,023	1,028	1/3Q	1,400	1/3Q	4,451
Subtotal Management Services			15,926	5,586		11,348		32860

Remarks

Prior to FY05, BMDS Certification funding was contained in PE 0901598C (MDA Management Headquarters).

Project Total Cost			44,720	19,015		23,922		87,657
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Intelligence																																
Update and Maintain Foreign Missile Knowledge Base	▲				▲				▲				▲				▲				▲				▲							
Intelligence Support Center	▲				▲				▲				▲				▲				▲				▲							
Studies and Scenario Development	▲				▲				▲				▲				▲				▲				▲							
Wargaming Support	▲				▲				▲				▲				▲				▲				▲							
Counterintelligence																																
CI Investigations & Operations Updates	▲				▲				▲				▲				▲				▲				▲							
Defense Threat Assessments	▲				▲				▲				▲				▲				▲				▲							
Multi-Discipline CI Threat Assessments	▲				▲				▲				▲				▲				▲				▲							
BMDS Certification																																
Certification and Accreditation	▲				▲				▲				▲				▲				▲				▲							
Systems Engineering & Validation	▲				▲				▲				▲				▲				▲				▲							
CND Threat/Modeling & Simulation	▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲	

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Intelligence							
Update and Maintain Foreign Missile Knowledge Base	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence Briefings	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence Support Center	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Studies and Scenario Development	1Q-4Q	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	1Q-4Q
Counterintelligence							
CI Investigations & Operations Updates	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Defense Threat Assessments	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence Information Reports	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Multi-Discipline CI Threat Assessments	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Summaries and Readbooks	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Travel Briefings & Debriefings	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
BMDS Certification							
Certification and Accreditation	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Systems Engineering & Validation	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
CND Threat/Modeling & Simulation	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q	2Q,4Q

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date February 2006		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE			
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603890C Ballistic Missile Defense System Core			

COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0103 Producibility & Manufacturing Technology	36,540	32,752	36,921	40,247	43,214	44,112	45,028
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: In FY05 and FY06, \$6.5M and \$9.0M of Project 0103 core funding respectively, was reprogrammed to an industrial investment appropriation on a trial basis to better leverage MDA Producibility and Manufacturing Technology efforts. These efforts have produced new lightweight batteries for spacecraft, improved radiation hardness for BMDS kill vehicles, and started a competitor to the sole source provider of all Department of Defense thermal reserve batteries. The benefits derived from this initial effort will determine the level of potential reprogrammings in future years.

A. Mission Description and Budget Item Justification

Producibility and Manufacturing Technology (MP) is integral to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the implementation of two-year capability blocks. An essential component of strong systems engineering practices, MP provides common, integrated programs across the BMDS Elements to ensure mature industrial manufacturing capabilities are available to the Blocks through risk reduction, cost reduction/avoidance, and performance enhancement. MP furthers efforts in commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts.

MP provides crosscutting BMDS manufacturing risk assessments, industrial capability assessments, and near term (1-3 year) producibility enhancements. Manufacturing risk assessments are accomplished through Engineering and Manufacturing Readiness Level (EMRL) Assessments, the MP systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes for BMDS and the Elements that insert into the BMDS Risk Management Process. Industrial Capability Assessments (ICAs) are accomplished broadly across the BMDS Industrial Base where trades are performed to assess and analyze the original equipment manufacturers (OEMs), supplier base, and others that produce end items for the BMDS. Near term producibility enhancements are accomplished through efforts in a number of key investment areas: Power Systems, Radiation Hardening (RAD HARD), Manufacturing Process Improvements, Electro-Optics/Infrared (EO/IR), Radar RF / Electronics, Propulsion, Advanced Materials and Structures, Anti-Tamper, and additional areas as required for integration efforts of Low Cost Kill Vehicle (LCKV). All MP investments within these areas are applied towards near term manufacturing improvements/producibility enhancements. These efforts are programmed for BMDS Element integration within a three to five year timeframe. In FY05 there was a significant increase in resources applied to the RAD HARD program. This increase is a result of BMDS near term capability improvements desired for the Block 06 BMDS and is part of the overall funding profile for the RAD HARD electronics program.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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<u>B. Accomplishments/Planned Program</u>			
	FY 2005	FY 2006	FY 2007
Power Systems	4,196	3,239	3,500
RDT&E Articles (Quantity)	0	0	0

The Power Systems objective is to establish a long-term, viable, world-class manufacturer of high performance thermal batteries that are responsive to requirements with respect to quality, delivery, and price for various configurations of thermal batteries. To accomplish this, Power Systems projects focus on providing alternative higher energy density power sources for BMDS systems that are more producible, reliable, and predictable. Projects also focus on developing new and improving manufacturing technologies and processes as well as the development of second source vendors with alternate technologies. These projects include advanced but available thermal power sources for interceptors, as well as other advanced primaries for Ground Based Interceptors and THAAD Program Kill Vehicles. Higher density secondary (rechargeable) power sources for missile defense applications and advanced but available solar array technology that can be hardened against natural and enhanced radiation environments are also required.

Eagle Picher (EP) Projects

Lithium oxyhalide batteries for Ground Based Interceptor Exoatmospheric Kill Vehicles and THAAD Kill Vehicles are mostly handmade, built from drawings and procedures that are not sufficiently capable of conveying the subtleties of construction. Manufacturing and Producibility improvement projects will improve EP responsiveness with respect to quality, delivery and price. Eagle-Picher will implement six-sigma lean and best manufacturing techniques in order to optimize oxyhalide battery production. Under MDA effort, the oxyhalide manufacturing area underwent a full Value Stream Mapping (VSM) exercise last year that resulted in an optimized to be layout that improves production flow, reduces task time and production costs. EP will implement the agreed to changes as EKV and THAAD production schedule allows. Additionally, they will implement a software-based expert system that allows battery assembly workers to automatically access highly detailed build and inspection procedures for lithium oxyhalide and thermal batteries. The MDA funded projects will also include a program to assist Eagle-Picher in developing high fidelity battery design, performance, and process models that will allow optimizing and improving design and manufacturability of MDA batteries.

FY05 Program Accomplishments:

- Improved Processes for Lithium Oxyhalide Batteries
- Mitigated battery build and inspection errors -Build Expert System
- Improved and optimized MDA batteries produced at EP
- Improved MDA battery manufacturing processes
- Developed an Advanced Lithium-Ion Battery for space applications

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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- Developed and prioritized a battery roadmap for MDA - MDA Battery Steering Group

FY06 Planned Program:

- Second source battery for GBI EKV
- MDA Battery Steering Group - Maintaining and prioritizing MDA/MP Battery investments
- Continue Eagle Picher Technologies (EPT) manufacturing improvements projects.
- Develop an Advanced Lithium-Ion Battery for space applications

FY07 Planned Program:

- Completion of EP Projects
- Implementation of THAAD cold operating temperature improvement battery
- MDA Battery Steering Group - Maintaining and prioritizing MDA/MP Battery investments

	FY 2005	FY 2006	FY 2007
Radiation Hardening	11,384	11,913	14,221
RDT&E Articles (Quantity)	0	0	0

The Radiation Hardening objective is to provide an integrated strategy to increase the availability of affordable Radiation Hardened (RH) and Radiation Tolerant (RT) devices for BMDS. Efforts include: support of programs at established foundries for critical devices being developed under the Radiation Hardening Oversight Council (RHOC), support programs at specified commercial foundries that utilize special Hardness by Design (HBD) rules to enhance radiation hardness with commercial manufacturing processes and practices, enhanced circuit modeling and simulation capabilities to better predict radiation hardness levels, developing a catalog of RH and RT devices available to MDA system designers, and exploring alternate hardening techniques.

FY05 Program Accomplishments:

- Developed initial phase of Inertial Measurement Unit (IMU) Interface Electronics in support of an MDA core standard for electronics capable of IMU interchangeability
- Initiated Virtually Hard Field Programmable Gate Array (FPGA) involving the use of commercial FPGAs with and without hard wired processor cores
- Produced Rad Hard Common Processor for missile applications involving stacking, shielding and survivability assessment

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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- Conducted Detector Testing - radiation tolerance testing of EKV long wave IR and visible sensors relative to High Altitude Exoatmospheric Nuclear Survivability (HAENS) standard
- Conducted HAENS Standard testing of focal plane arrays (VLWIR, 2-color LW/LW, visible and associated read-out electronics), and other commercial electronic devices to include IMU electronics
- Continued packaging, development and assessment of Non-Volatile C-RAM program
- Continued packaging, development, and assessment of EEPROM program

FY06 Planned Program:

- Continue IMU Interface Electronics development in support of an MDA core standard for electronics capable of IMU interchangeability
- Continue Virtually Hard FPGA development and assessment involving the use of commercial FPGAs with and without hard wired processor cores
- Continue Detector Testing - radiation tolerance testing of EKV long wave IR and visible sensors relative to HAENS standard
- Continue HAENS Standard testing of focal plane arrays (VLWIR, 2-color LW/LW, visible and associated read-out electronics), and other commercial electronic devices to include IMU electronics

FY07 Planned Program:

- Continue IMU Interface Electronics development in support of an MDA core standard for electronics capable of IMU interchangeability
- Continue Virtually Hard FPGA development and assessment involving the use of commercial FPGAs with and without hard wired processor cores
- Continue Detector Testing - radiation tolerance testing of EKV long wave IR and visible sensors relative to HAENS standard
- Continue HAENS Standard testing of focal plane arrays (VLWIR, 2-color LW/LW, visible and associated read-out electronics), and other commercial electronic devices to include IMU electronics

	FY 2005	FY 2006	FY 2007
Manufacturing Process Improvements	1,996	2,000	1,400
RDT&E Articles (Quantity)	0	0	0

The Manufacturing Process Improvements objective is to identify manufacturing processes and practices that serve both short-term and long-term MDA requirements. Efforts to accomplish this include: reducing unit cost for major subsystems in MDA systems, exploiting commercial practices to reduce capitalization costs, reducing timelines for long lead items through rapid prototyping of items with audit trail to demonstrated manufacturing heritage, eliminating hazardous or difficult to obtain materials that may add to cost and schedule, introducing metrics such as Engineering and

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<p>Manufacturing Readiness Levels (EMRLs) to assure technologies are ready for insertion in MDA systems, and providing prime contractors and major subcontractors with support to adopt best practices and lean manufacturing to enhance productivity. Additionally this area addresses overarching industrial base issues such as supply chain management, critical suppliers, parts obsolescence, and technology refresh.</p> <p>FY05 Program Accomplishments:</p> <ul style="list-style-type: none">• Continued Technology Refresh efforts• Initiated Tin Whisker effort to better understand the physics of failure• Developed processes for robotic soldier dipping of leads and embedding die on printed circuit cards to mitigate tin whisker risk• Continued RLSN efforts to develop, demonstrate, and deploy tools to evaluate risks in the supply chain of weapons systems• Continued inter-service activities in manufacturing technology, EMRLs/MRLs, and batteries• Conducted Lean Pathways events at several prime/original equipment manufacturers (OEMs) and supplier companies <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Complete RLSN effort• Continue efforts to mitigate tin whisker growth risk• Continue inter-service activities in manufacturing technology• Begin deploying technology refresh tools• Continue Lean Pathway events at several prime/OEMs and supplier companies <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Implement embedded die process in the BMDS• Host the Defense Manufacturing Conference• Expand Lean Pathways to other BMDS customers• Integrate technology refresh and critical supplier results into corporate MDA risk mitigation strategy		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
	FY 2005	FY 2006	FY 2007
Electro-Optics/Infrared (EO/IR)	8,096	9,400	6,900
RDT&E Articles (Quantity)	0	0	0
<p>The Electro-Optics/Infrared (EO/IR) objective is to implement producibility and reliability programs to assure availability of Radiation Hardened (RH) and Radiation Tolerant Infrared (RT IR) and visible Focal Plane Arrays (FPAs), readouts, cryocoolers and optics to meet the diverse requirements of BMDS systems for missile and satellite environments.</p> <p>FY05 Program Accomplishments:</p> <ul style="list-style-type: none"> • RH Scalable Missile Telescopes - low cost alternative materials and processing development and assessment • Technology developed for SiC Mirrors polishings and coatings • Two Color (LW/LW) Detector producibility and radiation tolerant assessment • Made developments in Light Detection and Ranging (LIDAR) Detector to improve detector sensitivity enabling improvement detection range • Tested device performance of Laser RADAR (LADAR) • Space Cryocooler Thermal and Electronics development and assessment • Conducted Environmental Testing for Two Color (LW/LW) missile kill vehicle applications • Developed improved RH (proton radiation) large 256X256 array VLWIR Detectors for satellite surveillance applications • Developed RH Visible Sensors for satellite and surveillance applications • Stacked Electronics Processing development and assessment to improve density and radiation tolerance of missile kill vehicle electronics <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • RH Scalable Missile Telescopes - optical component alignment technology and development (Silicon Carbide, Silicon, Carbon Composite) • SiC Mirrors polishing preprocessing and radiation hardened coatings technology development • Satellite payload cryocooler radiation hardened electronics development and assessment • 2-color IR detector and readout process yield and improved radiation tolerance • Development of improved RH (proton radiation) large 256X256 array VLWIR Detectors for missile and satellite surveillance applications • RH Visible Sensors development for missile and satellite surveillance applications 			

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FY07 Planned Program:

- RH Scalable Missile Telescopes - radiation hardening of alternative materials and assessment
- SiC Mirrors polishing and radiation hardened coatings technology development
- LIDAR Detector radiation hardening
- Development of improved RH (proton radiation) large 256X256 array VLWIR Detectors for missile and satellite surveillance applications
- RH Visible Sensors development for missile and satellite surveillance applications

	FY 2005	FY 2006	FY 2007
Radar RF / Electronics	3,296	2,000	3,500
RDT&E Articles (Quantity)	0	0	0

The Radar RF / Electronics objective is to provide subsystem improvements to enhance BMDS radar performance and sensitivity for emerging threats. Efforts to accomplish this will include: demonstrating producibility and reliability of high-power amplifiers, introducing producible materials and technologies to enhance thermal management, improving manufacturability of Transmit/Receive (T/R) Modules and Transmit/Receive Integrated Microwave Modules (TRIMMs) for cost and schedule, introducing Open System approaches and architecture to prevent parts obsolescence and stimulate competition at the subsystem level, and introducing composite materials to reduce antenna weight and improve transportability.

