Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	425,889	413,934	432,262	482,947	605,219	561,947	571,498
0101 Systems Engineering & Integration	101,305	0	0	0	0	0	0
YX24 Systems Engineering & Integration	0	118,750	124,080	132,185	173,833	164,329	166,991
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	19,109	0	0	0	0	0	0
0102 Intelligence and Security	18,396	0	0	0	0	0	0
YX28 Intelligence & Security	0	21,368	23,035	33,587	48,726	46,423	47,176
0103 Producibility & Manufacturing Technology	33,898	0	0	0	0	0	0
YX29 Producibility and Manufacturing Technology	0	29,668	33,338	38,626	47,673	44,856	45,582
0104 BMD Information Management Systems	102,710	0	0	0	0	0	0
YX30 BMD Information Management Systems	0	111,675	106,832	127,455	156,943	137,550	139,778
0106 Modeling & Simulation	91,488	0	0	0	0	0	0
YX31 Modeling & Simulation	0	91,765	103,598	97,390	119,244	112,111	113,926
0107 Safety, Quality and Mission Assurance	22,110	0	0	0	0	0	0
YX32 Safety, Quality and Mission Assurance	0	26,248	28,860	35,114	42,920	40,346	40,999
0602 Program-Wide Support	36,873	0	0	0	0	0	0
ZX40 Program-Wide Support	0	14,460	12,519	18,590	15,880	16,332	17,046

Note: For FY07, this PE consists of eight projects: 0101-Systems Engineering & Integration; 0105-Countermeasures/Counter-Countermeasures; 0102-Intelligence and Security; 0103-Producibility and Manufacturing Technology; 0104-BMD Information Management System; 0106-Modeling and Simulation; 0107-Safety, Quality and Mission Assurance; and 0602-Program-Wide Support.

For FY08-13, this PE consists of six projects: YX24 Systems Engineering & Integration Mission Area Investment; YX28 Intelligence and Security; YX29 Producibility and Manufacturing Technology; YX30 BMD Information Management Systems; YX31 Modeling and Simulation; YX32 Safety, Quality and Mission Assurance.

1. Funding for content in budget project YX24 (FY08 through FY13) was previously included in FY07 within budget projects 0101 and 0105.

2. Starting in FY08, funding for all content in budget project 0101 is included within budget project YX24.

3. Starting in FY08, funding for Countermeasures/Counter-Countermeasures (CM/CCM) in budget project 0105 is included within budget project YX24.

4. Starting in FY08, funding for all content in budget project 0102 Intelligence and Security is included within budget project YX28.

5. Starting in FY08, funding for all content in budget project 0103 Producibility and Manufacturing Technology is included within budget project YX29.

6. Starting in FY08, funding for all content in budget project 0104 BMD Information Management Systems is included within budget project YX30.

7. Starting in FY08, funding for all content in budget project 0106 Modeling & Simulation is included within budget project YX31.

8. Starting in FY08, funding for all content in budget project 0107 Safety, Quality and Mission Assurance is included within budget project YX32.

A. Mission Description and Budget Item Justification

A.1 System Element Description

(0101 and YX24) SYSTEMS ENGINEERING AND INTEGRATION (SE&I)

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) SE&I 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, including support as necessary for BMDS operational missions. This strategy provides core technical efforts to define, design, and assess the BMDS capabilities, and to enhance these capabilities over time to defeat emerging adversary capabilities 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 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 which will defeat adversary capabilities.

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 ensures continuous availability of performance baselines for defense of the United States, friends, allies and deployed forces to defeat adversary capabilities. SE&I efforts provide top-

down, overall architectural direction for development and assessment to ensure the BMDS functions as an integrated system. System Engineering assesses the feasibility of BMDS evolutionary development concepts and makes performance trade-offs and investment recommendations through the collaborative system engineering process. This process is a time-phased approach focused on delivery and improvement of the BMDS capability to defeat adversary capabilities and identifies required system-wide behavior, validates Element system designs, assesses and verifies system capability, and enables functional allocation of required capabilities in order to provide the warfighter with improved planning, situational awareness, and engagement execution.

(0105 and YX24) COUNTERMEASURES/COUNTER-COUNTERMEASURES (CM/CCM)

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.

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.

(0102 and YX28) INTELLIGENCE AND SECURITY

This project funds three specific areas: 1) Intelligence in that the process begins with the collection and analysis of data on foreign threat missiles. MDA uses this information to provide support to the BMDS architecture design, testing, modeling and wargaming to reduce risk and improve system performance; 2) Counterintelligence undertakes activities as part of an integrated DoD and national effort to detect, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, sabotage, espionage, sedition, suversion and terrorist activiteis against MDA or against U.S. national security, and 3) BMDS Security Assessment and Certification develops a comprehensie picture of Information Assurance/Computer Network Defense (IA/CND) architecture at all levels of BMDS. Together these efforts provide critical information regarding threat ballistic missile

system capabilities (Intelligence); protection of personnel and activities from espionage and terrorism through active and passive activities (Counterintelligence); and BMDS system vulnerabilities (BMDS Security Assessment and Certification).

(0103 and YX29) PRODUCIBILITY AND MANUFACTURING TECHNOLOGY (MP)

MP conducts manufacturing risk assessments through Engineering and Manufacturing Readiness Level (EMRL) Assessments which is 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 BMDS. 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. In each of these key investment areas, DEP conducts projects that provide key component and subsystem capabilities that are then incorporated into the applicable program element.

(0104 and YX30) BMD INFORMATION MANAGEMENT SYSTEMS

The MDA Director has established a multi-year strategy to realign and consolidate information technology resources that directly support our mission, test, and administrative systems. This strategy is designed to achieve secure systems that provide greater efficiency and effectiveness in compliance with Federal mandates and DoD policies. The MDA Information Management / Information Technology (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. The BMD Information Management Systems project includes the following Task areas:

- Enterprise Architecture and Engineering
- Core Enterprise Applications
- Enterprise Plans, Policies and Analyses
- MDA General Service Area Networks
- Enterprise Information Assurance (IA)
- Service IM/IT for Executing Agents
- US National Capital Region Metropolitan Area Network (MAN)

- MDA Video Teleconferencing
- US South MAN
- MDA Knowledge On-Line
- US West MAN

(0106 and YX31) MODELING AND SIMULATION (M&S)

The mission of MDA's Modeling and Simulation (M&S) program is to engineer and deliver validated integrated simulation solutions for the primary uses of BMDS Performance Assessment and Ground Test, with additional capability to support BMDS-Element integration, missile defense wargames & exercises (national and international), BMDS training, and BMDS concept analysis. In this role, M&S provides cost-effective and proactive tools to assess the fielded capabilities of the BMDS, analyze and foster accelerated integration of Element and component capability into the BMDS, and is a valuable training and planning tool for warfighting Concept of Operations and missile defense planning. These M&S attributes enable the BMDS acquisition program to provide warfighting capability in a faster timetable and achieve tighter systems integration. The M&S program accomplishes this by engineering and delivering an M&S tool set for planning, engineering, testing, acquiring and operating an integrated and evolving BMD System. For each venue, in cooperation with Element Program Offices, M&S defines, designs, develops, deploys and maintains system-level 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.

(0107 and YX32) QUALITY, SAFETY AND MISSION ASSURANCE (QSMA)

The MDA Quality, Safety, and Mission Assurance (QSMA) Directorate is responsible for MDA system-wide quality, safety, and mission assurance. QSMA maintains an agency-wide perspective to ensure both program and system Mission Assurance requirements are met to achieve a capable BMDS. QSMA provides practical and robust safety, quality and mission assurance policy, guidance, expertise and assistance to the BMDS and all Elements. Each MDA program has direct QSMA support to ensure that quality , safety and mission assurance is specifically addressed at all times. In addition, QSMA provides the program elements and their prime contractors, sub-contractors, and suppliers direct onsite support to meet emergent or surge safety requirements, and to meet MDA senior leadership requirements. Support includes senior management consultation on the viability of contractual requirements, oversight and insight into design, development, test, manufacturing, and operations as well as safety support for all operational facilities and many supplier sites.

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A.2 System Element Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS)

SE&I Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

The Systems Engineering process, through its technical expertise, tools and facilities, plays a lead role in developing the warfighters' capacity, both in equipment and proficiency, to dominate the missile defense battle space and defend the United States and its allies from ballistic missile attacks. Systems Engineering identifies where performance gaps exist in BMDS capabilities and determines what improvements are required to close those gaps. Additionally, systems engineering keeps pace with continually advancing missile defense technologies and the latest improvements that need to be integrated into the BMDS over time to provide system upgrades, improve performance, and expand the protection coverage to meet new security requirements. The Systems Engineering process is highly collaborative with weapons, sensors, command and control, battle management and communications as the foundation for ensuring unity of effort in the development of subsystems and architecture designs to deliver system-level capability. The Combatant Commanders are involved through the Warfighter Involvement Process (WIP) throughout all phases of the System Engineering process, providing input to develop components to greater levels of reliability, operational availability, maintainability and life-cycle affordability and identifying areas where design improvements in BMDS components and subsystems may be needed.

Countermeasures/Counter counter Measures (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.

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.

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Intelligence and Security Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

1) Intelligence: The MDA Intelligence Diretorate acts as a clearing house for MDA's requirements for the Intelligence Community (IC) collection, analysis and production. The MDA Intelligence Directorate acts as agent for quality control and dissemination of IC products for all properly cleared Government and contractor personnel. MDA Intelligence Directorate provides feedback to the IC on subsequent questions, issues and other needs resulting from IC reporting. The intelligence process begins when the Intelligence Community (IC) collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are given to the Ballistic Missile Defense System (BMDS) System Engineer who uses the threats to develop and change the BMDS. Through this activity, threat data are provided to support BMDS architecture design, testing, modeling, and wargaming. This information reduces the risk and improves system performance. 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, IC 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 (CI). Pursuant to Executive Order 12333, (US Intelligence Activities), DoD Directive 5240.2 (DoD Counterintelligence), and other DoD CI policy issuances, the MDA Counterintelligence Division (DOSC) is charged with undertaking activities as part of an integrated DoD and national effort, to detect, identify, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, other intelligence activities, sabotage, espionage, sedition, subversion and terrorist activities directed against MDA personnel, information, materials, facilities, and activities or against U.S. national security.