FY05 Program Accomplishments:

- Continue the High Power Electronics Reliability Test program - continue reliability testing of High Voltage GaAs MMICs at Naval Research Lab (NRL) and initiate reliability testing of Gallium Nitride (GaN) MMICs at NRL, Naval Surface Warfare Center -Crane, IN (NSWC-Crane), Penn State University-Applied Research Lab (PSU-ARL), and Air Force Research Lab (AFRL).
- Continue the Joint SiC MMIC Producibility Enhancement program - produce 3-inch diameter semi-insulating SiC wafers with greater MMIC yield.
- Complete the Joint High Voltage GaAs MMIC Producibility program - produce MMIC lots for independent reliability testing
- Initiate the 4-inch Diameter Semi-Insulating (SI) SiC Wafer Producibility program.
- Initiate Moduleless Transmit/Receive Integrated Microwave Modules (TRIMM) program.
- Conduct Hardware-in-the-Loop (HWIL) testing of Advanced Optical Processor (AOP) 2 Architecture - field testing to gather target data.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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FY06 Planned Program:

- Continue the High Power Electronics Reliability Test program - complete reliability testing of High Voltage GaAs MMICs at NRL and continue reliability testing of GaN MMICs at NRL, NSWC-Crane, PSU-ARL, and AFRL.
- Complete the Joint SiC MMIC Producibility Enhancement program - produce 3-inch diameter semi-insulating SiC wafers with greater MMIC yield.
- Continue the 4-inch Diameter SI SiC Wafer Producibility program - introduce second source for 4-inch SI SiC wafers.
- Develop and design Moduleless TRIMM architecture
- Completion of the Advanced Optical Processor (AOP) testing
- ALCOR insertion testing

FY07 Planned Program:

- Continue the High Power Electronics Reliability Test program - continue reliability testing of GaN MMICs at NRL, NSWC-Crane, PSU-ARL, and AFRL
- Continue the 4-inch Diameter SI SiC Wafer Producibility program - produce 4-inch SI SiC wafers from multiple vendors
- Initiate the 4-inch diameter SI GaN Wafer Producibility program
- Fabricate and test Moduleless TRIMMs

	FY 2005	FY 2006	FY 2007
Propulsion	4,296	2,700	2,500
RDT&E Articles (Quantity)	0	0	0

The Propulsion objective is to provide affordable, reliable propulsion systems/subsystems for the BMDS Elements. Efforts to achieve this objective will include: introducing innovative high-temperature materials to replace refractory metals reducing cost, weight and manufacturing time; implementing lean manufacturing and quality control to recapture cost and schedule for affected BMDS Elements; and executing programs to address scalability in propulsion systems addressing endurance, erosion resistance and improved manufacturing processes.

FY05 Program Accomplishments:

- Characterized C-SiC material properties from alternate sources to evaluate manufacturing process variation on material strength under high temperature, high pressure operation
- Initiated a producibility improvement for the TDACS divert thruster system, using braided C-SiC, to reduce part count and improve performance for BMDS applications

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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- Developed concept definition of proportional controlled solid DACS components for application to BMDS interceptors
- Executed efforts to address insensitive munitions for Missile Defense Systems

FY06 Planned Program:

- Execute hot gas testing of braided C-SiC thruster assemblies developed in FY05
- Continue material characteristics testing of high temperature materials for propulsion system applications
- Evaluate near term technologies to address insensitive munitions issues within the BMDS
- Hot fire test component demonstrations developed as part of the concept definition for proportional controlled solid DACS systems
- Further mature proportional DACS technologies for application to Midcourse and Boost defense missions

FY07 Planned Program:

- Complete data reduction on FY06 hot fire tests
- Execute design and development of MKV sized attitude control system thrusters/actuators
- Develop and demonstrate sealed up embedded divert thruster for application to next generation solid DACS systems for BMDS interceptors

	FY 2005	FY 2006	FY 2007
Advanced Materials & Structures	3,276	1,500	2,500
RDT&E Articles (Quantity)	0	0	0

The Advanced Materials & Structures objective is to replace exotic material such as Beryllium and Lithium Aluminum alloys with polymer matrix composites (PMCs) and metal matrix composites (MMCs) that exhibit equivalent strength and stiffness while being more easily producible at a lower cost. Program also aims to provide manufacturing processes, similar to those in commercial industry, that allow rapid prototyping and limited production without long lead times for: Interceptor and KV structures, Radar and EO Seekers, and missile canisters and launchers.

FY05 Program Accomplishments:

- Developed an assembly more amenable to radiation hardening at a reduced cost - Composite Mirror Structure
- Developed compatibility with both KEI and EKV at a reduced cost - Liquid Divert and Attitude Control System (LDACS) Structure
- Met schedule milestones and produced better performing products at a reduced cost - KEI Radome
- Produced prototype hardware at a reduced cost in time for preliminary design review and dynamic inert model tests - KEI Payload Adapter
- Developed an improved nosecone at a reduced cost - KEI Nosecone

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FY06 Planned Program:

- Continue to develop an assembly more amenable to radiation hardening at a reduced cost - Composite Mirror Structure
- Continue to develop compatibility with both KEI and EKV at a reduced cost - Liquid Divert and Attitude Control System (LDACS) Structure
- Continue to meet schedule milestones and produce better performing products at a reduced cost - KEI Radome
- Continue to produce prototype hardware at a reduced cost in time for preliminary design review and dynamic inert model tests - KEI Payload Adapter
- Continue to develop an improved nosecone at a reduced cost - KEI Nosecone

FY07 Planned Program:

- Continue to focus on advanced materials in radiation hardening, structures, mirrors, thermal management and propulsion that could assist modular or scalable efforts on kill vehicles and missile structures that reduce cycle times and enhance BMDS performance

	FY 2005	FY 2006	FY 2007
Anti-Tamper	0	0	2,400
RDT&E Articles (Quantity)	0	0	0

The Anti-Tamper objective is to provide protection against reverse engineering of BMDS critical technologies vulnerable to exploitation as a result of Battlefield Loss, Foreign Military Sales (FMS), or Cooperative Development. Robust Anti-Tamper solutions support coalition warfare and extend the effective operational life of the BMDS.

FY07 Planned Program:

- Command Destruct continue to develop and test a command destruct technology that protects information residing on computer hard-drives, while limiting collateral damage to surrounding systems or personnel
- Software Solutions continue to identify and develop software-based protection solutions that provide robust tamper protection at a minimal cost and with minimal system redesign
- Specialized Solutions Identify opportunities to leverage DoD investment in long-lead time protection technologies that will provide robust protection while minimizing non-recurring expenses

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C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	

D. Acquisition Strategy

Producibility and Manufacturing Technology (MP) adheres to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. Working with the BMDS Elements, MP identifies and executes programs that improve manufacturing and producibility for the BMDS. This is accomplished by leveraging maturing manufacturing technologies with the services and other government agencies. MP also leverages industry investments and uses Element cost share in hardware for component producibility improvements. For efficiency, MP utilizes existing MDA and service contract vehicles when possible to execute the program.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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I. Product Development Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Power Systems								
Battery Efforts	MIPR	NSWC/ Crane, IN	4,140	2,427	1Q	2,657	1Q	9,224
Radiation Hardening								
Rad Hard	Various	AFRL/ Kirtland, NM	5,834	3,957	1/2Q	4,879	1Q	14,670
Rad Hard	Various	SMDC/ Huntsville, AL	4,737	3,116	1/2Q	3,486	1Q	11,339
Rad Hard	MIPR	Various	4,730	3,115	2Q	3,704	1/2Q	11,549
Manufacturing Process Improvements								
Tech Refresh/RLSN	CPFF	ATI	1,300	900	2Q	300	1Q	2,500
Tin Whisker	CPFF	ONR/VA	650	258	1Q	200	1Q	1,108
Manufacturing Processes	MIPR	Various	210	100	2Q	81	1/2Q	391
Electro-Optics/Infrared (EO/IR)								
EO/IR	Various	AFRL/ Kirtland, NM	6,630	3,967	2Q	1,676	1Q	12,273
EO/IR	CPFF	Fibertek/ Hendon, VA	3,620	1,424	2Q	1,080	1Q	6,124
EO/IR	Various	SMDC/ Huntsville, AL	3,520	1,367	2Q	1,500	1Q	6,387
EO/IR	MIPR	DMEA/ MCLELLAN, CA	0	1,500	2Q	1,500	2Q	3,000
Radar RF / Electronics								
SiC MMIC	Various	AFRL/ Kirtland, NM	900	550	1Q	1,000	1Q	2,450
RF Device Test	MIPR	NRL/ Washington, DC	918	158	1Q	681	1Q	1,757

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
High Voltage GaAs	CPFF	Triquint/TX	1,017	150	1/2Q	600	1/2Q	1,767
RF	MIPR	Various	1,125	200	1Q	300	1Q	1,625
Propulsion								
SMDC	CPFF	Aerojet/ Sacramento, CA	4,410	1,066	1Q	956	1Q	6,432
Propulsion	MIPR	NSWCCD/MD	800	247	1Q	218	1Q	1,265
Propulsion	MIPR	ATK/Elkton, MD	800	250	1Q	215	1Q	1,265
Propulsion	MIPR	Various	763	245	2Q	219	2Q	1,227
Advanced Materials & Structures								
Advanced Materials	CPFF	San Diego Composites/ San Diego, CA	2,035	631	1Q	1,093	1Q	3,759
Advanced Materials	CPFF	Mentis Sciences, Inc./ Manchester, NH	628	150	1Q	304	1Q	1,082
Advanced Structures	Various	SMDC/ Huntsville, AL	2,040	219	1Q	335	1Q	2,594
Anti-Tamper								
Anti-Tamper	MIPR	NSWC CRANE/ CRANE, IN	0	0	N/A	1,588	N/A	1,588
Subtotal Product Development			50,807	25,997		28,572		105376
Remarks								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Power Systems								
Battery Efforts	MIPR	NSWC/ Crane, IN	460	200	1/2Q	250	1/2Q	910
SETA	FFP	DRC, SPARTA/ VA	784	350	1Q	356	1Q	1,490
Radiation Hardening								
Rad Hard	Various	AFRL/ Kirtland, NM	710	376	1Q	537	1Q	1,623
Rad Hard	Various	SMDC/ Huntsville, AL	500	275	1Q	393	1Q	1,168
Rad Hard	MIPR	NSWC CRANE/ IN	477	327	1Q	468	1Q	1,272
SETA	FFP	DRC, SPARTA/ VA	784	485	1Q	517	1Q	1,786
Manufacturing Process Improvements								
Tech Support	MIPR	REDCOM/AL	180	96	1Q	117	1Q	393
Tech Support	MIPR	NSWC/ Crane, IN	160	77	1Q	94	1Q	331
JDMTP	MIPR	ONR/VA	100	51	2Q	63	2Q	214
SETA	FFP	DRC, SPARTA/ VA	784	256	1Q	308	1Q	1,348
Electro-Optics/Infrared (EO/IR)								
EO/IR	Various	AFRL/ Kirtland, NM	720	246	1/2Q	272	1/2Q	1,238
EO/IR	CPFF	Fibertek/ Herndon, VA	435	138	1/2Q	139	1/2Q	712

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core				
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
EO/IR	Various	SMDC/ Huntsville, AL	375	192	1Q	193	1Q	760
SETA	FFP	DRC, SPARTA/ VA	784	304	1Q	303	1Q	1,391
Radar RF / Electronics								
SiC MMIC	CPFF	CREE/NC/ Triquint/TX	100	41	1Q	41	1Q	182
RF Device Test	MIPR	NRL/ Washington, DC	113	64	1Q	65	1Q	242
High Voltage GaAs	CPFF	Triquint/TX	102	79	1/2Q	79	1/2Q	260
RF	Various	Various	125	92	1Q	92	1Q	309
SETA	FFP	DRC, SPARTA/ VA	784	404	1Q	405	1Q	1,593
Propulsion								
SMDC	CPFF	Aerojet/ Sacramento, CA	490	175	1Q	182	1Q	847
Propulsion	MIPR	NSWCCD/MD	95	40	1Q	41	1Q	176
Propulsion	MIPR	ATK/ Elkton, MD	95	40	1Q	41	1Q	176
Propulsion	MIPR	Various	73	40	1/2Q	41	1/2Q	154
SETA	FFP	DRC, SPARTA/ VA	784	335	1Q	350	1Q	1,469
Advanced Materials & Structures								
Advanced Materials	CPFF	San Diego Composites/ San Diego, CA	221	59	1Q	162	1Q	442

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Advanced Materials	CPFF	Mentis Sciences, Inc./ Manchester, NH	68	38	1Q	45	1Q	151
Advanced Structures	Various	SMDC/ Huntsville, AL	211	41	1Q	49	1Q	301
SETA	FFP	DRC, SPARTA/ VA	784	100	1Q	275	1Q	1,159
Anti-Tamper								
SETA	FFP	DRC, SPARTA / VA	0	0	N/A	375	1/2Q	375
ANTI-TAMPER	MIPR	NSWC CRANE/ CRANE, IN	0	0	N/A	200	1/2Q	200
Subtotal Support Costs			11,298	4,921		6,453		22672

Remarks

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

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

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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IV. Management Services Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Power Systems								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Radiation Hardening								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Manufacturing Process Improvements								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Electro-Optics/Infrared (EO/IR)								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Radar RF / Electronics								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Propulsion								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Advanced Materials & Structures								
Govt Personnel		MDA/ VA	386	262	1/2Q	237	1/2Q	885
Anti-Tamper								
Govt Personnel		MDA/ VA	0	0	N/A	237	1/2Q	237
Subtotal Management Services			2,702	1,834		1,896		6432
Project Total Cost			64,807	32,752		36,921		134,480

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Power Systems																																
Li-Ion Battery Mgmt System Line	▲				▲				▲				▲				▲				▲				▲				▲			
Baseline Materials Characterization	▲																															
Complete Eagle Picher Projects													▲																			
Block 08/10 Power Projects													▲				▲				▲											
Radiation Hardening																																
HAENS Testing	▲				▲				▲				▲				▲				▲				▲							
Virtually-Hard FPGA Device Trials	▲				▲				▲				▲																			
LCKV Detector Survivability Assessment					▲																											
CRAM and EEPROM Availability Testing					▲																											
IMU Core Standard					▲				▲				▲																			
Low Cost Kill Vehicle Electronics					▲				▲				▲				▲				▲				▲							
LCKV Detector Radiation Hardened									▲				▲																			
Block 08/10 Hardening Projects																	▲				▲				▲							
Manufacturing Process Improvements																																
Tin Whisker Testing	▲																															
Robust Lean Supplier Network Demonstration	▲				▲				▲																							

Legend

<ul style="list-style-type: none"> ▲ Significant Event (complete) ★ Milestone Decision (complete) ◆ Element Test (complete) ▽ System Level Test (complete) ▲ Complete Activity 	<ul style="list-style-type: none"> ▲ Significant Event (planned) ★ Milestone Decision (planned) ◆ Element Test (planned) ▽ System Level Test (planned) ▲ Planned Activity
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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2006

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Manufacturing Process Improvements																													
Dev and Deplmnt of Sup Chain Dec Spt		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
Demonstrate Tech Refresh Tool Int Concept			▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
Industrial Partnership Effort with Suppliers																													
Block 08/10 Supplier Upgrades																													
EO/IR																													
SiC Mirrors Testing				▲																									
Two Color Envnmntal and Radiation Testing				▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
Satellite Sensor Testing																													
Rad Hard VLWIR FPA and Visible FPA Detector Prot																													
Rad Hard 1.06um Detector Testing																													
Advanced Detector Testing																													
Radar & RF																													
HPA/MMIC Reliability Testing																													
High Voltage GaAs MMIC Producibility																													
4-inch Diameter SiC Water Producibility																													
SiC Device Producibility Program																													

Legend

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

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Radar & RF																												
Radar Sub-Array Demonstrator (MPSD)					▲	▲			▲																			
Block 08/10 Radar Component Upgrades																												
Propulsion																												
MKV Thruster Development		▲	▲		▲				▲																			
SM-3 TDACS Comp Dev and Testing		▲	▲		▲			▲																				
Material Characterization				▲	▲				▲																			
KEI Thruster Development					▲	▲			▲																			
Health Monitoring and Insensitive Munitions																												
THAAD TDACS Thruster Development																												
Advanced Materials and Structures																												
KEI Cost/Weight Reduction		▲	▲		▲				▲																			
Dorsal and Control Surf Cost Reduction				▲	▲				▲																			
KEI Nosecone Risk Reduction Testing				▲																								
Lightweight Ballistic Canister Protection Testing				▲																								
CC Telescope Housing Fabrication Process Testing								▲																				
Block 08/10 Component Material Upgrades																												

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail					Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Power Systems							
Battery Manufacturing Improvements	1Q-4Q	1Q-2Q					
Li-Ion Battery Mgnt System Line	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Baseline Materials Characterization	2Q						
Technology Roadmap Planning Meeting	2Q						
Relocation of Oxyhalide Production Line	3Q						
Computer Aided Process/Planning	4Q						
Solar & Fuel Cells, High Capacity Storage Devices		4Q					
Complete Eagle Picher Projects			4Q				
Block 08/10 Power Projects				2Q-4Q	1Q-4Q	1Q-3Q	
Radiation Hardening							
HAENS Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Rad Hard Catalog	1Q-4Q	1Q-3Q					
COTS FPGA Assessment	2Q						
Virtually-Hard FPGA Device Trials	2Q-4Q	1Q-3Q	3Q				
LCKV Detector Survivability Assessment	3Q						
CRAM and EEPROM Availability Testing	4Q						
Detector Testing	4Q						
IMU Core Standard		1Q-4Q	1Q-4Q				
Rad Hard common Processor		1Q					
THAAD Detector/IMU Survivability Assessment		1Q					
Low Cost Kill Vehicle Electronics		2Q-4Q	1Q-4Q	1Q-4Q	1Q		
LCKV Detector Radiation Hardened			4Q				
Block 08/10 Hardening Projects					2Q-4Q	1Q-4Q	1Q-3Q
Manufacturing Process Improvements							
Tin Whisker Testing	2Q						
Robust Lean Supplier Network Demonstration	2Q-4Q	1Q-3Q					
Dev and Deplmnt of Sup Chain Dec Spt	2Q-4Q	1Q-4Q	1Q				
Demonstrate Tech Refresh Tool Int Concpt	4Q	1Q-4Q	1Q-3Q				
Industrial Partnership Effort with Suppliers		4Q	1Q-4Q	1Q-4Q			

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail					Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Block 08/10 Supplier Upgrades				2Q			
Technology Refresh	2Q						
EO/IR							
Two Color FPA	3Q						
SiC Mirrors Testing	4Q						
Stacked Electronics Processing Prototypes	4Q						
Two Color Envmtal and Radiation Testing	4Q	1Q-4Q	1Q-4Q	1Q-3Q			
Hybrid/Stirling Cryocooler Electronics		1Q					
Scalable SiC Mirror Assembly/Inspection		1Q					
Satellite Sensor Testing		3Q-4Q	1Q-4Q	1Q-4Q			
Hybrid Stirling/Cryocooler		4Q					
Rad Hard VLWIR FPA and Visible FPA Detector Prot		4Q					
Rad Hard 1.06um Detector Testing			1Q				
Visible Hybrid Detector			1Q				
Advanced Detector Testing					4Q	1Q-4Q	1Q-4Q
Radar & RF							
HPA/MMIC Reliability Testing	1Q-4Q	1Q					
High Voltage GaAs MMIC Producibility	1Q-4Q	1Q-2Q					
4-inch Diameter SiC Water Producibility	1Q-4Q	1Q-4Q	1Q-4Q				
SiC Device Producibility Program		1Q-2Q					
Radar Sub-Array Demonstrator (MPSD)		1Q-4Q	1Q-4Q	1Q-4Q			
Block 08/10 Radar Component Upgrades					1Q-4Q	1Q-4Q	1Q-4Q
Propulsion							
MKV Thruster Development	2Q-4Q	1Q-4Q	1Q-4Q	1Q			
SM-3 TDACS Comp Dev and Testing	2Q-4Q	1Q-3Q					
Material Characterization	4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q		
KEI Thruster Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Health Monitoring and Insensitive Munitions		4Q	1Q-4Q	1Q-3Q			
THAAD TDACS Thruster Development			1Q-4Q	1Q-4Q			
Advanced Materials and Structures							

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
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Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
KEI Cost/Weight Reduction	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q			
Dorsal and Control Surf Cost Reduction	4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
KEI Nosecone Risk Reduction Testing	4Q						
KEI Radome Development Testing	4Q						
LDACS Structure Development Testing	4Q						
Lightweight Ballistic Canister Protection Testing	4Q						
CC Telescope Housing Fabrication Process Testing		1Q					
KEI Payload Shock and Vibration Mitigation Testing			1Q				
Block 08/10 Component Material Upgrades			4Q	1Q-4Q	1Q-4Q	1Q-3Q	

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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0104 BMD Information Management Systems	61,252	111,843	123,175	124,775	127,375	135,375	138,075
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY06 includes an overall increase of \$50.5 million from FY05. The IT budgets from the Computing Infrastructure, Computing and Network Management Services, and Information Distribution Services projects were consolidated from PE 0901598C into this PE for a total of \$26.5 million. An increase of \$10.5 million supports planning, engineering, and test support for the BMDS Block 2004 system deployment certification, the Block 2006 System Security Authorization Agreement (SSAA) development, and increased security testing to achieve a 90% Authority to Operate on all MDA networks and systems. An additional \$8.2 million is for federally mandated initiatives (Electronic Records Management, Business Management Modernization Program, PKI-CAC, Privacy Management, and Collaborative Tools) to meet the requirements of the E-Govt Act. A \$5.3 million increase is for consolidation of IT systems in the Huntsville region in preparation for transition to the new Von Braun II Complex. FY07 includes an increase of \$11 million from FY06. A \$2 million increase is allocated to support the System Testing of the IA controls of the BMDS Block 2006 to accomplish the Interim Authority to Operate (IATO) and to develop the BMDS Block 2008 System Security Authorization Agreement (SSAA). A \$2 million increase is to assume responsibility for Video Teleconferencing systems supporting the Airborne Laser Program at Kirtland and Los Angeles Air Force Bases. The remainder of the increase is spread across the other major initiatives to support continued consolidation efforts as well as roll-out of federally mandated programs.

A. Mission Description and Budget Item Justification

Project 0104 includes initiatives that comprise the MDA secure communications infrastructure, which are vital to the strategic mission of the Agency. The MDA Secure Communications Infrastructure includes costs required to provide and sustain access to the classified Secret Internet Protocol Router Network (SIPRNET), MDA (MDANet), classified and unclassified Video Teleconferencing services and the Joint Worldwide Intelligence Connectivity System (JWICS). Connectivity to JWICS is essential to the MDA Intelligence project to obtain and provide intelligence data used to feed the Command, Control, Battle Management and Communication (C2BMC) project, the Hercules Project, the Countermeasures/Counter-Countermeasures (CM/CCM) project, and the Modeling and Simulation project. The above initiatives will provide for the efficient operation and safeguarding of all agency information. This Project funds initiatives that support the MDA Systems Engineering and Integration (SEI) mission for the BMDS System including:

- Information Assurance (IA) controls and Computer Network Defense (CND) of MDA networks
- Certification and Accreditation (C&A) processes that support the Ballistic Missile Defense System (BMDS), test assets, and administrative support networks
- IM/IT Enterprise Architecture that is compliant with Federally-mandated standards for the business and mission support activities of the MDA

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<ul style="list-style-type: none">• Business Management Modernization Program (BMMP) efforts to provide DoD approved solutions for information sharing, electronic records management, financial management, and decision support systems to achieve more effective, efficient and secure business and mission support activities throughout MDA• MDA communication networks that allow Information Management /Information Technology (IM/IT) operations to be performed in an efficient, secure, and effective manner• IM/IT policies, guidance, planning, oversight, and monitoring to ensure continued compliance with DoD mandated initiatives, statutes, regulations, directives, and policies• Operations and maintenance support to provide world-class day-to-day IT operations <p>The BMD Information Management Systems project, executed by the Information Management and Technology Operations Office (MDA/DOC), includes the following Task areas:</p> <ul style="list-style-type: none">• Enterprise Architecture and Engineering,• Enterprise Applications,• Enterprise Plans and Policies,• MDA Communications Infrastructure,• Enterprise Information Assurance (IA),• Service IM/IT for Executing Agents,• Computing and Network Management Services (National Capital Region (NCR) Operations),• Virtual Data Centers,• MDA Video Teleconferencing Services,• Computing Infrastructure (Enterprise),• ITO South Computing Infrastructure,• Information Management Services.		

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<u>B. Accomplishments/Planned Program</u>			
	FY 2005	FY 2006	FY 2007
Enterprise Architecture and Engineering	4,014	4,583	5,185
RDT&E Articles (Quantity)	0	0	0

Enterprise Architecture and Engineering initiatives support the MDA and especially the Ballistic Missile Defense System (BMDS) Core projects through the design, and planning of an MDA Enterprise Architecture (EA) that is compliant with the DoD Federal enterprise architecture standards. The MDA EA will improve the management of, and access to information throughout the MDA through the integration and consolidation of disparate networks and systems. These efforts will improve the value of the Information Management and Information Technology (IM/IT) infrastructure that is necessary for the design, development, modeling, and testing of the BMDS.

FY05 Accomplishments:

- Completed Version 4.0 of the MDA Enterprise Architecture
- Developed a secure wireless design and implementation plan for portable devices
- Developed a plan to implement an enterprise service delivery to BMDS Block 2004 remote sites
- Developed an implementation plan for a classified data recovery system in the National Capital Region and the Joint National Integration Center
- Developed a realignment and transition plan in support of the MDA transition efforts to Huntsville AL, and Fort Belvoir VA

FY06 Planned Program:

- Develop designs and improvement plans for MDA priority projects (BMDS Mission Ops Center, MDA Technical Support Center, Business Management Modernization Tools)
- Develop designs and improvement plans to meet continued evolution of Information Assurance (IA) controls
- Develop engineering plans to implement network protocol upgrades in accordance with recent DoD standards
- Develop engineering plans to consolidate data and email servers across the MDA
- Develop implementation plans to consolidate helpdesk services across the MDA
- Develop disaster recovery designs for classified systems in the Huntsville area
- Complete documentation of Version 5.0 of the MDA Enterprise Architecture

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FY07 Planned Program:

- Develop designs and improvement plans for MDA priority projects (BMDS Mission Ops Center, MDA Technical Support Center, Business Management Modernization Tools)
- Develop designs and improvement plans to meet continued evolution of IA controls
- Develop disaster recovery designs for MDA unclassified systems
- Develop designs and implementation plans for secure classified processing for all MDA users in Huntsville
- Complete documentation of Version 6.0 of the MDA Enterprise Architecture

	FY 2005	FY 2006	FY 2007
Enterprise Applications	5,965	14,218	15,952
RDT&E Articles (Quantity)	0	0	0

In accordance with the Clinger Cohen Act, DoD Directive 5000.15 DoD Records Management Program and OMB Circular A130, the Enterprise Applications initiative provides for the implementation of enterprise information applications which are used to collect, analyze, display and share information. DoD mandated and mission essential examples include BMD System Asset Management (BAM), Electronic Records Management System (EMS), E-Tasker, Data Warehousing and Mining, Financial Management Tools, personnel tracking system, standard procurement system, and on-line BMDS University.