3) BMDS Security Assessment and Certification: 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 DOSA Team must interface with relevant IA domain experts to 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 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 directorate's functions entail 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 Security Test and Evaluation (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 assessments and to recommend enhancements in the technical implementation and design.

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.

BMD Information Management Systems Budget Justification and Contribution to the BMDS:

The 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.

M&S Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

The M&S digital simulation architecture (DSA) and supporting frameworks and models are continuously used, in the form of validated integrated BMDS-level simulation compositions, by the MDA and DOT&E community to perform BMDS Performance Assessments and Ground Tests. Concurrently, this M&S capability also efficiently support secondary and tertiary uses for virtual BMDS integration, training, COCOM wargaming and exercises, and BMDS studies and analysis. Due to the spiral development nature of the BMDS and its fielded components, the DSA, integrating frameworks and models are designed for “plug and play” compatibility, with the integrated BMDS simulations constantly being updated to represent current, near-term and future epoch BMDS capability while reflecting the open architecture of the BMDS. This makes M&S a cost-effective means of evaluating BMDS capability.

QSMA Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

Quality, Safety 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, quality, safety and mission

assurance principles and disciplines are being standardized and applied throughout each individual element and the BMDS. Implementation and maintenance of these principles and disciplines are key to providing an effective war-fighting capability. Currently, there are over 24 MDA Assurance Representatives (MAR) located throughout the United States at major Government and supplier sites. MARs provide Defense Contract Management Agency (DCMA) and contractors direct access to MDA. Further, they are the conduit to the MDA Director providing unfettered insight into program operations "real time" through the QSMA weekly report.

A.3 Major System Element Goals

SE&I Major Program Goals:

- Establish key critical system level parts of the BMDS Technical Baseline:
  - Block Independent MDA Guidance Documentation (TOG - Technical Objectives and Goals)
  - Multiple Block Documentation (TBDD - Test Bed Description Document)
  - Block Specific Documentation (Specifications, Interface and Communications Design Documentation)
  - Adversary Capability Document (ACD)
  - Adversary Data Packages (ADP)
  - Master Integration Plan (MIP)
- 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 and defeat emerging adversary capabilities.
- Support as necessary BMDS operational missions.

CM/CCM Major Program Goals:

- Initiate engineering concept design of discrimination infrastructure to enable implementation of new CCM capabilities.
- Assess integrated performance of new discrimination infrastructure against ballistic missiles employing countermeasures.

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Intelligence and Security Major Program Goals:

- Represent MDA to national and DoD Counterintelligence, law enforcement and counterterrorist communities; ensure MDA's knowledge of the threat is complete, accurate and enduring.
- Ensure the intelligence community understands, accurately and timely fulfills MDA's current and future prioritized intelligence requirements; broker BMDS test support collection requirements with the intelligence community and that MDA's intelligence needs and finished intelligence requirements are understood while ensuring the intelligence community is involved in technical interchange meetings, etc.
- Define information assurance for Continental United States (CONUS) and non-CONUS based on BMDS assets consistently, comprehensively and definitively. Define Information Assurance/Computer Network Defense and cyber security infratructure intelligence requirements to focus intelligence community collection, analysis and production to target MDA/BMDS vulnerabilitites; definitized and incorporate information assurance into the systems engineering process.

MP Major Program Goals:

- 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 FY07 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.
- 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.

BMD Information Management Systems Major Program Goals:

- Implement a new information technology baseline in Huntsville, AL; Dahlgren and Alexandria, VA; and Ft Belvoir
- Implement initiatives to comply Federal mandates and DoD polices
- Consolidate information technology systems and communication networks where possible to achieve greater efficiencies
- Protect mission, test, and administrative systems from all threats and ensure integrity of data
- Sustain a high degree of service to our customers

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M&S Major Program Goals:

- GT-03/PA08 Plan, develop and conduct BMDS Performance Assessment and Ground Test events in cooperation with MDA and DOT&E stakeholders.
- GT-03/PA08 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.
- GT-03/PA08 Promote MDA's simulation-based acquisition of the BMDS.
- GT-03/PA08 Develop, proliferate, and maintain common standards across the enterprise including the architecture, framework, models, interfaces and quality assurance.
- PA08 Define Agency Modeling and Simulation strategy including establishing the system level architecture, policies, implementation priorities and risk management plan.
- PA08 Develop the BMDS M&S framework and architecture specifications.
- PA08 Support missile defense development, deployment, and testing with accredited system level models.
- PA08 Provide accreditation services for BMDS architectures, events, and venues utilizing BMDS models and simulations.
- PA08 Oversee verification and validation of Element/Component models and simulations.
- PA08 Provide objectives for and capturing data from BMDS Testing for anchoring and benchmarking BMDS models and simulations.
- INTERNATIONAL Provide foreign disclosure support for BMDS models and simulations.
- INTERNATIONAL Interface with international partners to support BMDS modeling and simulation.
- INTERNATIONAL Supervise the execution of international BMDS modeling and simulation activities.
- PA08 Develop end-to-end digital BMDS Simulation which integrates element/component models.
- PA08 Conduct validation, verification and accreditation activities associated with the BMDS Simulation and its associated element/component models.
- PA08 Develop Common Environment and Threat models in coordination with BMDS Element/Components and key threat stakeholders.
- PA08 Develop and operate event architectures.
- PA08 Provide facilities and support for executing simulations and venues.
- GT03 Develop BMDS Missile Defense System Exerciser HWIL end-to-end capabilities which integrate Element/Component HWIL.
- GT03 Develop and operate event architectures.
- GT03 Provide facilities and support for executing simulations and venues.

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Quality, Safety and Mission Assurance (QSMA) Major Program Goals:

- Improve BMDS processes such as Risk Management (RM), Configuration Management (CM), safety and hazard tracking, and Reliability, Maintainability, and Availability (RM&A), enabling direct measurement of Agency quality improvements.
- Establish and maintain a BMDS parts, materials, and process program that enables MDA to ensure the reliability of critical, space, airborne, sea, and ground assets while also protecting those assets from nefarious activity such as counterfeit parts, prohibited parts and materials, and sloppy process and procedures.
- Integrate QSMA into the BMDS by fostering communication between MARs, DCMA, and contractors in addition to supporting "out of the box" solutions to handle unique supplier problems by encouraging government/industry partnerships.
- Continue to make improvements to the QSMA audit process and independent safety assessments to ensure the BMDS is postured for mission success
- Facilitate continuous improvements in all audit areas with a focus on the five MAP disciplines showing the highest number of findings.
- Implement a software acquisition program that improves the processes in the requirements definition, development, test and integration of complex software programs.
- Enhance QSMA internal operations to provide effective support and solutions to improve quality, safety, and mission assurance functions
- Maintain and expand the MDA Safety Occupational Health program to include all MDA programs and operations
- Proactively address safety requirements and assessments for all system/element upgrades to eliminate or mitigate safety hazards as early in the design process as possible, and to continuously monitor the BMDS for new safety hazards.
- Improve insight into supplier processes through additional MAR coverage and the sharing of lessons learned.
- Seek out industry best practices that enhance the BMDS quality, safety and mission assurance processes and practices by fostering relationships with other agencies having Quality, Safety and Mission Assurance expertise.

A.4 Major Events Schedule and Description

Major Event	Project	Timeframe	Description
Contract Activity			
Milestones			
BMD System Specification (BMD SS)	YX24	2Q FY 2008	
BMD System Specification (BMD SS)	YX24	2Q FY 2009	
Technical Objectives & Goals / Updates	YX24	3Q FY 2009	
BMD System Specification (BMD SS)	YX24	2Q FY 2010	
BMD System Specification (BMD SS)	YX24	2Q FY 2011	
Technical Objectives & Goals / Updates	YX24	3Q FY 2011	

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Major Event	Project	Timeframe	Description
BMD System Specification (BMD SS)	YX24	2Q FY 2012	
BMD System Specification (BMD SS)	YX24	2Q FY 2013	
Modeling and Simulation			
Common Threat Scenarios/Models	YX31	1Q FY 2008 - 4Q FY 2013	• *per user event*
BMD International Simulation V 5.0	YX31	2Q FY 2008 - 1Q FY 2009	
BMDS Discrete Event Simulation V 4.0	YX31	2Q FY 2008 - 1Q FY 2009	
MDST V 10.0	YX31	2Q FY 2008 - 1Q FY 2009	
BMD International Simulation V 6.0	YX31	2Q FY 2009 - 1Q FY 2010	
BMDS Discrete Event Simulation V 5.0	YX31	2Q FY 2009 - 1Q FY 2010	
MDST V 11.0	YX31	2Q FY 2009 - 1Q FY 2010	
BMD International Simulation V 7.0	YX31	2Q FY 2010 - 1Q FY 2011	
BMDS Discrete Event Simulation V 6.0	YX31	2Q FY 2010 - 1Q FY 2011	
MDST V 12.0	YX31	2Q FY 2010 - 1Q FY 2011	
BMD International Simulation V 8.0	YX31	2Q FY 2011 - 1Q FY 2012	
BMDS Discrete Event Simulation V 7.0	YX31	2Q FY 2011 - 1Q FY 2012	
MDST V 13.0	YX31	2Q FY 2011 - 1Q FY 2012	
BMD International Simulation V 9.0	YX31	2Q FY 2012 - 1Q FY 2013	
BMDS Discrete Event Simulation V 8.0	YX31	2Q FY 2012 - 1Q FY 2013	
MDST V 14.0	YX31	2Q FY 2012 - 1Q FY 2013	
Safety, Quality, and Mission Assurance			
Support Baldrige Application Process	0107	1Q FY 2007 - 4Q FY 2007	
Engineering Standards			
CETM	YX31	1Q FY 2008 - 4Q FY 2009	
Delivery			
Modeling and Simulation			
BMDS SIM v2.0 Release	0106	1Q FY 2007	
Other			
Milestones			
Technical Objectives & Goals / Updates	0101	3Q FY 2007	
BLOCK 2008			
Test Bed System Specifications (TBSS)	0101	3Q FY 2007	
Block 2010			
Test Bed Description Document (TBDD)	0101	4Q FY 2007	

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B. Program Change Summary	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008 PB)	429,420	482,016	511,147
Current President's Budget (FY 2009 PB)	425,889	413,934	432,262
Total Adjustments	-3,531	-68,082	-78,885
Congressional Specific Program Adjustments	0	-65,228	0
Congressional Undistributed Adjustments	0	-2,854	0
Reprogrammings	2,880	0	0
SBIR/STTR Transfer	-6,411	0	0
Adjustments to Budget Years	0	0	-78,885

FY07 decrease of $3.531 million includes SBIR/STTR transfer and MDA reprogrammings.