FY05 Accomplishments:

- Implemented the BMD System Asset Management application (BAM) for web-based asset management
- Established and funded enterprise license agreements for office automation, and collaboration tools
- Implemented Phase 1 of an Agency EMS project and training program (1000 users)
- Implemented prototypes and began testing of DoD standardized financial management applications
- Implemented Phase I of the E-Tasker Project, (the Agency action tracking system) and provided training to 500 initial users

FY06 Planned Program:

- Implement upgrades for the Phase I baseline of DoD mandated and mission essential support applications
- Develop Phase II sequencing plan, update training programs, and continue rollout of DoD standardized financial management, information sharing and collaboration applications
- Implement Phase II of the E-Tasker Project, (the Agency action tracking system) and provide training to users

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- Integrate IA training into the MDA on-line university
- Fund recurring enterprise application license fees

FY07 Planned Program:

- Implement upgrades for the Phase II baseline of DoD mandated and mission essential support applications
- Develop Phase III sequencing plans, update training programs, and continue rollout of DoD standardized financial management, information sharing and collaboration applications
- Implement Phase III of the E-Tasker Project, (the Agency action tracking system) and provide training
- Begin development of metadata taxonomy to standardize information storage and to facilitate data mining across MDA
- Fund recurring enterprise application license fees

	FY 2005	FY 2006	FY 2007
Enterprise Plans & Policies	6,518	4,245	5,642
RDT&E Articles (Quantity)	0	0	0

This initiative funds efforts that support development and implementation of Agency-wide IM/IT strategies, policies, guidelines, and management processes to ensure efficient and effective oversight of information resources. These efforts ensure a secure MDA corporate infrastructure is in place to support the BMDS mission and to comply with statutory and DoD policies including: the Clinger-Cohen Act, the Federal Information Security Management Act (FISMA), the Government Paperwork Elimination Act (GPEA), and Office of Management and Budget (OMB) IT budget reporting policies. Specific examples include development, implementation, and oversight of various plans, guidelines, and policies to include the MDA Information Resource Strategic Plan, the IA Program Plan, and the MDA IM/IT Capital Planning and Investment Control (CPIC) process. This initiative also includes budget formulation and execution as well as contract management and oversight.

FY05 Accomplishments:

- Developed and published the MDA Information Resource Strategic Plan and the MDA Information Assurance Program Plan
- Developed a CIO implementation plan to support the MDA Reengineering Initiative
- Updated budget plans for future years in accordance with DoD and MDA guidance
- Successfully executed, tracked and reported the MDA CIO FY05 budget
- Conducted assessments, prepared status and metrics reports for MDA Senior Leadership, OSD, OMB, and DoD

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FY06 Planned Program:

- Develop, update, coordinate and publish policies, guidelines and processes in accordance with applicable legislation, DoD and MDA guidance
- Update budget plans for future years in accordance with MDA guidance
- Successfully execute, track and report the MDA CIO FY06 budget
- Conduct assessments, prepare status and metrics reports for MDA Senior Leadership, OSD, OMB, and DoD

FY07 Planned Program:

- Develop, update, coordinate and publish policies, guidelines and processes in accordance with applicable legislation, DoD and MDA guidance
- Update budget plans for future years in accordance with MDA guidance
- Successfully execute, track and report the MDA CIO FY07 budget
- Conduct assessments, prepare status and metric reports for MDA Senior Leadership, OSD, OMB, and DoD

	FY 2005	FY 2006	FY 2007
MDA Communications Infrastructure	11,003	12,647	13,734
RDT&E Articles (Quantity)	0	0	0

The MDA Enterprise Communications Infrastructure initiative consists of leased communications for classified and unclassified voice and data circuits including T1, fractional T1, OC3, and video teleconferencing capabilities and circuit access to the Joint Worldwide Intelligence Communications System (JWICS). Circuits and associated services are provided by the Defense Information Systems Agency (DISA) as well as the Defense Research and Engineering Network (DREN). These circuits provide access to government and industry locations to enable information sharing of BMD-related data throughout the global MDA Enterprise.

FY05 Accomplishments:

- Installed Service Delivery Points (SDPs) to support network consolidation plans at the National Capital Region (NCR), Joint National Integration Center (JNIC), and Fort Greely AK
- Funded recurring maintenance agreements on MDA Enterprise network equipment
- Funded MDA Enterprise leased communications for existing circuits provided by DISA and DREN

FY06 Planned Program:

- Upgrade networking equipment to meet the demands of the BMDS information sharing environment

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- Install Service Delivery Points (SDPs) to support network consolidation plans at Huntsville AL
- Migrate the MDA Enterprise Network layer from Asynchronous Transfer Mode (ATM) to Internet Protocol (IP) in support of the DoD Global Information Grid (GIG) architecture plan
- Fund recurring maintenance agreements on MDA Enterprise network equipment
- Fund MDA Enterprise leased communications for existing circuits provided by DISA and DREN

FY07 Planned Program:

- Upgrade networking equipment to meet the demands of the BMDS information sharing environment
- Install Service Delivery Points (SDPs) to support network consolidation plans at Kirtland, Los Angeles, and Edwards AFBs
- Fund recurring maintenance agreements on MDA Enterprise network equipment
- Fund MDA Enterprise leased communications for existing circuits provided by DISA and DREN

	FY 2005	FY 2006	FY 2007
Enterprise Information Assurance	11,121	21,650	23,782
RDT&E Articles (Quantity)	0	0	0

This initiative is not only a Federal mandate but also a key priority of the MDA Director. This vital program of the BMDS and MDA Enterprise consists of Information and Assurance (IA), Computer Network Defense (CND), and Certification and Accreditation (C&A) activities. The IA program provides system security engineering, development, and testing to ensure that command, control, communications, computing and intelligence (C4I) systems are protected against malicious or accidental attacks. The MDA IA program provides the network security operations centers and supporting processes to protect and defend information and information systems. This ensures the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems.

FY05 Accomplishments:

- Issued the BMDS Block 2004 Interim Authority to Operate (IATO) and risk mitigation plan
- Developed the IA portion of the Test Bed System Specifications (TBSS) for the BMDS Block 2006
- Provided IA engineering and planning staff support for all IT acquisition programs
- Supported Enterprise Network Operations Security Center (ENOSC) operations
- Trained the entire MDA workforce in Information Assurance in compliance with the Federal Information Security Management Act (FISMA)

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<ul style="list-style-type: none">• Conducted in excess of 150 System Test and Evaluations (ST&Es) of the mission, test and administrative systems and networks to ensure implementation of appropriate IA controls <p>FY06 Planned Program:</p> <ul style="list-style-type: none">• Provide planning, engineering and test support for BMDS Block 2004 system deployment certification• Provide BMDS Block 2006 System Security Authorization Agreement (SSAA) development• Develop and insert Information Assurance requirements into the Test Bed System Specifications (TBSS) for the BMDS Block 2008• Conduct BMDS Block 2004 ST&Es to certify and accomplish Authority to Operate (ATO) accreditation• Conduct ST&Es of test and administrative systems• Provide 100% IA training for the MDA workforce• Provide IA engineering and planning guidance for all IT acquisition programs• Accredite test and administrative networks• Implement Phase II of the Classified Disaster Recovery Storage Systems (Huntsville AL)• Support Enterprise Network Operations Security Center (ENOSC) operations and maintenance <p>FY07 Planned Program:</p> <ul style="list-style-type: none">• Provide system security planning, engineering and test support to the spiral development of BMDS Blocks 2006 and 2008 configurations• Conduct BMDS Block 2006 ST&Es to certify and accomplish Interim Authority to Operate (IATO) accreditation• Provide BMDS Block 2008 System Security Authorization Agreement (SSAA) development• Conduct ST&Es of the test and administrative systems and networks• Accredite test and administrative networks• Provide 100% IA training for the MDA workforce• Implement Phase I of the Unclassified Disaster Recovery Storage Systems (Colorado Springs CO)• Support Enterprise Network Operations Security Center (ENOSC) operations and maintenance		

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	FY 2005	FY 2006	FY 2007
Service IM/IT	7,713	6,911	7,250
RDT&E Articles (Quantity)	0	0	0
<p>This initiative provides recurring funds to three MDA Executing Agents in support of BMDS research and mission related efforts. The Executing Agents include 1) U.S. Army Space and Missile Defense Command (SMDC), 2) the U.S. Army Program Executive Office, Air, Space and Missile Defense (PEO ASMD), and 3) U.S. Air Force BMD Program Executive Office (USAF PEO).</p> <p>Funds provided to SMDC support continuing operations and maintenance of their communications and computing infrastructure in the Von Braun I facility in Huntsville AL. This includes the communications costs, help desk services, and hardware and software sustainment. SMDC also receives MDA funds to update and maintain the Program Resource Internet Database Environment (PRIDE), a database management tool used by MDA for planning and budgeting efforts. Funds provided to PEO ASMD support IT infrastructure costs for multiple MDA research contracts and projects. Funds provided to the USAF PEO support MDA related logistics, database management, and network communications costs.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Operated and maintained IT networks in support of MDA efforts in Army and Air Force facilities located in Huntsville and Los Angeles • Updated and maintained the PRIDE database management tool • Provided helpdesk services to MDA users • Funded recurring O&M and helpdesk services provided through SMDC in direct support of MDA personnel • Provided IT support for the Missile Defense conference • Implemented a Budget Execution module in CIMS for MDA <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Operate and maintain IT networks, systems and helpdesk services in support of MDA efforts in Army and Air Force facilities • Update and maintain the PRIDE database management tool • Provide helpdesk services to MDA users • Provide IT support for the Missile Defense conference 			

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<p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Operate and maintain IT networks in support of MDA efforts in Army and Air Force facilities located in Huntsville and Los Angeles • Update and maintain the PRIDE database management tool • Provide helpdesk services to MDA users • Provide IT support for the Missile Defense conference • Provide IT support to MDA international programs and conferences 			
	FY 2005	FY 2006	FY 2007
Computing & Network Management Services	0	21,637	23,210
RDT&E Articles (Quantity)	0	0	0
<p>The Computing and Network Management Services initiative (formerly funded under PE 0603882C, Program Wide Support for \$16.5 million) consists of IT support services required to operate and maintain the classified and unclassified local area networks in the National Capital Region (approximately 2900 users). This includes operations and maintenance of hardware, software and help desk services in support of BMDS mission, research and test efforts as well as MDA business processes.</p>			
<p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Sustain the BMDS Mission Operation Center (MOC) • Support the MDA CIO helpdesk consolidation program • Maintain the network and help desk services at 99% readiness • Provide weekly training to MDA users 			
<p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Sustain the BMDS Mission Operation Center (MOC) • Sustain the network and help desk services at 99% readiness • Support the transition of the Regional Network Operations and Security Center (RNOSC) to Huntsville, AL • Provide weekly training to MDA users 			

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	FY 2005	FY 2006	FY 2007
Virtual Data Centers	3,668	0	0
RDT&E Articles (Quantity)	0	0	0
<p>In accordance with OMB 9602, ``Consolidation of Agency Data Centers``, the Virtual Data Center (VDC) task integrates data centers to the MDA portals. The VDC initiative consolidates information sharing across the MDA into an integrated virtual capability. The VDCs include the Missile Defense Data Center (MDDC), a component of the US Army Space and Missile Defense Command (USASMDC), the Advanced Missile Signature Center (AMSC), a component of the US Air Force, Naval Warfare Assessment Station, the Joint National Integration Center Ballistic Missile Defense System Integration Data Center (BMDS IDC) and the BMD Information Resource Center (BIRC).</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Access to the Data Centers is now available through the MDA Portals based on completion of this project 			
	FY 2005	FY 2006	FY 2007
MDA Video Teleconferencing	5,171	6,135	7,942
RDT&E Articles (Quantity)	0	0	0
<p>The MDA Video Teleconferencing (VTC) initiative supports management, engineering, systems integration, operation, maintenance and technical support services for the teleconferencing systems and implementation of a high-bandwidth, Video Over Internet Protocol (VOIP) capability to enhance resolution and reduce per-minute unit cost. Primary MDA video-teleconferencing sites include the NCR, JNIC, Airborne Laser (ABL) at Kirtland Air Force Base (AFB), and Space Tracking and Surveillance System (STSS) at Los Angeles AFB. Future sites will include numerous offices in Huntsville, AL including Terminal High Altitude Area Defense (THAAD), Targets and Countermeasures, and Ground Based Missile Defense.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Implemented a VTC Scheduling Operations Center (VSOC) to support BMDS situational awareness between MDA and COCOMs • Developed a standardized VTC platform design for all MDA locations • Implemented Phase I of the Video-Over-Internet Protocol (VOIP) capability for Executive Offices in the NCR and JNIC • Funded recurring O&M for VTC facilities and equipment 			

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FY06 Planned Program:

- Operate VTC Scheduling Operations Center (VSOC) in support of BMDS situational awareness between MDA and COCOMs
- Implement Phase II of the VOIP project to MDA sites in Huntsville AL
- Standardize VTC equipment and software at MDA facilities in Huntsville AL and Los Angeles CA
- Fund recurring O&M for VTC facilities and equipment

FY07 Planned Program:

- Operate VTC Scheduling Operations Center (VSOC) capability in support of BMDS situational awareness between MDA and COCOMs
- Implement Phase III of the VOIP project to MDA sites in Kirtland AFB, NM, Edwards AFB, CA, and Los Angeles AFB, CA
- Standardize VTC equipment and software at MDA facilities in Albuquerque, NM
- Fund recurring O&M for VTC facilities and equipment

	FY 2005	FY 2006	FY 2007
Computing Infrastructure	0	5,172	5,852
RDT&E Articles (Quantity)	0	0	0

The Computing Infrastructure initiative provides funds to support the operations and sustainment of hardware and software systems supporting the MDA Enterprise and regional support of consumables for the NCR. Typical hardware devices include; network routing and switching gear, server farms, storage devices and desktop computers.

FY05 Accomplishments: (initiative funded under PE 0603882, Program Wide Support in FY05 for 8.5M)

- Completed the first phase in the transition from regional software licensing to MDA enterprise licensing to achieve cost savings
- Funded maintenance agreements for hardware systems (NCR)
- Funded recurring operations and maintenance for the MDA NCR classified and unclassified LANs

FY06/07 Planned Program:

- Complete the consolidation of regional software licenses to MDA Enterprise licenses
- Begin the transition from regional to enterprise maintenance agreements for hardware systems
- Fund recurring operations and maintenance for the MDA NCR classified and unclassified LANs

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	FY 2005	FY 2006	FY 2007
ITO South Computing Infrastructure	276	5,517	4,271
RDT&E Articles (Quantity)	0	0	0
<p>This initiative supports the build-out of IT resources to support the transition of 400 personnel from the NCR.. This effort includes: acquisition, operations and maintenance, and consolidation of classified and unclassified local area networks (LAN), helpdesks, servers and desktop computers. In order to maintain continuity of operations, the transition and realignment efforts must include an IT capability (systems installation, testing, training, and certification) that is completed prior to the movement of the personnel.</p> <p>FY05 Accomplishments</p> <ul style="list-style-type: none"> • Provided IT support to the MDA CIO Huntsville Information Technology Office (ITO) <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Initiate Huntsville region implementation (Phase I) of the MDA CIO realignment and infrastructure consolidation (networks, servers, helpdesks) • Implement Phase I of the secure classified processing capability for all MDA users in Huntsville (eliminates dual desktop PCs) • Provide IT support for the transition of 400 MDA personnel from the NCR to Huntsville <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Initiate Huntsville region implementation (Phase II) of the MDA CIO realignment and infrastructure consolidation (networks, servers, helpdesks) • Complete the fielding of the secure classified processing capability for all MDA users in Huntsville (eliminates dual desktop PCs) 			
	FY 2005	FY 2006	FY 2007
Information Management Services	5,803	9,128	10,355
RDT&E Articles (Quantity)	0	0	0
<p>The Information Management Services initiative includes costs to develop, manage content, and operate and maintain the unclassified and classified MDA Portals. The MDA Portals are a vital asset used to share information and knowledge throughout the Missile Defense community. This initiative also supports the operations and maintenance of the Visual Information Production Center (VIPC), a state-of-the-art, high capacity graphic and video production center, which provides services to senior leadership and agency employees.</p> <p>FY05 Accomplishments:</p> <ul style="list-style-type: none"> • Produced over 3500 VIPC products per month to support Agency sponsored briefings, conferences, training, and other functions 			

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- Consolidated 49 web sites into the classified and unclassified MDA Portals reducing overall administrative support costs
- Implemented Phase I of the web-based training through the MDA Portals (IA training, ethics training, etc.)
- Funded recurring operations and maintenance of the MDA Portals

FY06 Planned Program:

- Implement Phase I of the Portal user interfaces upgrade project to improve access to BMDS data and Director's plans, policies and guidance
- Consolidate GM and THAAD web sites into the MDA Portals
- Implement Phase I of the MDA information cataloging project hosted on the MDA Portal
- Implement Phase II of the web-based training through the MDA Portals (new employee orientation, new IT user training, etc)
- Fund VIPC services providing graphic and video production capabilities to Agency senior leaderships and MDA-wide personnel
- Fund recurring operations and maintenance of the MDA Portals

FY07 Planned Program:

- Implement Phase II of the Portal user interfaces upgrade project to improve access to BMDS data and Director's plans, policies and guidance
- Implement Phase II of the MDA information cataloging project hosted on the MDA Portal
- Implement Phase III of the web-based training through the MDA (additional and enhanced training courses and programs)
- Fund VIPC services providing graphic and video production capabilities to Agency senior leaderships and MDA-wide personnel
- Fund recurring operations and maintenance of the MDA Portals

C. Other Program Funding Summary

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

D. Acquisition Strategy

MDA employs a federated acquisition strategy for the procurement and sustainment of the MDA Enterprise. This strategy utilizes a FEDSIM Millennia contractor for Engineering and Architectural Planning support. Approved engineering designs and plans are then implemented, sustained, and operated by local contractors in each regional area (National Capital Region; Huntsville, AL; Colorado Springs, CO; Albuquerque, NM; and Los Angeles, CA).

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Enterprise Architecture and Engineering								
Enterprise Architecture & Engineering	MIPR	FEDSIM/SRA/ VA	4,014	4,423	2Q	5,004	2Q	13,441
SETA Support	CPFF	Anteon/ VA	0	160	3Q	181	3Q	341
Enterprise Applications								
Enterprise Application	C/CPAF	FEDSIM/ VA	3,356	11,357	2Q	12,847	1/2Q	27,560
PRIDE Maintenance and Support	MIPR	SMDC/ AL	999	999	1Q	999	1Q	2,997
Database Support	MIPR	GSA/ VA	100	0	N/A	0	N/A	100
BMDS University support	MIPR	NTIS/ VA	133	0	N/A	0	N/A	133
SETA Support	CPFF	Anteon/ VA	0	1,862	3Q	2,106	3Q	3,968
Enterprise Plans & Policies								
SETA Support	C/CPFF	Anteon/ VA	5,864	1,960	2/3Q	2,217	2/3Q	10,041

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
CIO Support	Various	Various/ CO	818	545	1/2Q	1,456	1/2Q	2,819
CIO Support	C/CPFF	Decisive Analytics/ VA	320	1,138	N/A	1,288	N/A	2,746
SETA Support	SS/MIPR	NAWC Pt Mugu/ CA	1,366	0	N/A	0	N/A	1,366
CIO Support	MIPR	STRATCOM	255	266	2Q	301	2Q	822
CIO Travel			79	106	N/A	120	N/A	305
SETA	CPAF	SRS/ CO	0	230	3Q	260	3Q	490
MDA Communications Infrastructure								
Leased Communications	MIPR	DISA/ IL	1,274	1,613	1Q	1,825	1Q	4,712
Leased Communications	MIPR	Army Rsch Lab/ MD	2,533	2,307	2Q	2,611	1Q	7,451
WAN Transport	C/CPAF	Northrop Grumman/ CO	6,640	7,676	2Q	8,109	2Q	22,425
Hub Services	MIPR	AFRL Hanscom/ MA	10	11	1Q	12	1Q	33
Hub Services	MIPR	AFRL Redstone/ AL	23	22	1Q	25	1Q	70
Leased Communications	MIPR	DTSW/ VA	298	539	1Q	610	1Q	1,447
SETA Support	CPFF	Anteon/ VA	0	479	3Q	542	3Q	1,021
Special Access WAN	MIPR	FEDSIM/SRA/ VA	225	0	N/A	0	N/A	225

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Enterprise Information Assurance								
C&A Support	MIPR	FEDSIM/ VA	1,452	2,867	2Q	3,244	2Q	7,563
SETA C&A Support	MIPR	Anteon/ VA	895	4,043	1/3Q	4,574	1/3Q	9,512
NCR Info Assurance	C/CPAF	ZEN Tech/ VA	4,562	5,056	1/3Q	5,609	1/3Q	15,227
Enterprise Network Op Security Center	C/CPAF	Northrop Grumman/ CO	3,990	7,029	2Q	7,351	2Q	18,370
Disaster Recovery	C/CPAF	Northrop Grumman/ CO	0	1,302	2Q	1,473	2Q	2,775
PKI Support	C/CPAF	FEDSIM/ VA	454	1,034	2Q	1,170	2Q	2,658
Info Assurance Training	C/CPAF	FEDSIM/ VA	300	319	2Q	361	2Q	980
Service IM/IT								
Service IM/IT	C/CPAF	SMDC/SAIC/ AL	6,172	6,383	1/2Q	6,653	1/2Q	19,208
Service IM/IT	C/CPAF	PEO ASMD/SAIC/ AL	1,345	319	N/A	361	N/A	2,025
Service IM/IT	C/CPFF	USAF/SAIC/ CA	196	209	1/2Q	236	1/2Q	641
Computing & Network Management Services								
Computing & Network Services	C/CPFF	ZEN Tech/ MD	0	17,116	2/3Q	18,094	2/3Q	35,210

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
IM/IT SETA Support	C/CPFF	Anteon/ VA	0	4,521	3Q	5,116	3Q	9,637
Virtual Data Centers								
VDC Support	MIPR	Missile Defense Data Ctr/ AL	348	0	N/A	0	N/A	348
VDC Support	MIPR	Joint Natl Integ Ctr/ CO	2,905	0	N/A	0	N/A	2,905
VDC Support	MIPR	Missile Signature Ctr/ AL	300	0	N/A	0	N/A	300
VDC Support	MIPR	Naval Surface Warfare Ctr/ CA	115	0	N/A	0	N/A	115
MDA Video Teleconferencing								
VTC Support and Maintenance	SS/CPAF	SGICOM/ VA	4,256	5,816	1/3Q	7,581	1/3Q	17,653
VTC Enterprise Engineering	C/CPAF	FEDSIM/ VA	915	0	N/A	0	N/A	915
Integration Support	C/CPAF	Northrop/ CO	178	0	N/A	0	N/A	178
SETA Support	C/CPFF	Anteon/ VA	0	319	3Q	361	3Q	680
Computing Infrastructure								
Cabling	C/TM	Crawford/ MD	0	300	1/2Q	0	N/A	300
IT HW/SW Equipment	MIPR	GSA	0	4,872	1/2Q	5,852	N/A	10,724
ITO South Computing Infrastructure								

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
ITO South IT Equipment/Lease		Various	276	5,517	N/A	4,271	N/A	10,064
Information Management Services								
Portal and VIPC support	SS/CPFF	CSC/ VA	5,803	8,809	2/3Q	9,994	1/2Q	24,606
SETA Support	C/CPFF	Anteon/ VA	0	319	3Q	361	3Q	680
Subtotal Support Costs			62,769	111,843		123,175		297,787

Remarks

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

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

Remarks

Project Total Cost			62,769	111,843		123,175		297,787
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Enterprise Architecture and Engineering																																
Develop an Enterprise Architecture	▲																															
Plan disaster recovery capability	▲				▲				▲				▲				▲				▲				▲				▲			
Plan server/helpdesk consolidation					▲				▲																							
Design/upgrade IA architecture	▲				▲				▲				▲				▲				▲				▲							
Develop plans to transition comms networks	▲				▲				▲				▲				▲															
MDA Communications Infrastructure																																
Upgrade network equipment for BMDS	▲				▲				▲																							
Consolidate regional networks	▲				▲				▲				▲				▲				▲											
Migrate from ATM to IP V6					▲				▲																							
Enterprise Information Assurance																																
Issue BMDS Block 04 ATO									▲																							
Develop BMDS Block 06 SSAA, issue IATO					▲				▲																							
IA rqmts for Test Bed Sys Spec for Block 08					▲				▲																							

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

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

Date
February 2006

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Enterprise Information Assurance																																
Complete PKI/CAC digital signature	▲	▲																														
Implement smartcard-only logon					▲	▲		▲																								
Implement Phase I disaster recovery capability	▲	▲	▲	▲																												
Implement Phase II disaster recovery capability					▲	▲		▲																								
Implement Phase III disaster recovery									▲	▲		▲																				
Test and accredit MDA networks and systems	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Provide annual IA training			▲				▲				▲				▲				▲				▲				▲				▲	
Update the IA Program Plan			▲				▲				▲				▲				▲				▲				▲				▲	
Implement 24/7 Enterprise Network Ops Security Ct						▲																										
Enterprise Applications																																
Implement BMDS Asset Management Tool	▲	▲																														
Implemented an MDA action tracking tool	▲	▲	▲	▲																												
Consolidated Microsoft licenses to Enterprise	▲	▲																														
Implement Collaborative Tools	▲	▲	▲	▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲
Transition financial management applications		▲	▲	▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲	▲	▲		▲

Legend

▲	Significant Event (complete)	▲	Significant Event (planned)
★	Milestone Decision (complete)	☆	Milestone Decision (planned)
◆	Element Test (complete)	◇	Element Test (planned)

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Applications																												
Implement Phase I of electronic records mgmt	▲																											
Implement Phase II of electronic records mgmt tool					▲				▲																			
Implement DoD-mandated improvements					▲				▲				▲				▲				▲				▲			
Enterprise Plans, Policies, and Analyses																												
Develop strategic IT plans and policies					▲				▲				▲				▲				▲				▲			
Develop agency IT budgets and monitor execution					▲				▲				▲				▲				▲				▲			
Measure performance against IT strategic goals					▲				▲				▲				▲				▲				▲			
MDA Video Teleconferencing																												
Implement BMDS VTC Scheduling Operations Ctr	▲																											
Implemented VOIP for Executive Offices	▲																											
Implement VOIP across the MDA					▲				▲																			
Information Distribution Services																												
Consolidated 49 portals to 1 Enterprise portal	▲																											
Improve portal access to BMDS data					▲				▲																			
Consolidate GM/THAAD website					▲				▲																			

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Enterprise Architecture and Engineering							
Develop an Enterprise Architecture	1Q-2Q						
Increased server capacity for IDO	1Q-4Q						
Plan disaster recovery capability	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Plan server/helpdesk consolidation	3Q-4Q	1Q-4Q	1Q-4Q				
Design/upgrade IA architecture	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Develop plans to transition comms networks	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q	
MDA Communications Infrastructure							
Fund DISA/DREN for comms and services	1Q,1Q	1Q,1Q	1Q,1Q	1Q,1Q	1Q,1Q	1Q	1Q
Continue migration of circuits to DISA		1Q,2Q					
Execute Service Level Agreements for hub services	1Q	1Q	1Q	1Q	1Q		
Support recurring maintenance agreements	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
Sustain operations of the MDA Wide Area Network	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Upgrade network equipment for BMDS	1Q-4Q	1Q-4Q	1Q-4Q				
Consolidate regional networks	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Migrate from ATM to IP V6		1Q-4Q					
Enterprise Information Assurance							
Issue BMDS Block 04 ATO		2Q					
Develop BMDS Block 06 SSAA, issue IATO	3Q-4Q	1Q-4Q	1Q				
IA rqmts for Test Bed Sys Spec for Block 08		1Q-3Q					
Complete PKI/CAC digital signature	1Q-2Q						
Implement smartcard-only logon		2Q-4Q					
Implement Phase I disaster recovery capability	1Q-4Q						
Implement Phase II disaster recovery capability		1Q-4Q					
Implement Phase III disaster recovery			1Q-4Q				
Test and accredit MDA networks and systems	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
Submit FISMA Report	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Provide annual IA training	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Update the IA Program Plan	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Implement 24/7 Enterprise Network Ops Security Ct		2Q					