FY08 decrease of $68.082 million includes a Congressionally specific program decrease of $65.228 million and a portion of the MDA Congressional undistributed reduction.

FY09 decrease of $78.885 million reflects MDA programmatic changes to support program requirements.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0101 Systems Engineering & Integration	101,305	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Starting in FY08, funding for all content in budget project 0101 is included within budget project YX24.

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 design, 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 Engagement Sequence Groups (ESGs) and also lead to new ESGs. The MDA identifies BMDS capabilities, architectures, and element contributions to counter the threat and organizes them by ESGs. These ESGs are developed by SE&I and describe a combination of sensors, weapons, and Command and Control, Battle Management, and Communications capabilities that must work together to detect, track, and intercept an enemy missile. Using ESGs as a tool enhances functional and engineering analysis, creates manageable combinations or Block configurations, simplifies allocations of BMDS capabilities, provides a structure to assess BMDS performance, and assists the warfighters in developing concepts of operations. In addition SE&I provides support as necessary for BMDS operational missions. During the recent period leading up to and following the launch of a TD-2 ballistic missile, SE&I formed a crisis action team that provided detailed analytical work, namely predicted system performance against potential threats and trajectories, impact of intercept debris, and timeline and engagement success analyses, that was the technical basis for decisions made at national level.

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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 ensures continuous availability of a proven performance baseline system for defense of the United States, friends, allies and deployed forces to defeat adversary capabilities: defines architectures, subsystem behaviors/functions, and critical interfaces, identifies information exchange requirements, performs technical trade studies, reviews technical and performance risks and develops mitigation strategies, oversees program development maturity across segments and manages multiple configuration baselines within block development cycles. 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 system designs, and assesses and verifies system capability, and 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 to defeat adversary capabilities. 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.

The Test Bed Planning function begins with an assessment of the threats to be countered by the BMDS. Test Bed Planning takes the input from the threat engineering team that defines the adversary capability, the Adversary Data Package (ADP), for future specific blocks, determines technology needs to defeat those capabilities, develops concept descriptions (CDs) for those maturing solutions to describe proposed concepts that would enhance the BMDS, and defines Engagement Sequence Groups (ESGs) to implement them. Test Bed Planning also finalizes recommended ESG assignments to future blocks for development.

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, performance 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, 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. The new concepts are analyzed and reviewed through two mechanisms: the annual Summer Study that looks at specific performance gaps and possible solutions for mitigation, and the Preliminary Capability

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Review (PCR) that looks at additional concepts not covered in the Summer Study. Those concepts chosen for development then go into the Test Bed Description Document. Test Bed Planning produces the Test Bed Description Document (TBDD), for future blocks. Each future Block's TBDD is issued to the Elements by MDA and documents the concepts demonstrating the most potential for improving BMDS effectiveness against adversary capabilities and integrates them into BMDS program planning. Without the identification of these concepts and the associated ESG improvements, the Elements would not have the functional and interface identification necessary to make ESGs operational. Approved ESGs are incorporated in BMDS design and description documentation to ensure Element programs include required hardware and software, 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 in defeating adversary capabilities.

BMDS design allocates the functions and interfaces 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, subsystem behaviors/functions and operational concepts are documented in the BMDS Test Bed System Specifications. 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, subsystem behavior identification and specification, information exchange requirements, interfaces, key interoperability requirements and design trade studies to ensure successful attainment to defeat adversary capabilities. 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. The Master Integration Plan defines integration 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, verified and assessed in accordance with the Responsible Test Organization's Integrated Master Test Plan and the system engineering Capabilities Assessment Plan, assuring that representative adversary capabilities are approximated in testing. 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, 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. 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. 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 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 Capability Assessment Reports. DoD then uses this 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 is the link between the warfighting community and the Systems Engineering team and provides sustaining engineering services for support, configuration management, operations and sustainment of BMDS capabilities before, during and after transition of fielded capability. The Operational Integration and Support function facilitates the transition of an available defensive capability to the warfighter by advocating user-requested changes and modifications to the designed system. This ensures successful transition of an operational BMDS capability by processing and tracking operational configuration baseline changes through the Program Change Board. Development and management of the Operational Configuration Baseline, Concept of Operations (CONOPs), assessment reports, the Incremental Capability Review, and liaison with user organizations at various command levels are key operational integration activities. By ensuring that Systems Engineering responds to requested changes (through the Prioritized Capabilities List and the Warfighter Involvement Process), the OI&S team provides operational support to the warfighter. The Operational Integration and Support team also obtains feedback from the warfighter through simulations, demonstrations, and training exercises to refine system interfaces, modes of operation, and human-machine interfaces, enhancing system reliability,

maintainability, suitability and effectiveness. As-built system-level hardware and software products are managed within the Operational Configuration Baseline.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Test Bed Planning	11,756	0	0
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 for future blocks (e.g., Block 2010, Block 2012, Block 2014, etc.). 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 Element for BMDS integration. Test Bed Planning also conducts threat system engineering and lethality assessment to characterize current and emerging threat system performance (adversary capabilities) to ensure BMDS efforts keep pace with threat developments and produces Capability Planning Specifications for documenting pre-cursor requirements for new programs and specific upgrades which impact overall BMDS performance to defeat adversary capabilities. As new improvements are introduced into the BMDS, the Capability Planning Specifications is the key document for allowing the responsible Element to start development planning and acquisition strategies to produce the necessary new capabilities on a schedule required by the system. The Capability Planning Specification defines the threat envisioned for the time period of the development, and the requirements necessary to allow the Element or component function to tie into the overall system in an integrated manner. The Capability Planning Specification is produced in conjunction with the stakeholders involved in delivering the capability.

FY07 Accomplishments:

- Delivered the update to the Technical Objectives and Goals (TOG) which provides the overall development goals and metrics used to judge system capability and progress.
- Drafted Engineering Guidance for Block 2010/2012, requesting Element planning and programming for designated ESGs. 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.

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- Completed the Test Bed Description Document for Block 2010/2012 directing the Elements to develop supporting specifications. The TBDD documents the concepts demonstrating the most potential for improving BMDS effectiveness and integrates them into BMDS program planning for Block-specific requirements.
- Facilitated System Capability Review for Block 2008.
- Produced Concept Descriptions and ESGs for BMDS Block 2014 Planning.
- Initiated Block 2014 Performance Gap Analysis to define what concepts need to be considered for future block development to defeat emerging adversary capabilities.
- Oversaw CM/CCM Program and assess technical and performance risks, identify mitigation strategies and integrate engineering changes to the baseline BMDS to improve performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures.
- Took input from the international program and analyzed effects on future capability ensuring that international goals are consistent with the needs of the BMDS and that efforts leverage foreign technology and engineering capability as directed by the MDA Director.
- Conducted the 2007 Summer Study that identified linking the Warfighter's Prioritized Capabilities List (PCL) with the MDA System Engineering process to assure spiral capability development matched Warfighter needs more closely.
- Continued producing Capability Planning Specifications for additional programs.

	FY 2007	FY 2008	FY 2009
BMDS Design & Specification	14,319	0	0
RDT&E Articles (Quantity)	0	0	0

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) and Interface Control Documents (ICDs). 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. The system ICDs identify interface exchange requirements including data attributes, timelines, criticality, and frequency. 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 to defeat adversary capabilities 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.

FY07 Accomplishments:

- Finalized the automated process for System-Element requirements traceability and synchronization using Dynamic Object Oriented Requirements System (DOORS) partitioning.

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- Finalized the near-term discrimination BMDS design architecture, specification and interface requirements for Element execution.
- Managed finalization of the detailed design interface and communications requirements.
- Served as the Chair of the BMDS Interface Control Working Group managing the BMDS interface requirements and detailed design across the BMDS enterprise.
- Finalized the BMDS design architecture and associated Specification and Interface requirements for near-term capabilities for use by the Elements.

	FY 2007	FY 2008	FY 2009
Test Bed Integration & Implementation	13,916	0	0
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 into system integration and test. Additionally, integration produces tools and products to facilitate the understanding and monitoring of BMDS capabilities by the Combatant Commands.

FY07 Accomplishments:

- Conducted Block 2006 delta System Design Review to assess maturity of plans and readiness to execute the second phase of Block 2006 integration.
- Updated the Master Integration Plan to reflect changes in program execution plans.
- Maintained MIP Planning Allocation Matrix (PAM) and Integration Event Matrix (IEM) tools for Block 2006 and developed the PAM/IEM to support 2007-2011 integration, test, assessment and verification activities.
- Provided system test objectives, scenarios representing adversary capabilities, and required test article configurations for system test events.
- Conducted System Engineering Integration Working Group meetings to vet, assign and work Block 2006 implementation issues.
- Provided Technical and System Integration documentation to USNORTHCOM and USSTRATCOM to support training and Block 2006 integration Source Data for BMDS Users Handbook.
- Tracked system interfaces and related documentation and provide status to the Director's Executive Knowledge Database.
- Served as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Working Group (TCWG) to coordinate test events and schedules and determined impact of delays in the integration process.

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- Integrated System Engineering Test Bed Integration and Implementation activities more closely with the BMDS Integration Directorate.

	FY 2007	FY 2008	FY 2009
Verification & Assessment Engineering	5,869	0	0
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 are validated and accredited by using the results of the test program.

FY07 Accomplishments:

- Published the end of CY06 Interim Capability Assessment Report (ICAR) to report assessments of BMDS performance demonstrated in BMDS system-level testing and analyses.
- Updated Block 2006 Capability Assessment Plan (CAP) to describe the plan of action required to assess BMDS system-level technical performance.
- Drafted 2008 CAP to describe the plan of action required to assess BMDS system-level technical performance.
- Maintained the Block 2006 Traceability Matrix to map system-level requirements to the specifications of MDA elements and components.
- Developed Verification Ledger (Dynamic Object Oriented Requirements System (DOORS)-based) for monthly tracking of sub-system verification status.
- Provided System Impact Assessment Reports for significant test events and test campaigns.
- Drafted 2008 Analysis Plan for unique system-level Modeling and Simulation requirements.

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	FY 2007	FY 2008	FY 2009
Operational Integration & Support	3,167	0	0
RDT&E Articles (Quantity)	0	0	0

The Operational Integration and Support team is the link between the warfighting community and the Systems Engineering team and provides sustaining engineering services for support, configuration management, operations and sustainment of BMDS capabilities before, during and after transition of fielded capability. Operational Integration and Support collects, analyzes, and disseminates user input and feedback on the BMDS for incorporation into the collaborative System Engineering process by supporting Force Structure Integration and Deployment, and capability development.

FY07 Accomplishments:

- Served as warfighter advocates into the System Engineering process through interaction with the Warfighter Support Center.
- Supported Combatant Command CONOPS and EXORD updates.
- Represented Systems Engineering in the Warfighter Involvement Process developed by USSTRATCOM, as well as provided input to USSTRATCOM-led WIP Focus Groups.
- Supported warfighter surveys to collect and disseminate user input and feedback on the BMDS for incorporation into the collaborative system engineering process.
- Supported Force Structure Integration and Deployment by working with the COCOMs and affected services in focus groups or integrated process teams involving BMDS system engineering issues.
- Coordinated an Incremental Capability Review for BMDS components being nominated as deployment options/by higher authority for designation as partially or fully fielded capabilities.
- Communicated system engineering concepts and results of engineering analyses to users and stakeholders.
- Developed and proposed changes to the operational configuration baseline.
- Coordinated analysis of operational configuration baseline change requests and presented changes to the Integration Synchronization Group and the Program Change Board.
- Prepared Decision Memoranda to support changes to the operational baseline.
- Supported the tracking of Modification Requests that lead to Near Term capability development and/or modification to the deployed BMDS capabilities.

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- Supported the Deputy for Integration and Fielding including the Warfighter Support Center and Space Missile Defense Center regarding Doctrine, Organization, Training, Material, Leadership and education, Personnel, Facilities (DOTMLPF) Analysis of Emerging Test-bed Capabilities that were proposed for potential operational use.
- Supported the Deputy for Integration and Fielding including the Warfighter Support Center on COCOM analytic efforts and studies by providing system engineering expertise.
- Collaborated with the WIP Focus Groups in the development of the Functional Needs Analysis Activity Model.
- Participated in the Joint Warfighter Support program and acted as a SE&I liaison for joint or service exercises, wargames, simulations, demonstrations, and seminars.

	FY 2007	FY 2008	FY 2009
System Assessment and Analysis	14,192	0	0
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 to defeat adversary capabilities, formulation of system alternatives and their relative contributions, engineering trade studies, and rapid responses to senior department "what if"` 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.

FY07 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 Assessment Plan, and Capabilities Assessment Report.
- Conducted 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.
- Conducted Quick reaction analyses, as required, to support real-world events.
- Developed and maintained the Element/Component Characterization Analysis and the analysis knowledge base.
- Developed models and simulation requirements for submission to the MDA modeling and simulation process.
- Provided support as necessary for BMDS operational mission.

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	FY 2007	FY 2008	FY 2009
Program Management	26,672	0	0
RDT&E Articles (Quantity)	0	0	0

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 Corporation and Applied Physics Laboratory contracts and award fees), correspondence, information and document management, policy and procedures, security, and government human relations functions.

FY07 Accomplishments:

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

	FY 2007	FY 2008	FY 2009
Threat Systems Engineering	11,414	0	0
RDT&E Articles (Quantity)	0	0	0

Threat Systems Engineering interfaces throughout the SE&I process to define the parameters and assess threats to be countered by the BMDS and provide 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; and maintains oversight and liaison with element lethality programs, including system flight test opportunities to defeat adversary capabilities.

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FY07 Accomplishments:

- Continued the development and evolution of the Adversary Capability Document to include additional data files characterizing the performance of Adversary Missile Characterizations and payloads which defined the projected threat environment for the BMDS.
- Completed the development of the Block 2008 Adversary Data Package utilized for the design and assessment of the BMDS.
- Continued technical evaluation of emerging Adversary characteristics to be included within future Block-specific ADPs (Block 2010, Block 2012, Block 2014).
- Defined the Adversary Threat Parameter Characterizations and their relationship to BMDS target development.
- In collaboration with CM/CCM, continued to integrate the Adversary Capability Document Parameter's Inter-Relationship Study into the Adversary Capability Document. Continued the efficient execution of the approved Corporate Lethality Plan under the direction of the Systems Engineering and Integration Council.
- Defined and published lethality specific payload characterizations to be utilized in conjunction with the Block-specific 2006-2008 Adversary Data Package and Multi-Kill Vehicle threat package.
- Added an additional kill criteria assessment capability to the numerical Test Bed.
- Added the ability to calculate post-engagement debris predictions to the numerical Test Bed.
- Completed lethality and collateral effects gap analysis detailed in the FY06 BMDS Lethality Plan. The results of the gap analysis will drive the direction and extent of future efforts.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281

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	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Test Bed Planning								
Industry	CPAF	Boeing/VA	11,066	0	N/A	0	N/A	11,066
SETA	CPFF	Sparta/VA	14,415	0	N/A	0	N/A	14,415
SETA	CPFF	CSC/VA	11,337	0	N/A	0	N/A	11,337
FFRDC/UARC	MIPR	Aerospace/VA, CA	8,330	0	N/A	0	N/A	8,330
FFRDC/UARC	FFRDC	IDA/VA	741	0	N/A	0	N/A	741
FFRDC/UARC	MIPR	MIT/LL/MA	5,464	0	N/A	0	N/A	5,464
FFRDC/UARC	MIPR	LLNL/NM	3,491	0	N/A	0	N/A	3,491
FFRDC/UARC	FFRDC	SDL/UT	1,108	0	N/A	0	1Q	1,108
FFRDC/UARC	MIPR	Sandia/NM	1,231	0	N/A	0	N/A	1,231
BMDS Design & Specification								
Industry	CPAF	Boeing/VA	40,175	0	N/A	0	N/A	40,175
SETA	CPFF	Sparta/VA	7,189	0	N/A	0	N/A	7,189
SETA	CPFF	CSC/VA	6,289	0	N/A	0	N/A	6,289
Test Bed Integration & Implementation								
Industry	CPAF	Boeing/VA	35,993	0	N/A	0	N/A	35,993
SETA	CPFF	Sparta/VA	7,896	0	N/A	0	N/A	7,896
SETA	CPFF	CSC/VA	7,875	0	N/A	0	N/A	7,875

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Verification & Assessment Engineering								
Industry	CPAF	Boeing/VA	13,481	0	N/A	0	N/A	13,481
SETA	CPFF	Sparta/VA	5,353	0	N/A	0	N/A	5,353
SETA	CPFF	CSC/VA	11,379	0	N/A	0	N/A	11,379
FFRDC/UARC	FFRDC	JHU/APL/MD	3,772	0	N/A	0	N/A	3,772
FFRDC/UARC	MIPR	Sandia/NM	626	0	N/A	0	N/A	626
Operational Integration & Support								
Industry	CPAF	Boeing/VA	2,146	0	N/A	0	N/A	2,146
SETA	CPFF	Sparta/VA	1,849	0	N/A	0	N/A	1,849
SETA	CPFF	CSC/VA	2,211	0	N/A	0	N/A	2,211
System Assessment and Analysis								
Industry	CPAF	Boeing/VA	29,491	0	N/A	0	N/A	29,491
SETA	CPFF	Sparta/VA	33,575	0	N/A	0	N/A	33,575
SETA	CPFF	CSC/VA	10,140	0	N/A	0	N/A	10,140
Threat Systems Engineering								
SETA	CPFF	Sparta/VA	5,744	0	N/A	0	N/A	5,744
SETA	CPFF	CSC/VA	3,970	0	N/A	0	N/A	3,970
SETA	CPFF	Schafer/VA	3,056	0	N/A	0	N/A	3,056
FFRDC/UARC	MIPR	Aerospace/CA, VA	1,154	0	N/A	0	N/A	1,154
FFRDC/UARC	MIPR	MIT/LL/MA	1,583	0	N/A	0	N/A	1,583
FFRDC/UARC	FFRDC	JHU/APL/MD	4,374	0	N/A	0	N/A	4,374
FFRDC/UARC	MIPR	Sandia/NM	3,097	0	N/A	0	N/A	3,097
FFRDC/UARC	MIPR	LLNL/CA, VA	1,262	0	N/A	0	N/A	1,262
Other DoD		SMDC/AL	7,861	0	N/A	0	N/A	7,861
Other DoD	MIPR	Battelle/OH	3,966	0	N/A	0	N/A	3,966
Other DoD	MIPR	NSWC/VA	3,482	0	N/A	0	N/A	3,482

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Other DoD	MIPR	AMSC/VA	840	0	N/A	0	N/A	840
Subtotal Support Costs			317,012	0		0		317012

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Test Bed Planning								
FFRDC/UARC	MIPR	LLNL/CA, VA	637	0	N/A	0	N/A	637
BMDS Design & Specification								
Verification & Assessment Engineering								
FFRDC/UARC	FFRDC	JHU/APL/MD	610	0	N/A	0	N/A	610
Operational Integration & Support								
Program Management								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Industry	CPAF	Boeing/VA	112,943	0	N/A	0	N/A	112,943
SETA	CPFF	Sparta/VA	11,271	0	N/A	0	N/A	11,271
SETA	CPFF	CSC/VA	9,337	0	N/A	0	N/A	9,337
FFRDC/UARC	MIPR	Aerospace/VA	825	0	N/A	0	N/A	825
Govt Personnel		WHS/DC	29,643	0	N/A	0	N/A	29,643
Travel			1,725	0	N/A	0	N/A	1,725
SETA	FFP	Paradigm/VA	367	0	N/A	0	N/A	367
Threat Systems Engineering								
SETA	CPFF	Sparta/VA	2,020	0	N/A	0	N/A	2,020
SETA	CPFF	CSC/VA	1,843	0	N/A	0	N/A	1,843
FFRDC/UARC	MIPR	LLNL/CA, VA	279	0	N/A	0	N/A	279
Subtotal Management Services			171,500	0		0		171500