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Enterprise Applications							
Implement BMDS Asset Management Tool	1Q-2Q						
Implemented the BMDS University application	1Q-4Q						
Implement a Personnel Tracking System	1Q-4Q	1Q					
Implemented a System Development Schedule	1Q-4Q	1Q					
Implemented an MDA action tracking tool	1Q-4Q						
Consolidated Microsoft licenses to Enterprise	1Q-2Q						
Fund recurring enterprise application license fees	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement Collaborative Tools	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Transition financial management applications	2Q-4Q	1Q-4Q	1Q-4Q				
Implement Phase I of electronic records mgmt	1Q-4Q						
Implement Phase II of electronic records mgmt tool		1Q-4Q	1Q-4Q				
Implement DoD-mandated improvements		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Virtual Data Centers							
Completed conversion of BIRC to a Virtual Library	2Q-4Q						
Migrated VDC program into MDA Portals	3Q-4Q						
Enterprise Plans, Policies, and Analyses							
Develop strategic IT plans and policies		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Develop agency IT budgets and monitor execution		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Measure performance against IT strategic goals	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Update Info Security Approach w/evolving DoD Stnds	1Q-4Q						
Submit DOJ Section 508 Survey	1Q	1Q	1Q	1Q	1Q		
Implement a SW Asset Management Program					4Q		
Provide Quarterly Update to DITPR	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q		
Coordinate FISMA review, inspection, audit	2Q	2Q	2Q	2Q	2Q		
Update DITPR Quarterly	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Submit updates to PMA/PART E-Gov	3Q	3Q	3Q	3Q	3Q	3Q	3Q
Submit Agency IT Resources Exhibit 53	4Q	4Q	4Q	4Q	4Q	4Q	4Q
IT/NSS Commercial-Off-The-Shelf (COTS) SW/Services	1Q	1Q	1Q	1Q	1Q	1Q	1Q

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
MDA Video Teleconferencing							
Implement BMDS VTC Scheduling Operations Ctr	1Q-3Q						
Implemented VOIP for Executive Offices	1Q-4Q						
Implement VOIP across the MDA	4Q	1Q-4Q	1Q-4Q				
Sustain VTC operations and maintenance	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Computing Infrastructure							
Maintain software licenses for the NCR	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Sustain O&M of IM/IT infrastructure		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Information Distribution Services							
Consolidated 49 portals to 1 Enterprise portal	1Q-3Q						
Improve portal access to BMDS data		1Q-4Q	1Q-4Q				
Consolidate GM/THAAD website		1Q-4Q					
Sustain the O&M of the VIPC	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Computing & Network Management Services							
Continue operations of the NCR LAN/WAN	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Support BRAC and transition planning		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0106 Modeling & Simulation	0	92,577	103,419	107,740	109,770	111,222	112,538
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: FY05 funding for this effort was under the Ballistic Missile Defense System (BMDS), Program Element 0603890C, Project 0101

A. Mission Description and Budget Item Justification

The Missile Defense Agency is developing the capability to defend the homeland, its friends, allies and deployed forces against ballistic missiles of all ranges, in all phases of their flight. The Ballistic Missile Defense System exploits maturing capabilities, both national and in the theater to build an integrated, highly capable defense. As we bring new capabilities to the war fighter, the ``plug and fight`` missile defense system increases its effectiveness through the use of new engagement sequence groups. These engagement sequences take advantage of air, land, sea and space components to maximize the probability of kill, expand the area we can defend and decrease the area from which our enemy can launch, as well as minimize the number of weapons we need in the inventory. Likewise, we are developing a modeling and simulation framework that reflects the open architecture we envision for the Ballistic Missile Defense system.

The mission of the Agency's Modeling and Simulation program is to establish a tool set for planning, engineering, testing and operating an integrated ballistic missile defense system. Specific modeling and simulation products map to the six agency venues: ground tests, flight tests, war games, analysis, training and element testing. For each of these venues and their stakeholders, we define, design, develop, deploy and maintain system simulations, including their constituent subsystem, threat and environment models, and provide user and analytical support services. In addition, we are responsible for requirements development, configuration control, verification, validation and accreditation, facility and infrastructure planning, information assurance and risk management.

The modeling and simulation enterprise uses a centrally managed - distributed execution management paradigm drawing on the existing geographically dispersed workforce to accurately and credibly represent the system, its threats and the multitude of environments. Our implementation teams consisting of the Element project offices and our Modeling and Simulation Centers of Excellence at the U.S. Army Space and Missile Defense Center in Huntsville, Alabama and the Agency's Joint National Integration Center in Colorado Springs, Colorado have highly capable teams and state of the art facilities already onsite around the country, servicing the design, development and testing needs of the Agency. The Agency's Modeling and Simulation Directorate comprises a modest, simulation-literate team of government, Federally Funded Research and Development Center and University Affiliated Research Center staff; it sets policy, leads system engineering and centrally manages the Agency-wide enterprise.

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MODEL DEVELOPMENT

Modeling and simulation is required in every facet of fielding a credible missile defense system from capability needs analysis to activation of the system. The Agency's system engineering process guides our program strategy and implementation.

Our comprehensive Modeling and Simulation plan based on Agency and War fighter needs described in the Needs Statement and Capabilities Requirements Document includes modifying and sustaining our legacy tools, developing an integrated simulation open architecture and framework, defining a Common Environment and Threat Model and building a foundation of international missile defense initiatives.

We have defined a simulation architecture that mirrors the Ballistic Missile Defense System's open architecture. Moving to an open simulation architecture, we accrue significant benefits. Plugging and fighting element models within the architecture assures that we have a flexible tool set, anchored by high fidelity, engineering level models with a vast store of verification and validation data. We are also evolving to a multi-layer modeling and simulation framework within which the models described above will operate. This standardized simulation framework, called the Open Architecture Simulation System, or OASiS, customized for various uses optimizes commonality and potentially reduces infrastructure complexity. In FY05 - FY06 we defined framework standards and specifications. In FY07, we apply resources to reconfigure models to meet these standards.

Over the last decade, the Agency has developed a number of element, component and system tools. These tools evolved to meet the needs of our formerly stand-alone theater and strategic weapons. Our approach leverages investments already made in these legacy assets, including the Missile Defense Wargaming Resource 2000 (MDWAR), transitioning to Ballistic Missile Defense System Simulation (BMDS Sim) in FY06, and the Missile Defense System Exerciser (MDSE) to meet near term needs while we migrate them to the framework and standards described.

In FY05 and FY06 we applied funds to MDWAR/BMDS Sim to support war fighter exercises, war games, and element testing. In FY06 we applied development funds to MDWAR/BMDS Sim in support of WG 04-5, GT 06-1, and GT 06-2. In FY07, we fund upgrades to evolve the tool to continue to support these venues for Block 2006 as well as migrate to OASiS standards.

We invested FY05-2006 resources to evolve the MDSE architecture for Block 2004 system ground testing to include CGT 06-1 & 2 and IGT 06-1. FY07 and out year resources modify the tool architecture to permit testing of the Block 2006 system ground testing, IGT 06-2 and migrate to OASiS standards.

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In FY05 and FY06 we invested resources in to two Block 2004 performance assessment tools, the BMDS Sim and BMDS Analysis Federation. Data from these tools support Agency Interim Capability Assessment Reports and Capability Assessment Reports. In FY07 we continue to support development of Block 2006 performance assessment tools.

In addition to these assessment tools in FY05 and FY06 we applied funds to risk reduction efforts. These risk reduction efforts include a C2BMC Planner and modifying BMDS Sim to OASiS standards. In FY07 we continue model and tool development to meet OASiS standards.

To respond to a rapidly changing threat and take advantage of advances in technology, we define a Common Environment and Threat Model (CETM). The model provides a standard framework and rule set for representing the battle space environment and adversary capabilities. The domain of the model includes active and passive signatures of threat objects and their kinematics and operational behaviors, the relevant natural and perturbed battle space environment, the effects of this environment on threats and defensive systems, and a common way of dealing with the consequences of missile defense engagements. We applied FY05-2006 resources to define the CETM and consolidate existing phenomenology tools to include Parametric Endo-Exo Lethality Simulation (PEELS), Post Engagement Ground Effects Model (PEGEM), Kinetic Impact Debris Distribution (KIDD), Performance Assessment Workbench Software (PAWS), CT-Analyst, Battlespace Environment and Signatures Toolkit (BEST), Strategic Scene Generation Model (SSGM), and Optical Signature Code (OSC). In FY07 and beyond, we will migrate the tools to this framework.

To support Agency and Department international goals, we are building a foundation for international missile defense initiatives by partnering on defining requirements and interfaces for an open system modeling framework. Defining our modeling and simulation requirements up front with our friends and allies, we can ensure compatibility of our simulation architecture at all levels with future missile defense partners. Compatibility of our simulation architecture significantly increases our ability to develop interoperable missile defense elements both theater and global. It also establishes a laboratory for exploring concept of operations, battle management command and control networks and capability assessment. In FY05 and 2006, we established cooperative work with the North Atlantic Treaty Organization, Australia and the United Kingdom. In FY07, we plan additional bi-lateral initiatives in both the Pacific and European regions.

TEST AND OPERATIONS

One of our key cornerstones is promoting the Agency's simulation-based acquisition of the Ballistic Missile Defense System. Obtaining a statistically relevant set of flight data to characterize our system is unachievable. Therefore models and simulation anchored to data from well-contrived flight tests are fundamental tools for verifying and assessing system performance. The Agency employs an integrated approach to testing, bringing together

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the contributions of various elements into combined system tests. The Agency's Integrated Master Test Plan specifies the tests that require modeling and simulation products as well as the sources of real-world data to anchor those products.

The Modeling and Simulation Resource Master Plan allocates execution and resources to the Centers of Excellence. The Modeling and Simulation Center of Excellence at the U.S. Army Space and Missile Defense Center operates and maintains the facilities and infrastructure necessary to execute hardware-in-the-loop ground testing. The Missile Defense System Exerciser facilitates these ground tests. The Modeling and Simulation Center of Excellence at the Joint National Integration Center installs, operates and maintains digital simulation hardware and software at the Center as well as designated element locations. In FY05 and FY06 these Centers of Excellence supported the execution of Block 2004 and 2006 Ground Tests and Wargames, and will continue through 2007.

MODELING AND SIMULATION ENGINEERING AND INTEGRATION

The Modeling and Simulation Program Directorate leads an integrated Agency team leveraging skills from the Element program offices, the modeling and simulation Centers of Excellence, industry and academia to accomplish the mission. In addition to establishing Agency policy and strategic direction, one of the primary responsibilities of the program is to develop, proliferate and maintain common standards across the enterprise including the architecture, framework, models, interfaces and quality assurance.

To help meet this responsibility, the Directorate establishes enterprise-wide processes including; requirements engineering, development, configuration management, and verification, validation and accreditation. We use the requirements engineering process to develop requirements based on stakeholder needs (including the Block Test Bed System Specifications), estimate implementation costs and risks and develop modeling and simulation support plans. We use the development process to formulate implementation concepts and design specifications to meet these requirements, develop software and components, perform integration and checkout and deploy modeling and simulation capabilities to the venues. We use the configuration management process to archive and manage modeling and simulation-related programmatic data, design and interface information, as well as control upgrade and release of model and simulation components. The verification, validation and accreditation process ensures that the models and simulation we implement meet the designer's intent, adequately represent reality and are appropriate for their intended use.

In FY05 and FY06 we developed and updated the Modeling and Simulation Strategic Plan, System Engineering Management Plan, Needs Statement, and Capability Requirements Document. In 2007 we update the Modeling and Simulation Needs Statement and Capability Requirements Document to incorporate Block 2008 changes.

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In FY06 we initiated a Verification, Validation, and Accreditation process for BMDS level system models. Within this process the responsible Centers of Excellence identify and deliver the required validation evidence including plans and reports needed for model accreditation. The Modeling and Simulation Program Directorate is responsible for configuration and accrediting the M&S Tools to meet Agency needs.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Model Development	0	68,252	79,971
RDT&E Articles (Quantity)	0	0	0

Modeling and simulation is required in every facet of fielding a credible missile defense system from capability needs analysis to activation of the system.

FY06 Planned Program:

- Updates of BMDS simulations (BMDS SIM, MDSE) for Ground Test and Integrated Missile Defense Exercises
- Updates of industry standard lethality, ground effects and debris dispersion phenomenology codes (PEELS, PEGEM and KIDD)
- Updates threat and scene generation codes (BEST, SSGM and OSC)
- Update Open Architecture Simulation System (OASiS) Model and Framework Specifications
- OASiS-based Analysis Engine for the BMDS Planner
- Constructive Analysis Federation Prototype 1
- OASiS middleware risk reduction
- OASiS simulation engine risk reduction

FY07 Planned Program:

- Updates of BMDS simulations (BMDS SIM, MDSE) Ground Test and Integrated Missile Defense Exercises
- Updates of industry standard lethality, ground effects and debris dispersion phenomenology codes (PEELS, PEGEM and KIDD)
- Updates of threat and scene generation codes (BEST, SSGM and OSC)
- Update Open Architecture Simulation System (OASiS) Model and Framework Specifications
- OASiS-based Analysis Engine for the BMDS Planner
- Constructive Analysis Federation Prototype 2 - OASiS compliant
- OASiS risk reduction aimed at transition to legacy simulations

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE	
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603890C Ballistic Missile Defense System Core	
	FY 2005	FY 2006	FY 2007
Product Test and Operations	0	12,025	10,950
RDT&E Articles (Quantity)	0	0	0
<p>Models and simulations anchored to data from well-contrived flight tests are fundamental tools for verifying and assessing system performance. The Agency employs an integrated approach to testing, bringing together the contributions of various elements into combined system tests.</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> • Accredit Models and Simulations for Core Intended Uses • Develop Accreditation Reports • Facility/Test support for test events • Release Accreditation Plans and Final Report • Test Event Assessment Reports • Sustainment of core facilities and capabilities • Support test events including GTC 06-1, WG 06-2, GTC 06-2, and GTI 06-1 <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Accredit Models and Simulations for Core Intended Uses • Develop Accreditation Reports • Facility/Test support for test events • Release Accreditation Plans and Final Report • Test Event Assessment Reports • Support test events including WG 06-3, WG 06-4, GTC 06-3, GTI 06-2, GTC 06-4, and WG 06-5 			
	FY 2005	FY 2006	FY 2007
Systems Engineering and Integration (SE&I)	0	12,300	12,498
RDT&E Articles (Quantity)	0	0	0
<p>The Modeling and Simulation Program Directorate leads an integrated Agency team leveraging skills from the Element program offices, the modeling and simulation Centers of Excellence, industry and academia to accomplish the mission.</p>			

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FY06 Planned Program:

- Update Modeling and Simulation System Engineering Management Plan
- Update Block 06 Modeling and Simulation Needs Statement
- Update Block 06 Modeling and Simulation Capability Requirements Document
- Update Block 06 Modeling and Simulation Implementation Plans
- Establish Modeling and Simulation Enterprise Verification, Validation and Accreditation Process
- Establish Modeling and Simulation Enterprise Requirements Engineering Process

FY07 Planned Program:

- Block 08 Modeling and Simulation Needs Statement
- Block 08 Modeling and Simulation Capability Requirements Document
- Block 08 Modeling and Simulation Implementation Plans
- Establish Modeling and Simulation Enterprise Configuration Control Process
- Establish Modeling and Simulation Enterprise Development Control Process

C. Other Program Funding Summary

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275

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

D. Acquisition Strategy

The M&S acquisition strategy is to build an integrated open system framework (OASiS) for Block 2006 and beyond. We implemented a centralized management and decentralized execution approach to achieving this goal. We leverage the use of legacy M&S Tools and element M&S Tools to fit within this new framework and support the spiral development of the BMDS. The Modeling and Simulation Centers of Excellence at Colorado Springs and Huntsville execute modeling and simulation implementation plans to deliver the desired capabilities and tools. The results of the requirements engineering, risk reduction, and knowledge-based requirements will drive future investments.