Remarks

Project Total Cost			488,512	0		0		488,512

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestones																												
Technical Objectives & Goals / Updates			▲																									
Master Integration Plan (MIP)			▲																									
System Engineering Assessment Report (SEAR)		▲		▲																								
Adversary Capability Document / updates		▲																										
BLOCK 2008																												
Test Bed System Specifications (TBSS)			▲																									
Interface Control Document (ICD)			▲																									
Adversary Data Package (ADP)			▲																									
Block 2010																												
Test Bed Description Document (TBDD)				▲																								

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Integration							
Integration Monthly Report	1Q,2Q,3Q,4Q						
Block 2008 Integration Design Review	2Q						
Studies & Analyses							
E/CCA	1Q,2Q,3Q,4Q						
Milestones							
Technical Objectives & Goals / Updates	3Q						
Master Integration Plan (MIP)	3Q						
System Engineering Assessment Report (SEAR)	2Q,4Q						
Adversary Capability Document / updates	2Q						
BLOCK 2008							
Test Bed System Specifications (TBSS)	3Q						
Interface Control Document (ICD)	3Q						
Adversary Data Package (ADP)	3Q						
Block 2010							
Test Bed Description Document (TBDD)	4Q						
General Milestones							
Adversary Engineering	1Q						
Special Adversary Capability Studies	1Q,2Q,3Q,4Q						
Perform Intel Threat Analysis	2Q						
Missile Characterizations	3Q						
Countermeasure Characterizations	4Q						
Lethality							
Perform Studies Chem./Bio - Agents at Altitudes	1Q						
Analyze Missile Payload Lethality	2Q						
Analyze Post Engagement Lethality Data	2Q						
Kill Assessment Phenomenology	3Q						
Submunition Properties	3Q						
Viscoelastic Fluid Properties	3Q						
Chem-Bio Threats - Report	4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX24 Systems Engineering & Integration	0	118,750	124,080	132,185	173,833	164,329	166,991
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: For FY08-FY13, funding for all content in YX24 is a continuation of budget projects 0101 (Systems Engineering and Integration) and 0105 (Countermeasures/Counter-Countermeasures) and was explained in those projects in PB08.

A. Mission Description and Budget Item Justification

Systems Engineering and Integration (SE&I) leads the planning, design and development of the integrated BMDS by employing collaborative engineering techniques. Only System Engineering performed at the BMDS level can design and direct the necessary and unique cross Element/Component functionality allocation necessary to create the more capable integrated BMDS. This function is not performed at any other Element/Component within the BMDS. 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 an integrated engineering development process within a multi-block framework. During this development process resources are needed not only for near-term Block requirements, but also for longer-range Blocks still being defined. The current two-year block structure has been redefined to incorporate five near-term 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 Block development cycle (in the new MDA Block Structure) and the process phases for each development block do significantly overlap. For example, at the current time Blocks 1.0 through 5.0 are in various stages of design, test, verification, and fielding (operational integration). The Block structure is an increment of fielded capabilities enabling MDA to execute configuration management, to 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. Additionally, in support of the evolving BMDS role in real-world events, during the summer 2006 period leading up to and following the launch of North Korea's ballistic missile, SE&I formed a crisis action team that provided detailed analytical work, namely predicted system performance against potential threat and trajectories, impact of intercept debris, and timeline and engagement success analyses, which provided the technical basis for decisions made at the national level. Since then, SE&I formalized this quick-reaction team into a standing Warfighter Support Center available to support both routine and surge needs for analysis to support BMDS operations and exercises.

The system engineering process, which defines required system-wide behavior, validates Element system designs, and assesses and verifies system capability across the entire MDA Block process, involves five-phases: 1) Systems engineering planning/concept development; 2) design and

specification; 3) integration 4) test and 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 of the BMDS system capability to defeat adversary 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.

The System Engineering and Integration (SE&I) planning phase is a continuous process of assessing and choosing BMDS technical alternatives that can be included in the BMDS blocks. 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). The Planning Phase also uses the gap analysis and adversary capability information to generate BMDS capability needs to help the Advanced Technology community focus and prioritize their investments in the most critical need areas. Concepts demonstrating the most potential for improving BMDS effectiveness are integrated into BMDS program planning and documented in the Ballistic Missile Defense System Description Document for future capabilities. Systems Engineering Planning also conducts threat systems engineering and lethality assessment to characterize current and emerging threat system performance (adversary capabilities) to ensure that all Elements/Components of the BMDS use the same (common) threat and to keep pace with threat developments. Capability Planning Specifications are produced for documenting precursor requirements for new programs and specific upgrades which improve overall BMDS performance to defeat adversary capabilities. Threat Systems Engineering provides detailed threat analysis and characterization of various chemical agents and their stimulants, and obtains information on post-impact debris signatures as they impact the BMDS; plans, executes, and administers the MDA Corporate Lethality program; and maintains oversight and liaison with element lethality programs, including system flight test opportunities to defeat adversary capabilities.

BMDS Design and Specification continues the SE&I process and uses the data developed during the Planning process, along with existing Element specifications, to develop system specification and interface requirements documented in the integrated Ballistic Missile Defense System Specification and Interface Control Documents. Using standard, commercially available system engineering tools, Design and Specification phase defines and specifies the detailed BMDS design, including functional decomposition and allocation; timing, error, and performance requirements; specialty engineering design constraints and considerations; information and data exchange requirements; BMDS core standards identification and adherence. The detailed BMDS design is captured in Popkin's System Architect and Dynamic Object Oriented Requirements System enabling both engineering community design collaboration and configuration management and control. Both trade studies and performance analysis must be conducted and managed by SE&I at the BMDS level to ensure the proper defining and specifying the BMDS design architecture and specifications across the various Element and Components. BMD System level trades are not performed at the Element/Component levels. The BMDS design architecture, BMD System Specifications, and system level ICDs provide a common, executable set of requirements and design parameters to direct

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

Element design and component specification development that drive the detailed design and integration across the participating Elements. The Design and Specification activities are then culminated in the System/Subsystem Requirements Review to ensure technical execution and understanding to realize the integrated BMDS reflected in the BMDS design.

Integration and test describes those system engineering activities and events required to structure and test new block functionality as an integrated and ‘seamless ‘ end-to-end BMDS System level 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 addressing all active blocks in the programming cycle. The Master Integration Plan defines integration phases within the Blocks, which become the building blocks to achieve final capability, and allocates the ESG functionality captured in the BMD system specification and documents to those integration phases. Only SE&I is able to define the appropriate BMD System level test requirements across the BMD System Elements and Components and flowing them into the Responsible Test Organization's Integrated Master Test Plan and the system engineering Capabilities Assessment Plan. 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.

Test and Verification ensures the ‘as built’ system is compliant with the system specification and assesses performance of the delivered capability. During the test planning and execution phase, SE&I provides the needed system engineering support to the Responsible Test Organization, MDA's Test program leader, to ensure tests are appropriated planned, test scenarios are certified, and ground test models are accredited for use. SE&I engineers and analysts participate in the tests to collect and analyze data required for system verification, assessment and model validation. This work must be and is only done by SE&I at the BMD System level. Emerging BMDS block capabilities are critically assessed against the established Technical Objectives and Goals. 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. 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 Engagement Sequence Groups 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 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 blocks, 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 System Engineering Assessment Reports. DoD then uses this information to determine whether the ESG capability is ready for transition to operations, to production, or to the next stage of development.

Operational Integration is the link between the warfighting community and the Systems Engineering team and provides sustaining engineering and analytical services for support, configuration management, operations and sustainment of BMDS capabilities before, during and after transition of fielded capability. During 2007, SE&I stood up a permanent on-site presence in the Warfighter Support Center to enhance our ability to provide JFCC-IMD quick responses to BMDS operational capability questions. Additionally, the transition of an available defensive capability to the warfighter is facilitated by advocating user-requested changes and modifications to the designed system through the Prioritized Capabilities List, Modification Request Lists and the Warfighter Involvement Process. The SE&I group supporting Operational Integration processes and tracks operational configuration baseline changes through the Program Change Board.

BMD Systems level Assessment and Analysis is most effective when performed at the BMDS level by SE&I, 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 to defeat adversary capabilities, formulation of system alternatives and their relative contributions, engineering trade studies, and rapid responses to senior department “what if”` questions and scenarios.

SE&I managed Threat Systems Engineering interfaces throughout the planning, design and development process, to define the adversary missile capabilities directly supporting supports the development of the BMDS Description Document and System Specification. Only the common and consistent threat data, developed at the BMDS level, adequately supports the Integrated BMDS capability, design, verification, and assessment. It documents the threat missile system and countermeasures descriptions and associated digital data by producing threat data packages, including the Adversary Capability Document (ACD), the Block specific Adversary Data Packages (ADPs) and other special purpose documents. Threat systems engineering also develops scenarios for system and element utilization for compliance and assessment evaluations as part of the ADP development efforts.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

The Countermeasures/Counter-countermeasures (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. The Adversary Engineering efforts determine 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. Adversary engineering is performed by two teams, each operating with a different perspective of adversary capabilities. The Red Team, restricted to using only 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.