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I. Product Development Cost (\$ in Thousands)

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

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Model Development								
Consolidated and Integrated M&S (CIMS)	C/CPAF	Northrup Gruman/ CO	0	24,912	1/2Q	27,553	1Q	52,465
V&V	C/CPAF	Dynamics Solutions Inc. and NG/ CO	0	2,790	1/2Q	2,830	1Q	5,620
MDSE	C/CPFF	TBE/ AL	0	7,031	1/2Q	7,031	1Q	14,062
MDSE - Patriot	MIPR	AMRDEC SED/ AL	0	766	1/2Q	766	1Q	1,532
MDSE - Aegis BMD	SS/CPAF	Lockheed Martin/ NJ	0	1,108	1/2Q	1,108	1Q	2,216
MDSE - Aegis BMD	MIPR	NSWC Dahlgren/ VA	0	640	1/2Q	640	1Q	1,280
MDSE - SBIRS	SS/CPAF	Northrup Gruman/ CA	0	686	1/2Q	686	1Q	1,372
MDSE - JTAGS	SS/CPFF	Northrup Gruman/ CA	0	600	1/2Q	600	1Q	1,200

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
MDSE - GMD	C/CPFF	Boeing/ AL	0	1,400	1/2Q	1,400	1Q	2,800
MDSE - FBX-T	SS/CPAF	Raytheon/ MA	0	2,550	1/2Q	2,550	1Q	5,100
MDSE - TCES	MIPR	SSC San Diego/ CA	0	1,885	1/2Q	1,885	1Q	3,770
MDSE - C2BMC	MIPR	Various/ CO	0	0	N/A	500	1Q	500
MDSE - THAAD	SS/CPAF	TMI/ AL	0	2,000	1/2Q	2,000	1Q	4,000
V&V - Verification	C/CPFF	TBD/ Competitive	0	870	2/3Q	870	1Q	1,740
V&V - Element Validation	MIPR	Various	0	2,000	2Q	2,000	1Q	4,000
Risk Reduction	MIPR	Boeing/ VA	0	1,321	2Q	0	N/A	1,321
Risk Reduction	C/CPAF	Lockheed Martin/ VA	0	500	2Q	0	N/A	500
Risk Reduction	C/CPAF	Lockheed Martin and Boeing/ VA	0	2,033	2/3Q	5,378	1Q	7,411
Phenomenology	C/CPFF	TSI/ AL	0	700	1/2Q	700	1Q	1,400
CETM / Lethality	Various	Various	0	3,800	1/2Q	3,800	1Q	7,600
OASIS	Various	Various	0	3,508	1/2Q	6,948	1Q	10,456
EADSIM	C/CPFF	TBE/ AL	0	1,840	1Q	0	N/A	1,840
International	MIPR	MITRE/ VA	0	100	1Q	0	N/A	100

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
International	MIPR	SPARTA/ VA	0	705	1/2Q	738	1Q	1,443
International	MIPR	PRA/ VA	0	370	1/2Q	387	1Q	757
International	Various	Various	0	425	1/2Q	396	1Q	821
M&S Tools	Various	Various	0	1,798	3/4Q	7,541	2/3Q	9,339
MDSE	C/CPFF	TBD/ Competitive	0	864	1/2Q	864	1Q	1,728
MDSE - DMOC	MIPR	Various/ CO	0	400	1/2Q	400	1Q	800
MDSE - MCUSMC	SS/CPFF	Sensis Corp/ CA	0	400	1/2Q	400	1Q	800
EADTB	C/CPAF	Raytheon/ AL	0	250	1/2Q	0	4Q	250
Product Test and Operations								
Computational Facilities	Various	Various	0	12,025	1/2Q	10,950	1Q	22,975
Subtotal Support Costs			0	80,277		90,921		171198

Remarks

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

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

Remarks

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IV. Management Services Cost (\$ in Thousands)								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Systems Engineering and Integration (SE&I)								
Requirements Engineering (UARC)	SS/CPFF	JHU/APL/ MD	0	2,210	1/2Q	2,271	1Q	4,481
M&S Architecture (FFRDC)	SS/MIPR	MIT/LL/ MA	0	1,471	1/2Q	1,596	1Q	3,067
Program Plans (FFRDC)	SS/CPFF	MITRE/ VA	0	2,210	1/2Q	2,261	1Q	4,471
Gov` t Personnel		MDA/ VA	0	1,124	1Q	1,149	1Q	2,273
Travel		MDA/ VA	0	100	1Q	104	1Q	204
Gov` t Personnel		SMDC/ AL	0	2,443	1Q	2,277	1Q	4,720
Travel		SMDC/ AL	0	250	1Q	262	1Q	512
SETA	C	SMDC/ AL	0	1,792	1/2Q	1,845	1Q	3,637
SETA	C	SRS/ JNIC / CO	0	700	1/2Q	733	1Q	1,433
Subtotal Management Services			0	12,300		12,498		24798

Remarks

Project Total Cost			0	92,577		103,419		195,996
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Remarks
 Previous Year funding for this effort was under the Ballistic Missile Defense System (BMDS), Program Element 0603890C, Project 0101

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

Date
February 2006

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Modeling and Simulation																													
Legacy M&S Tools Assessment	▲																												
Legacy M&S Tools Development	▲																												
GT 04-5		▲																											
Legacy M&S Tools Integration			▲			▲																							
MS Requirements Engineering			▲			▲			▲			▲			▲			▲			▲			▲			▲		
Model Build Releases									▲																				
GTC 06-1																													
GTC 06-2																													
GTI 06-1																													
GTC 06-3																													
GTI 06-2																													
Constructive Analysis CAR Blk04																													
Constructive Analysis CAR Blk06																													
WG 04-4 (IMD-5.3)																													
WG 04-5 (IMD-5.4)																													
WG 06-2 (IMD-6.2)																													

Legend

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

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

Date
February 2006

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Modeling and Simulation																												
WG 06-3 (IMD-7.1)									△																			
WG 06-4 (IMD-7.2)									△																			
MDIE Events													△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
War game Events													△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
OASIS Framework Specs	△	△	△	△																								
Legacy M&S Tools Maintenance	△	△	△	△																								
Interim Constructive Analysis ICAR Blk04											△																	
Interim Constructive Analysis ICAR Blk06															△													
BMDS SIM v2.0 Release											△																	
BMDS SIM v1.1 Release								△																				
BMDS Network Centric Planner Demo							△		△																			
BMDS SIM v1.0 Release						△																						
BMDS Analysis Federation Phase II											△																	
MDSE 6.0							△																					
MDSE 6.1											△																	

Legend

	Significant Event (complete)		Significant Event (planned)
	Milestone Decision (complete)		Milestone Decision (planned)
	Element Test (complete)		Element Test (planned)
	System Level Test (complete)		System Level Test (planned)
	Complete Activity		Planned Activity

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail					Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Modeling and Simulation							
Legacy M&S Tools Assessment	1Q-2Q						
Legacy M&S Tools Development	1Q-4Q	1Q					
GT 04-5	2Q						
Legacy M&S Tools Integration	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
MS Requirements Engineering	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q	3Q-4Q
Model Build Releases		4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
GTC 06-1		2Q					
GTC 06-2		3Q					
GTI 06-1		4Q					
GTC 06-3			1Q				
GTI 06-2			2Q				
MS O&F	1Q-4Q	1Q					
Strategic Plan	2Q-4Q						
M&S SEMP	1Q-4Q						
Needs Statement	3Q-4Q						
Capabilities Requirements Document	4Q	1Q					
Implementation Plan	4Q	1Q					
International Seminar		1Q					
Vigilant Shield Event		1Q					
USFJ Demo		2Q					
JPOW		2Q					
JEFX -Event		3Q					
Constructive Analysis CAR Blk04			4Q				
Constructive Analysis CAR Blk06				3Q			
WG 04-4 (IMD-5.3)	4Q						
WG 04-5 (IMD-5.4)		1Q					
WG 06-2 (IMD-6.2)		3Q					
WG 06-3 (IMD-7.1)			1Q				
WG 06-4 (IMD-7.2)			1Q				

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
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Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
MDIE Events				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
War game Events				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
OASiS Framework Specs	1Q-4Q	1Q					
Legacy M&S Tools Maintenance	1Q-4Q	1Q					
Interim Constructive Analysis ICAR Blk04			2Q				
Interim Constructive Analysis ICAR Blk06				2Q			
BMDS SIM v2.0 Release			1Q				
BMDS SIM v1.1 Release		4Q					
BMDS Network Centric Planner Demo		3Q	1Q				
BMDS SIM v1.0 Release		2Q					
BMDS Analysis Federation Phase II			2Q				
MDSE 6.0		3Q					
MDSE 6.1			2Q				

Common Environment and Threat Model, CETM; Missile Defense Integration Exercise, MDIE; War Game, WG

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0107 Safety, Quality and Mission Assurance	3,206	17,833	25,900	31,800	41,100	40,100	40,500
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The prior year (PY) and the FY05 funding for Safety, Quality, and Mission Assurance the amount of \$12 million is captured in PE 0603882C Project 0602.

A. Mission Description and Budget Item Justification

As a critical activity in the Ballistic Missile Defense System (BMDS), the Safety, Quality and Mission Assurance Directorate has the mission of ensuring the successful implementation throughout all Missile Defense Programs. This Directorate serves as the Missile Defense Agency's agent responsible for establishing and maintaining safety, quality and mission assurance throughout all aspects of the Ballistic Missile Defense System. The Safety, Quality and Mission Assurance Directorate provides Mission Assurance support for all Missile Defense Agency organizations and Elements to ensure and verify Capability, Testability, Reliability, Maintainability, Availability, Suitability, Producibility, and Supportability of the Ballistic Missile Defense System and compliance with all relevant laws and regulations. Other critical and essential activities for the Safety, Quality and Mission Assurance Directorate's includes advising senior management on the viability of industry, develop and implement policies, perform engineering and technical assessments and ensure Missile Defense Agency system-wide safety, quality and mission assurance (SQMA) throughout the design, development, production and operation of the Ballistic Missile Defense System. Within the Safety, Quality and Mission Assurance Directorate, responsibilities are functionally allocated to four groups; Assurance Integration, Mission Assurance, Quality Assurance and Safety.

In addition, the Safety, Quality and Mission Assurance Directorate is responsible for implementing Section 804 of the 2003 Defense Authorization Act, which requires MDA to establish and implement a program to improve the software acquisition process. The safety, quality and mission assurance, and software acquisition improvement activities performed by this Directorate encompass the development, engineering, testing, production, and fielding of ballistic missile defense elements under the cognizance of MDA. SQMA has also been given the responsibility for developing and implementing an MDA High Reliability Parts (HRP) management program to identify key parts/materials issues to ensure overall MDA and BMDS success.

Safety, Quality and Mission Assurance efforts enable the development, testing and fielding of an effective, reliable, and safe missile defense capability. To ensure the BMDS can meet its performance, schedule, quality, safety, and mission assurance requirements, MDA SQMA principles and disciplines are being applied throughout each individual element and the BMDS as a whole. These functions include establishment of BMDS safety plans, development and maintenance of the MDA Mission Assurance Provisions (MAP), BMDS development and maintenance of Mission

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Assurance Provision Implementation Plans (MAIPs), independent technical assessments of BMDS element SQMA efforts, establishing relationships with DOD and Military Service SQMA organizations, instituting SQMA in MDA acquisitions and establishing a Quality-centric culture and implementation to ensure mission success. Implementation and maintenance of SQMA disciplines are key to providing an effective war-fighting capability and ensuring all phases, including life-cycle support, are addressed within the confines of the BMDS. Once SQMA disciplines and techniques are established throughout MDA, it is essential to maintain those efforts throughout the BMDS life cycle.

Personnel: Provides funding for government salaries and benefits at the Missile Defense Agency that are associated with safety, quality, and mission assurance.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Safety, Quality and Mission Assurance	3,206	17,833	25,900
RDT&E Articles (Quantity)	0	0	0

The prior year (PY) and the FY05 funding Safety, Quality, and Mission Assurance the amount of \$12 million is captured in PE 0603882C Project 0602.

MDA/QS has significantly enhanced the mission success of the BMDS by implementing advanced SQMA concepts and techniques to effectively integrate Capability, Testability, Reliability, Maintainability, Availability, Suitability, Producibility, and Supportability into all phases of the BMDS life cycle. Our embedded/on-site Quality and Safety personnel have provided significant improvements to all aspects of BMDS design, production and testing.

FY05 Accomplishment:

- Conducted four unannounced Agency Mission Assurance audits at Raytheon - Tucson, AZ; Lockheed Martin - Troy, AL; Lockheed Martin - Sunnyvale, CA; Orbital - Chandler, AZ; and Boeing - Brownsville, TX that significantly enhanced the quality of BMDS products and systems
- Developed Mission Assurance Provisions for all BMDS Elements to standardize BMDS design, development, production, testing, fielding and operations.
- Coordinated implementation of Mission Assurance Implementation Provisions (MAIPS) for all BMDS Elements
- Safety, Quality and Mission Assurance (SQMA) Functions
 - Conducted four SQMA forums with DOD and industry to develop and disseminate SQMA Lessons Learned
 - Provided SQMA technical support to MDA Elements that improved their SQMA efforts.