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 assessment to the MDA Director. 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. The Blue Team, comprised of BMDS System, element, and component technical experts, performs integrated performance and risk assessments of the BMDS against projected adversary capabilities and conceptual countermeasures, identifies and characterizes counter-countermeasure options to mitigate BMDS risks posed by these adversary capabilities and countermeasures, and performs the system-level engineering required to identify the BMDS baseline changes to implement and integrate the options into the operational system baseline.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Systems Engineering and Integration	0	99,750	104,080
RDT&E Articles (Quantity)	0	0	0

FY08 Planned Accomplishments:
For FY08, system engineering activities focus on integration and checkout of C2BMC and AN/TPY-2 hardware and software, and verification and assessment of Block 1.0 capability. In Block 2.0, system engineering activities begin integrating THAAD Fire Units into the BMDS, evaluating test results to assess BMDS performance, conducting system-level verification, obtaining Warfighter feedback on THAAD equipment for incorporation into future BMDS improvements, and providing a near-term capability for sea-based terminal defense by integrating AEGIS SM-2 missiles into the BMDS. In Block 3.0, system engineering activities focus on integrating Fylingdales and Thule UEWRs into the BMDS to provide additional sensor

coverage and integrating additional near-term discrimination. Also, the results of system-level tests to assess BMDS performance with the new sensor assets and conducting system-level verification activities are evaluated. With Block 4.0 system engineering activities identify weapon, sensor, and C2BMC functionality needed to perform these missions; define hardware, software and interface requirements for the BMDS assets to be located in Europe; and begin integration of the European interceptor site. In Block 5.0, system engineering focuses on improving regional sensor coverage by integrating additional AN/TPY-2 radars. The FY08 system engineering effort Capability Development includes identifying new concepts, defining their functionalities, and monitoring subsystem test results to facilitate planning their transition into BMDS capability blocks.

- Deliver the BMDS integrated capability to the Operational Baseline to support the Warfighter.
- Deliver the update to the Technical Objectives and Goals (TOG) which provides the overall development goals and metrics used to judge system capability and progress.
- Conduct the 2008 Summer Study that looks at specific performance gaps and possible solutions for mitigation.
- Work with the Technology Development community to ensure technology investments are prioritized and aligned to address BMDS-level capability needs.
- Analyze the effects from international program input on BMDS future capability ensuring that international goals are consistent with the needs of the BMDS and that efforts leverage foreign technology and engineering capability as directed by the MDA Director.
- Continue technical evaluation of emerging adversary characteristics to be included within future Block-specific Adversary Data.
- Execute the approved Corporate Lethality Plan.
- Develop System Specifications, associated interface requirements, and core standards for Block capabilities:
  - Draft and adjust the Ballistic Missile Defense System Description Document update which documents the concepts demonstrating the most potential for improving BMDS effectiveness and integrates them into BMDS program planning for Block-specific requirements.
- Support Integration Task Forces charged with facilitating the design, integration, testing, and fielding of cross-cutting integrating capabilities (e.g., CTTO, Discrimination Capability, Engage on System Track, etc.).
- Conduct Engineering Reviews to include System Capability Reviews, System Requirements Reviews, In-process Technical Reviews, etc., for baselines covering Block 1.0 through Block 5.0 under the new block structure:
  - Conduct System Design Review following Element Preliminary Design Reviews to review the maturity of the technical baseline and plans for integration, test and verification prior to execution.
- Provide Technical and System Integration documentation to USPACECOM, USNORTHCOM, and USSTRATCOM to support training and Block integration; Source Data for BMDS Users Handbook; BMDS top-level drawings.
- Update the Master Integration Plan (MIP) to incorporate any changes in planned delivery of Block program content and the MIP Planning Allocation Matrix (PAM) tool to support 2007-2013 integration, test, assessment, and verification activities.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Publish an end-of-year System Engineering Assessment Report (SEAR) of BMDS performance demonstrated in BMDS-level testing and analyses.
- Serve as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Working Group (TCWG) to coordinate test events and schedules and determine impact of delays in the integration process.
- Maintain Verification Ledger (Dynamic Object Oriented Requirements System-based) for monthly tracking of sub-system verification status.
- 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.
- Develop an agency-wide Common Threat baseline in support of Block 1.0 design, verification, and assessment.
- Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for the BMDS.
- Produce all the threat data required to support the BMDS Block 1.0 Ground Test 03 (GT-03), BMDS Performance Assessment 08 (PA-08), and FY-08 war games and exercises.

FY09 Planned Accomplishments:

For FY09, Block 1.0 system engineering activities include counter-countermeasure improvements into BMDS assets, evaluating BMDS test results to assess system performance, conducting system-level verification. In Block 2.0, system engineering activities continue integrating THAAD Fire Units into the BMDS, evaluating test results to assess BMDS performance, conducting system-level verification, obtaining Warfighter feedback on THAAD equipment for incorporation into future BMDS improvements, and continuing AN/TPY-2 radar and sea-based terminal capability integration into the BMDS. Block 3.0 system engineering activities continue to focus on integrating Fylingdales and Thule UEWRs into the BMDS to provide additional sensor coverage, and integrating additional near-term discrimination capabilities. Results of system-level tests to assess BMDS performance with the new sensor assets, conducting system-level verification activities, and assessments of discrimination improvements also continue. In FY09, Block 4.0 system engineering activities include refinement of hardware, software and interface; and integration of the European interceptor site as they are delivered. In FY09, Block 5.0, system engineering begins evaluating system-level test results to assess the performance of additional AN/TPY-2 radars, and begin system-level verification. In FY09, system engineering activities continue to identify new concepts, define functionalities, and monitor subsystem test results to facilitate planning their transition into the BMDS Capability Development block.

- Deliver the BMDS integrated capability to the Operational Baseline to support the Warfighter.
- Deliver the update to the Technical Objectives and Goals (TOG) which provides the overall development goals and metrics used to judge system capability and progress.
- Conduct the 2009 Summer Study that looks at specific performance gaps and possible solutions for mitigation.
- Work with the technology development community to ensure technology investments are prioritized and aligned to address BMDS-level capability needs.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Analyze the effects from international program input on BMDS future capability ensuring that international goals are consistent with the needs of the BMDS and that efforts leverage foreign technology and engineering capability as directed by the MDA Director.
- Continue technical evaluation of emerging adversary characteristics to be included within future Block-specific Adversary Data.
- Execute the approved Corporate Lethality Plan.
- Develop System Specifications, associated interface requirements, and core standards for Block capabilities:
  - Draft and adjust the Ballistic Missile Defense System Description Document update which documents the concepts demonstrating the most potential for improving BMDS effectiveness and integrates them into BMDS program planning for Block-specific requirements.
- Support integration task forces charged with facilitating the design, integration, test and fielding of cross-cutting integrating capabilities (e.g., CTTO, Discrimination Capability Engineering, and Engage on System Track.)
- Conduct Engineering Reviews for baselines covering Block 1.0 through Block 5.0 under the new block structure:
  - Conduct System Design Review following Element Preliminary Design Reviews to review the maturity of the technical baseline and plans for integration, test and verification prior to execution.
- Provide Technical and System Integration documentation to USPACECOM, USNORTHCOM, and USSTRATCOM to support training and Block integration; Source Data for BMDS Users Handbook; BMDS top-level drawings.
- Update the Master Integration Plan (MIP) to incorporate any changes in planned delivery of Block program content, and the MIP Planning Allocation Matrix (PAM) tool to support 2007-2013 integration, test, assessment, and verification activities.
- Publish an end-of-year System Engineering Assessment Report (SEAR) of BMDS performance demonstrated in BMDS-level testing and analyses.
- Serve as Co-Chairman with Director, Combined Test Force (CTF) and Deputy Director, Integration on the Test Configuration Working Group (TCWG) to coordinate test events and schedules and determine impact of delays in the integration process.
- Finalize the development of the System Specifications and associated interface requirements for Block 4.0 capabilities.
- Complete adherence planning for Block 4.0 Core Standards.
- 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.
- Develop an agency-wide Common Threat baseline in support of future BMDS design, verification, and assessment.
- Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for the BMDS.
- Produce all the threat data required to support the BMDS Ground Test 04 (GT-04), BMDS Performance Assessment 09 (PA-09), FY-09 war games and exercises, and the implementation of Improved BMDS discrimination.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
Countermeasures/Counter-Countermeasures (CM/CCM)	0	19,000	20,000
RDT&E Articles (Quantity)	0	0	0

The Countermeasures/Counter-countermeasures (CM/CCM) Program assesses technical and performance risks, identifies mitigation strategies, and engineering changes to the baseline BMDS to improve performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures.

In FY08, counter-countermeasure improvements begin in Block 1.0, and counter-countermeasure capabilities are integrated in Block 3.0.

FY08 Planned Accomplishments:

- Deliver engineering descriptions for conceptual countermeasure suites to support risk assessments of the BMDS discrimination strategy.
- Provide independent assessments and recommendations to the MDA Director on the BMDS Discrimination Strategy being pursued to achieve robust performance against adversary countermeasures.
- Analyze design trades and initial engineering to support development and implementation of the specifications and standards for the BMDS Discrimination Infrastructure evolutionary capability spiral.
- Initiate development of the Block 3.0 Implementation Plan for the BMDS discrimination infrastructure and provide inputs to the BMD Systems Specifications and Interface Control Documents (ICDs).
- Complete Capability Development Performance Gap Analysis and define the concepts to be considered for future block development to defeat emerging adversary capabilities.
- Oversee CM/CCM Program and assess technical and performance risks, identify mitigation strategies and integrate engineering changes to the baseline BMDS to improve performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures.
- 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.
- Integrate, in collaboration with Threat Systems Engineering, results from Phase 4 of the ACD Parameters Inter-Relationships Study into the Adversary Capabilities Document, and initiated Phase 5 to study countermeasure relationships involving 18 Adversary Capabilities Document parameters.
- Conduct annual reviews of CM/CCM Program Red and Black Team countermeasures and Blue Team risk assessments, and propose mitigation options.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Conduct assessments of BMDS performance against projected adversary capabilities and conceptual countermeasures to the BMDS Discrimination Strategy 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.

FY09 Planned Accomplishments:
In FY09, counter-countermeasure capabilities are integrated into Block 3.0.

- Deliver engineering descriptions for conceptual countermeasure suites to support risk assessments of the BMDS discrimination strategy.
- Provide independent assessments and recommendations to the MDA Director on the BMDS Discrimination Strategy being pursued to achieve robust performance against adversary countermeasures.
- Analyze design trades and initial engineering to support development and implementation of the specifications and standards for the BMDS Discrimination Infrastructure evolutionary capability spiral.
- Initiate development of the Block 3.0 Implementation Plan for the BMDS discrimination infrastructure and provide inputs to the BMD Systems Specifications and Interface Control Documents (ICDs).
- Complete Capability Development Performance Gap Analysis and define the concepts to be considered for future block development to defeat emerging adversary capabilities.
- Oversee CM/CCM Program and assess technical and performance risks, identify mitigation strategies and integrate engineering changes to the baseline BMDS to improve performance against the full spectrum of adversary capabilities, focusing primarily on defeating countermeasures.
- 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.
- Conduct annual reviews of CM/CCM Program Red and Black Team countermeasures and Blue Team risk assessments, and propose mitigation options.
- Conduct assessments of BMDS performance against projected adversary capabilities and conceptual countermeasures to the BMDS Discrimination Strategy posed by the Black Team to identify and evaluate performance risks and gaps.
- Identify and characterize counter-countermeasures to mitigate BMDS risks posed by Black Team conceptual countermeasures.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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

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), System Engineering and Technical Assistance (SETA), and Industry. This combination of resources forms an integrated team to accomplish the necessary engineering for the BMD System. In addition, extensive involvement by the major defense contractors responsible for the development of the BMDS, Elements, and major components is required. Countermeasure/Counter-Countermeasure initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems directorate and BMDS Element Program Offices.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Systems Engineering and Integration								
Industry	CPAF	Boeing/ VA	0	50,929	1/3Q	52,336	1/3Q	103,265
CSS	CPFF	CSC/ VA	0	9,671	1/3Q	10,243	1/3Q	19,914
CSS	CPFF	Sparta/ VA	0	6,542	1/3Q	6,929	1/3Q	13,471
FFRDC/UARC	MIPR	MIT/LL/ MA	0	3,383	1/3Q	3,383	1/3Q	6,766
Other DoD	MIPR	NSWCD/ VA	0	170	1/3Q	200	1/3Q	370
Other DoD	MIPR	Battelle/ OH	0	101	1/3Q	471	1/3Q	572
CSS	CPFF	Schafer/ VA	0	1,838	1/3Q	2,200	1/3Q	4,038
FFRDC/UARC	MIPR	Aerospace/ CA	0	433	1/3Q	433	1/3Q	866
FFRDC/UARC	FFRDC	JHU APL/ VA	0	1,443	1/3Q	1,443	1/3Q	2,886

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
FFRDC/UARC	MIPR	MITRE/ NJ	0	86	1/3Q	86	1/3Q	172
FFRDC/UARC	MIPR	SNL/ CA	0	944	1/3Q	844	1/3Q	1,788
FFRDC/UARC	MIPR	LLNL/ CA	0	600	1/3Q	600	1/3Q	1,200
Other DoD	MIPR	AMSC/ TN	0	245	1/3Q	260	1/3Q	505
Other DoD		SMDC/ AL	0	1,722	1/3Q	1,722	1/3Q	3,444
UK MoD	MIPR	DSTL/ UK	0	450	1/3Q	600	1/3Q	1,050
Gov Personnel & Travel		Civ/ VA	0	5,300	N/A	5,646	1/3Q	10,946
Other DoD	MIPR	Corvid/ NC	0	560	1/3Q	560	1/3Q	1,120
Other DoD	MIPR	NSWCC/ IN	0	500	1/3Q	544	1/3Q	1,044
Countermeasures/Counter-Countermeasures (CM/CCM)								
Industry	CPAF	Boeing/ VA	0	5,776	1/3Q	5,816	1/3Q	11,592
CSS	CPFF	CSC/ VA	0	4,333	1/3Q	4,363	1/3Q	8,696
CSS	CPFF	Sparta/ VA	0	4,333	1/3Q	4,363	1/3Q	8,696
FFRDC/UARC	MIPR	IDA/ VA	0	719	4Q	719	1/3Q	1,438

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
FFRDC/UARC	MIPR	SNL/ CA	0	281	1/3Q	381	1/3Q	662
FFRDC/UARC	MIPR	LLNL/ CA	0	450	1/3Q	450	1/3Q	900
Other DoD	MIPR	ARL/ NM	0	323	4Q	323	1/3Q	646
Other DoD	MIPR	Battelle/ OH	0	385	1/3Q	385	1/3Q	770
UK Mod	MIPR	DSTL/ UK	0	1,400	1/3Q	2,200	1/3Q	3,600
CSS	CPFF	Schafer/ VA	0	1,000	1/3Q	1,000	1/3Q	2,000
Subtotal Support Costs			0	103,917		108,500		212417

Remarks

III. Test and Evaluation Cost ($ in Thousands)

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

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Systems Engineering and Integration								
CSS	CPFF	CSC/ VA	0	2,446	1/3Q	2,556	1/3Q	5,002
CSS	CPFF	Sparta/ VA	0	8,004	1/3Q	8,364	1/3Q	16,368
CSS	CPFF	Paradigm/ VA	0	400	1/3Q	500	1/3Q	900
FFRDC/UARC	MIPR	Aerospace/ VA	0	2,389	1/3Q	2,496	1/3Q	4,885
FFRDC/UARC	FFRDC	JHU-APL/ VA	0	399	1/3Q	416	1/3Q	815
FFRDC/UARC	FFRDC	USU-SDL/ VA	0	399	1/3Q	416	1/3Q	815
FFRDC/UARC	MIPR	MITRE/ VA	0	796	1/3Q	832	1/3Q	1,628
Subtotal Management Services			0	14,833		15,580		30413

Remarks

Project Total Cost			0	118,750		124,080		242,830

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestones																												
Technical Objectives & Goals / Updates											△								△									
Master Integration Plan (MIP)						△				△				△				△				△				△		
BMD System Specification (BMD SS)						△				△				△				△				△				△		
System Engineering Assessment Report (SEAR)						△				△				△				△				△				△		
Sys Eng & Integration (SE&I) General Milestones																												
Adversary Data Package (ADP)						△			△				△				△				△				△			
Capability Assessment Plan (CAP) / update							△			△								△				△				△		
Countermeasures/Counter-Countermeasures (CM/CCM)																												
Deliver Special Studies Report								△				△				△				△				△				
Design CCM Improvements								△				△				△				△				△				△

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestones							
Technical Objectives & Goals / Updates			3Q		3Q		
Master Integration Plan (MIP)		2Q	2Q	2Q	2Q	2Q	2Q
BMD System Specification (BMD SS)		2Q	2Q	2Q	2Q	2Q	2Q
System Engineering Assessment Report (SEAR)		2Q	2Q	2Q	2Q	2Q	2Q
Sys Eng & Integration (SE&I) General Milestones							
Adversary Data Package (ADP)		2Q	1Q	1Q	1Q	1Q	1Q
Capability Assessment Plan (CAP) / update		3Q	2Q		2Q	2Q	2Q
Countermeasures/Counter-Countermeasures (CM/CCM)							
Deliver Special Studies Report		4Q	4Q	4Q	4Q	4Q	
Provide Independent Assessments to MDA		4Q	4Q	4Q	4Q	4Q	4Q
Review Black Team Countermeasure Concepts		2Q	2Q	2Q	2Q	2Q	2Q
Review Blue Team CCM Concepts and Plans		3Q	3Q	3Q	3Q	3Q	3Q
Design CCM Improvements		4Q	4Q	4Q	4Q	4Q	4Q

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0105 Countermeasures/Counter-Countermeasures (CM/CCM)	19,109	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Starting in FY08, funding for all content in budget project 0105 is included within budget project YX24.

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.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Adversary Engineering	9,091	0	0
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. Adversary engineering is performed by two teams, each operating with a different perspective of adversary capabilities. The Red Team, restricted to using only 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.

FY07 Accomplishments:

- Continued characterization of adversary countermeasures capabilities and phenomenology related to countermeasure design, employment, and performance.
- Updated and continued development of detailed parametric descriptions of the adversary capability space and countermeasures.
- Delivered engineering descriptions for conceptual countermeasure suites to risk assessments of the BMDS discrimination strategy.
- Integrated, in collaboration with Threat Systems Engineering, results from Phase 3 of the ACD Parameters Inter-Relationships Study into the ACD, and initiated Phase 4 to study five countermeasure relationships involving 18 ACD parameters.
- Delivered the first version of the digital countermeasure design tool with nine classes of countermeasures and two adversary missile systems.
- Completed a project arrangement for five additional years of Red Team operations.

	FY 2007	FY 2008	FY 2009
Independent Assessment	500	0	0
RDT&E Articles (Quantity)	0	0	0

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.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY07 Accomplishments:

- Conducted annual reviews of CM/CCM Program Red and Black Team countermeasures, Blue Team risk assessments, and proposed mitigation options and implementation plans for the BMDS Discrimination Architecture.
- Provided independent assessments of CM/CCM Program products and recommendations to the MDA Director.

	FY 2007	FY 2008	FY 2009
BMDS Risk Assessment and Mitigation Engineering	9,518	0	0
RDT&E Articles (Quantity)	0	0	0

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 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.

FY07 Accomplishments:

- Assessed engineering alternatives to implement system discrimination improvements which maximized enforcement of the BMDS Discrimination Strategy.
- Defined engineering alternatives, design parameters, and knowledge points for the development of three discrimination initiatives which will enter development in Block 2008.
- Performed initial engineering of the BMDS Discrimination Infrastructure to support prototype development beginning in Block 2008.
- Identified the recommended functional requirements, allocations and interface definitions to support development of the System and Subsystem level specifications for the Discrimination Architecture.
- Characterized internal subsystem behavior, functional requirements, allocations and interface definitions necessary to support development of the BMDS system design and resultant specifications, including proposed changes and/or additions to performance requirements.
- Provided inputs for the BMDS Test Bed Description Document, Block 2008 Test Bed System Specification, and Interface documents.
- Developed a Block 2008 Implementation Plan for the BMDS Discrimination Infrastructure with identified knowledge points, integration schedules, initial test plans and objectives, and inputs for the Master Integration Plan and Integrated Master Test Plan.