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<ul style="list-style-type: none"> ○ Established MDA Metrics Program to provide information on the health of the BMDS to MDA management ○ Embedded SQMA personnel in Elements to provide needed expertise to guarantee that safety and quality was incorporated in their efforts ○ Participated in the BMDS Joint Reliability, Availability, Maintainability Evaluation Team (JRMET) that determined BMDS effectiveness ○ Implemented MDA's Safety and Quality Concerns Hotline as required by DOD regulation ● MDA Safety Functions <ul style="list-style-type: none"> ○ Established MDA safety policies and requirements as required by law and DOD regulations ○ Developed Capability Verification and Assessment addendum detailing the capability of the BMDS to operate safely in Block 2004 ○ Established an MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups that ensured that all BMDS activities are conducted safely. ○ Implemented an MDA Safety and Occupational Health (SOH) Mishap Investigation Program ○ Developed Agency-wide Range safety mediation, augmentation and commonality program to enhance BMDS safety. ○ Developed and implemented the MDA BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes. ○ Conducted required Occupational Safety and Health Inspections ● Software Acquisition (As required by Law - Section 804) <ul style="list-style-type: none"> ○ Developed a Software Acquisition Program Improvement Plan (SAIIP) ○ Developed initial MDA Software Readiness Level documents (SWRLs) ○ Revised and implemented the MDA Software Acquisition Process Framework (MSAPF) <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> ● Conduct up to 6 unannounced Agency Mission Assurance audits to continue enhancement of quality in BMDS products ● Implement the MDA Assurance Provisions via prime contracts to standardize BMDS design, development, production, testing, fielding and operations. ● Safety, Quality and Mission Assurance (SQMA) Functions <ul style="list-style-type: none"> ○ Schedule quarterly BMDS Safety, Quality and Mission Assurance forums to develop and disseminate SQMA Lessons Learned ○ Maintain embedded QS personnel in MDA organizations and elements to provide Quality and Mission Assurance expertise to enhance their SQMA efforts ○ Provide technical support to MDA programs to meet all Safety, Quality and Mission Assurance requirements to ensure that safety and quality is incorporated in their efforts. ○ Manage the integrated MDA Metrics Program to provide information on the health of the BMDS to MDA management 		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<ul style="list-style-type: none">○ Continue participation in the BMDS Joint Reliability, Availability, Maintainability Evaluation Team (JRMET) to determine BMDS effectiveness○ Maintain MDA's Safety and Quality Concerns Hotline as required by DOD regulation● MDA Safety Functions<ul style="list-style-type: none">○ Maintain and update MDA safety policies and requirements○ Develop Capability Verification and Assessment addendum detailing the capability of the BMDS to operate safely in Block 2006○ Maintain the MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS activities are conducted safely.○ Manage the MDA Safety and Occupational Health Mishap Investigation Program○ Conduct independent Safety Assessments/Reviews of MDA programs and Elements to enhance BMDS safety○ Maintain the Range Safety mediation, augmentation and commonality program○ Manage the MDA BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes.○ Perform all required Occupational Safety and Health Inspections of MDA facilities● Software Acquisition ((As required by Law - Section 804))<ul style="list-style-type: none">○ Implement the Software Acquisition Program Improvement Plan (SAIIP)○ Complete the MDA Software Readiness Level documents (SWRLs)○ Implement the MDA Software Acquisition Process Framework (MSAPF)○ Develop an MDA Software Acquisition Training/Education Program (SAT/EP)○ Develop an MDA Software Verification and Validation Program <p>FY07 Planned Program:</p> <ul style="list-style-type: none">● Conduct up to 8 unannounced Agency Mission Assurance audits to enhance the quality of BMDS products● Continue to implement the MDA Assurance Provisions via prime contracts to standardize BMDS design, development, production, testing, fielding and operations.● Safety, Quality and Mission Assurance (SQMA) Functions<ul style="list-style-type: none">○ Assess degree of MAP implementation through Supplier and Program assessments○ Conduct quarterly BMDS Safety, Quality and Mission Assurance forums to develop and disseminate SQMA Lessons Learned○ Maintain embedded QS personnel in MDA organizations and elements to provide Quality and Mission Assurance expertise to enhance their SQMA efforts		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core	
<ul style="list-style-type: none"> ○ Continue to provide technical support to MDA programs to develop and implement necessary Safety, Quality and Mission Assurance requirements. ○ Maintain/update the integrated MDA Metrics Program to provide information on the health of the BMDS to MDA management ○ Continue active participation in the BMDS Joint Reliability, Availability, Maintainability Evaluation Team (JRMET) to determine BMDS effectiveness ○ Maintain MDA's Safety and Quality Concerns Hotline as required by DOD regulation ○ Maintain and revise are necessary MDA safety policies and requirements ○ Develop Capability Verification and Assessment addendum detailing the capability of the BMDS to operate safely in Block 2006 ● MDA Safety Functions <ul style="list-style-type: none"> ○ Continue the MDA Safety Review Board to ensure that all BMDS activities are conducted safely. ○ Continue the MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS test and operational activities are conducted safely. ○ Continue the MDA Safety and Occupational Health Mishap Investigation Program ○ Conduct independent Safety Assessments/Reviews of MDA programs and Elements to enhance BMDS safety ○ Conduct independent Mission Assurance Assessments/Reviews of MDA programs and Elements ○ Maintain the Range Safety mediation, augmentation and commonality program ○ Maintain the MDA BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes. ○ Perform all required Occupational Safety and Health Inspections of MDA facilities ● Software Acquisition ((As required by Law - Section 804)) <ul style="list-style-type: none"> ○ Implement the Software Acquisition Program Improvement Plan (SAIIP) ○ Complete the MDA Software Readiness Level documents (SWRLs) ○ Implement the MDA Software Acquisition Process Framework (MSAPF) ○ Develop an MDA Software Acquisition Training/Education Program (SAT/EP) ○ Develop an MDA Software Verification and Validation Program ● High Reliability Parts Program <ul style="list-style-type: none"> ○ Finalize MDA HRP Program Plan ○ Begin implementation of MDA HRP Program ○ Establish Long Term Plan and Requirements 		

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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D. Acquisition Strategy

The execution of program activities is a collaborative effort involving subject matter experts from Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), Science and Engineering and Technical Assistance (SETA), and Industry. In addition extensive involvement by the major defense contractors responsible for implementation of the MAP requirements is required. Safety, Quality, and Mission Assurance and Software Acquisition Improvement initiatives will be executed by MDA directorates and industry contractors.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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I. Product Development Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Safety, Quality and Mission Assurance								
S/W Acq	C/FFP	Sparta/ AL, MD, VA	0	300	1/2Q	500	1/2Q	800
Subtotal Product Development			0	300		500		800

Remarks

II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Safety, Quality and Mission Assurance								
OGA Spt/Audits	SS/MIPR	NSWC Corona/ CA, VA	0	2,500	1/2Q	3,000	1/2Q	5,500
Safety & Quality/Audits	C/FFP	SRS Tech/ VA, MD	0	4,200	1/2Q	5,600	1/2Q	9,800
Mission Assurance/Audits	C/FFP	Swales/ VA, MD, NM, CA	0	2,800	1/2Q	3,550	1/2Q	6,350
Metrics/S/W Acq	C/FFP	BAE/SMDC/ AL, VA, MD	0	1,708	1/2Q	600	1/2Q	2,308
OGA Spt	SS/MIPR	NSWC Crane/ IN, VA	0	585	1/2Q	600	1/2Q	1,185
Govt Spt	SS/MIPR	NSWC VA Beach/ VA	0	200	1Q	200	1Q	400
S/W Acquisition	C/FFRDC	SEI/ PA, VA	0	300	1Q	300	1Q	600

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Engrng Review Board	C/FFRDC	Aerospace, SEI/ PA, CA, VA	0	0	N/A	730	1/2Q	730
Parts Material Prog	SS/MIPR	NSWC, Crane/ IN, VA	0	0	N/A	2,700	1/2Q	2,700
Subtotal Support Costs			0	12,293		17,280		29573

Remarks

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

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

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Safety, Quality and Mission Assurance								
QS Civilian Salaries	TM	MDA/ VA, MD, AL, CA, AZ, HI, AK, MA, NJ, FL, AR, UT, MH	0	5,240	N/A	7,320	N/A	12,560

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/Oblg Date	FY 2007 Cost	FY 2007 Award/Oblg Date	Total Cost
Travel	TM	MDA/ VA, MD, AL, CA, AZ, HI, AK, MA, NJ, FL, AR, UT, MH	0	0	N/A	800	N/A	800
Subtotal Management Services			0	5,240		8,120		13360

Remarks

Project Total Cost			0	17,833		25,900		43,733
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Safety, Quality, and Mission Assurance																												
Develop Non-Advocate Safety Program	▲																											
Implement Non-Advocate Safety Program					▲																							
Revise S/W Acq Improvement Prog Plan (SAIPP)	▲				▲				▲																			
Implement SAIPP		▲	▲	▲		▲	▲	▲		▲	▲	▲																
Revise Software Readiness Levels (SWRLs)	▲				▲																							
Implement SWRLs		▲			▲																							
Devlp S/W Verification & Validation Prog					▲																							
Implement MDA S/W Verification & Validation Prog									▲																			
Implement MDA Assurance Provisions					▲																							
Develop MDA Mishap Invest. Prog.	▲																											
Implement MDA Mishap Invest. Prog					▲																							
Revise MDA S/W Acq Process Framework (MSAPF)		▲																										
Implement MSAPF					▲																							
Implement SAT/EP									▲																			
Range Safety mediation, augment, & commonality Prg	▲				▲																							

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

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

Date
February 2006

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Safety, Quality, and Mission Assurance																												
Coord MDA Mission Assurance Implement Pln	▲																											
Assess MDA Mission Assurance Implement Pln					▲																							
Maintain MDA/BMDS Safety and Quality Hotline	▲								▲																			
Develop Integrated Metrics Program	▲																											
Implement Integrated MDA Metrics Prog					▲																							
Independent Safety Assessments/Reviews					▲																							
Perform Occupational Safety & Health Inspections			▲						▲																			
Establish MDA/BMDS Safety Review Board & Council	▲																											
Implement MDA/BMDS Safety Review Board & Council					▲																							
Revise MDA/BMDS Safety Policy & reqmts	▲																											
Implement MDA/BMDS Safety Policy & reqmts					▲																							
Implement SQMA Forums	▲																											
Conduct SQMA Forums					▲																							
Establish MDA/BMDS Safety Officer Program	▲																											
Implement MDA/BMDS Safety Officer Program					▲																							

Legend

▲	Significant Event (complete)	▲	Significant Event (planned)
★	Milestone Decision (complete)	☆	Milestone Decision (planned)
◆	Element Test (complete)	◇	Element Test (planned)
◀▶	System Level Test (complete)	◊	System Level Test (planned)
▲	Complete Activity	▲	Planned Activity

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail				Date February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Safety, Quality, and Mission Assurance							
Develop Non-Advocate Safety Program	1Q-4Q						
Implement Non-Advocate Safety Program		1Q-4Q					
Conduct Non-Advocate Safety Program			1Q-4Q				
Revise S/W Acq Improvement Prog Plan (SAIPP)	1Q	1Q	1Q				
Implement SAIPP	2Q,3Q,4Q	2Q,3Q,4Q	2Q,3Q,4Q				
Revise Software Readiness Levels (SWRLs)	1Q	1Q					
Implement SWRLs	2Q-4Q	1Q-4Q	1Q-4Q				
Devlp S/W Verification & Validation Prog		1Q-4Q					
Implement MDA S/W Verification & Validation Prog			1Q-4Q				
Develop MDA Assurance Provisions	1Q-4Q						
Implement MDA Assurance Provisions		1Q-4Q	1Q-4Q				
Develop MDA Mishap Invest. Prog.	1Q-4Q						
Implement MDA Mishap Invest. Prog		1Q-4Q	1Q-4Q				
Revise MDA S/W Acq Process Framework (MSAPF)	2Q-4Q						
Implement MSAPF		1Q-4Q	1Q-4Q				
Develop S/W Acq Training/Edu Prog (SAT/EP)	3Q-4Q	1Q-2Q					
Implement SAT/EP		3Q-4Q	1Q-4Q				
Range Safety mediation, augment, & commonality Prg	1Q-4Q	1Q-4Q	1Q-4Q				
Coord MDA Mission Assurance Implement Pln	1Q-4Q						
Assess MDA Mission Assurance Implement Pln		1Q-4Q	1Q-4Q				
Maintain MDA/BMDS Safety and Quality Hotline	1Q-4Q	1Q-4Q	1Q-4Q				
Develop Integrated Metrics Program	1Q-4Q						
Implement Integrated MDA Metrics Prog		1Q-4Q	1Q-4Q				
Revise/Update Integrated Metrics Program			3Q-4Q	1Q			
Independent Safety Assessments/Reviews		1Q-4Q	1Q-4Q				
Perform Occupational Safety & Health Inspections	2Q-4Q	1Q-4Q	1Q-4Q				

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Establish MDA/BMDS Safety Review Board & Council	1Q-4Q						
Implement MDA/BMDS Safety Review Board & Council		1Q-4Q	1Q-4Q				
Revise MDA/BMDS Safety Policy & reqmts	1Q-4Q						
Implement MDA/BMDS Safety Policy & reqmts		1Q-4Q	1Q-4Q				
Implement SQMA Forums	1Q-4Q						
Conduct SQMA Forums		1Q-4Q	1Q-4Q				
Establish MDA/BMDS Safety Officer Program	1Q-4Q						
Implement MDA/BMDS Safety Officer Program		1Q-4Q	1Q-4Q				

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	16,185	12,278	21,414	26,343	29,549	33,627	25,714
RDT&E Articles Qty	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Civilian Salaries and Support	16,185	12,278	21,414
RDT&E Articles (Quantity)	0	0	0

See Section A: Mission Description and Budget Item Justification

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603890C Ballistic Missile Defense System Core
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C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603894C Multiple Kill Vehicle	0	83,000	220,370	273,805	307,566	309,284	115,119	1,309,144
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475