- Defined the BMDS Discrimination Infrastructure capabilities evolution in terms of the system functionality and interfaces required in Block 2010 through Block 2014.
- Conducted assessments of BMDS performance against projected adversary capabilities and conceptual countermeasures to the BMDS Discrimination Strategy posed by the Red and Black Teams to identify and evaluate performance risks and gaps.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Adversary Engineering								
SETA	CPFF	SPARTA/VA	5,799	0	N/A	0	N/A	5,799
SETA	CPFF	CSC/VA	1,643	0	N/A	0	N/A	1,643
Other DoD		SMDC/AL	1,785	0	N/A	0	N/A	1,785
Other DoD	MIPR	ARL/NM	3,278	0	N/A	0	N/A	3,278
Other DoD	MIPR	Battelle/OH	1,676	0	N/A	0	N/A	1,676
FFRDC/UARC	MIPR	MIT/LL/MA	1,749	0	N/A	0	N/A	1,749
FFRDC/UARC	MIPR	IDA/VA	1,710	0	N/A	0	N/A	1,710
Red Team		MDA Elements	13,056	0	N/A	0	N/A	13,056
Other DoD		MDA Elements	7,247	0	N/A	0	N/A	7,247
BMDS Risk Assessment and Mitigation Engineering								
SETA	CPFF	CSC/MA	1,724	0	N/A	0	N/A	1,724
Industry	CPAF	Boeing/NM	9,538	0	N/A	0	N/A	9,538
Industry	CPAF	Raytheon/AL	8,300	0	N/A	0	N/A	8,300
FFRDC/UARC	MIPR	MIT/LL/MA	5,744	0	N/A	0	N/A	5,744
Other DoD	MIPR	NSWC/IN	3,881	0	N/A	0	N/A	3,881
Collaborative Engineering		MDA Elements	17,845	0	N/A	0	N/A	17,845

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Assessment and Concept Development Support		MDA Elements	8,758	0	N/A	0	N/A	8,758
Subtotal Support Costs			93,733	0		0		93733

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Independent Assessment								
FFRDC/UARC	MIPR	IDA/VA	3,539	0	N/A	0	N/A	3,539
BMDS Risk Assessment and Mitigation Engineering								
SETA	CPFF	CSC/VA	1,000	0	N/A	0	N/A	1,000
Subtotal Management Services			4,539	0		0		4539

Remarks

Project Total Cost			98,272	0		0		98,272

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Adversary Engineering																												
Deliver Special Studies Report		▲	▲																									
Complete 5-Year Project Arrangement		▲																										
Independent Assessment																												
Provide Independent Assessments to MDA	▲	▲																										
BMDS Risk Assessment and Mitigation Engineering																												
Design CCM Improvements				▲																								

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Adversary Engineering							
Deliver Special Studies Report	2Q,3Q						
Complete 5-Year Project Arrangement	2Q						
Independent Assessment							
Provide Independent Assessments to MDA	1Q,2Q						
Review Black and Red Team Countermeasure Concepts	1Q,2Q						
Review Blue Team CCM Concepts and Plans	1Q,2Q						
BMDS Risk Assessment and Mitigation Engineering							
Design CCM Improvements	4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0102 Intelligence and Security	18,396	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content previous planned in 0102 for FY08-13 has been captured in YX28 in accordance with the MDA revised block structure.

A. Mission Description and Budget Item Justification

The Security and Intelligence Project captures three specific areas:
1) Intelligence
2) Counterintelligence
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). Specifically, the activities include:

1. Intelligence: The intelligence process begins when the Intelligence Community (IC) collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are given to the Ballistic Missile Defense System (BMDS) System Engineer who uses the threats to develop and change the BMDS. Through this activity threat data are provided to support BMDS architecture design, testing, modeling, and wargaming. This information reduces risk, improves system performance. 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, IC 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 (CI). Pursuant to Executive Order 12333, (US Intelligence Activities), DoD Directive 5240.2 (DoD Counterintelligence), and other DoD CI policy issuances, the MDA Counterintelligence Division (DOSC) is charged with undertaking activities as part of an integrated DoD and national effort, to detect, identify, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, other intelligence activities, sabotage, espionage, sedition, subversion and terrorist activities directed against MDA personnel, information, materials, facilities, and activities or against U.S. national security. As a member of the DoD CI community, DOSC's portfolio includes the following missions & functions:

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Pursuant to DoD Instruction 5240.4 (CI investigations and Preliminary Inquiries), DOSC conducts CI preliminary investigations to determine the initial facts and circumstances surrounding suspected clandestine relationships between MDA personnel and Foreign Intelligence and Security Services (FISS) agents or individuals associated with terrorist organizations. When allegations are substantiated, DOSC refers these matters to the appropriate Title 10, U.S.C. jurisdiction (Army, Navy or United States Air Force CI Organization, Defense Criminal Investigative Services (DCIS) or Federal Bureau of Investigation (FBI), as appropriate).
- Pursuant to DoD Instruction 5240.17 (DoD CI Collection and Reporting), DOSC systematically collects CI information from US and foreign counterpart intelligence, CI, security and law enforcement (LE) entities through routine liaison activities associated with multi-national BMD conferences overseas, RDT&E activities and BMDS deployments worldwide. DOSC also conducts briefings and debriefings of MDA personnel who travel outside continental United States (OCONUS) for CI relevant information. Information gleaned from these activities is reported to the US intelligence community via Intelligence Information Reports, as appropriate, to answer validated DoD CI collection requirements.
- Pursuant to DoD Instruction 5240.18, (CI Analysis and Production), DOSC conducts research and prepares timely and relevant analytic products that address the threat from espionage, international terrorism, subversion, sabotage, assassination, other clandestine or covert activities, and any other similar activities that are reasonably believed to have a foreign nexus. This includes threats to MDA personnel and property, RDT&E activities and conferences worldwide, and intelligence collection threats to MDA technology, information systems or infrastructure.
- Pursuant to DoD Instruction 5240.16 (CI Functional Services): DOSC serves as the focal point within MDA for specialized CI technical services support to include Technical Surveillance Countermeasures (TSCM) surveys/inspections, CI-Scope polygraph exams and computer forensic examinations in support of CI and LE investigations resulting from insider abuse or foreign computer intrusions. DOSC provides specialized support to MDA special access programs to protect the most critical BMDS technologies and capabilities from FISS collection and exploitation throughout the entire acquisition lifecycle. DOSC directs and manages the MDA CI research and technology protection effort by leveraging organic and external DoD and National CI resources to provide on-site support to test and evaluation (T&E) activities conducted at various test ranges, MDA operational locations and during overseas multi-national BMD conferences to protect information, technology, personnel, facilities and activities from FISS, criminal or terrorism threats. DOSC develops and executes other defensive programs such as the insider threat program with the objective of detecting computer abuse or other nefarious activities detrimental to MDA interests.
- Pursuant to DoD Instruction 5240.6 (CI Awareness, Briefing and Reporting Program): DOSC provides initial (MDA Newcomer's briefing) and periodic CI awareness training to the entire MDA Government and DoD Contractor workforce on the threats posed by FISS, international terrorists, computer intruders, unauthorized disclosures and insider activities, and individual reporting responsibilities. In addition to CI awareness, DOSC provides mandatory foreign travel threat briefings to all MDA OCONUS travelers to familiarize them with potential terrorism, criminal, health, political and FISS threats. Follow-up debriefings are done to capture pertinent CI information that is shared with other MDA travelers and the US intelligence community, as appropriate.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

3. BMDS Security Assessment and Certification Directorate: This directorate 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 DOSA team must interface with relevant IA domain experts to 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 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 directorate's functions entail 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 Security Test & Evaluation (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 assessments and to recommend enhancements in the technical implementation and design.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Counterintelligence	3,397	0	0
RDT&E Articles (Quantity)	0	0	0

The MDA DOSC serves as the MDA focal point for all 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 FISS and terrorist groups worldwide.

FY2007 Accomplishments:

- Partnered with other DoD TSCM organizations to develop limited organic capability to conduct surveys and inspections of key MDA facilities where critical program information and technologies are discussed or processed to preclude FISS electronic exploitation.
- Implemented and beta tested automated Foreign Travel Threat Briefing Program.
- Continued to mature PROJECT 56 - the DOSC initiative for Joint DOSC - FBI engagement with MDA industrial partners to provide them CI coverage and support.
- Implemented MDA CI Insider Threat Program while continuing to research and integrate DoD best practices in regard to software tools, processes, and procedures.
- Reviewed sampling of MDA Small Business Innovative Research (SBIR) proposals to test MDA/FBI collaborative processes designed to identify potential FISS influences.
- Produced updated CI Surveys, Defense Threat Assessments and Multi-disciplined CI Threat Assessments for selected MDA/BMDS Programs.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Continued to develop, expand and populate CI databases.
- Developed and published MDA-specific CI policy that implements DoD CI policy issuances.

	FY 2007	FY 2008	FY 2009
BMDS Certification	1,854	0	0
RDT&E Articles (Quantity)	0	0	0

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.

FY2007 Accomplishments:

- Provided domain expertise as the Program Manager for IA on behalf of the BMDS.
- Conducted 8500 Controls Assessments at the BMDS and Element level to assess compliance with IA policy requirements.
- Enforced accreditation decisions for hosted or interconnected DoD information systems.
- Implemented risk management processes across the BMDS elements to prioritize and categorize vulnerabilties.
- Planned for IA Controls implementation, validation, and sustainment throughout the system life cycle, to inlcude timely and effective configuration and vulnerability management.
- Enhanced the conifdentiality, integrity and availability of key systems, networks and data through direct participation in IA 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 IA related guidance (e.g., DoD 8500.2, IA Technology Framework, NSA and DISA requirements) for use by systems engineers and program developers to facilitate incorporation of practices and procedures developed in accordance with emerging IA technologies.
- Acted as the primary POC for Small Business Innovative Research (SBIR) IA related initiatives.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009
Intelligence	13,145	0	0
RDT&E Articles (Quantity)	0	0	0

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.

FY2007 Accomplishments:

- Expanded the foreign missile critical parameters database to include 100 parameters for each of 85 foreign missiles.
- Further developed UMPIRE (a universal tool to allow BMDS planners and warfighters to access four Intelligence Community (IC) databases using a single interface).
- Developed intelligence-based plume and signature data each of 85 foreign missiles for use by C2BMC and the COCOMs.
- Provided characteristics and performance parameters for each of 85 foreign missiles to be used in 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).

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
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	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
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PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Counterintelligence								
Analysis and Support	C/FFP	Beta Analytics Inc/ Washington DC	8,787	0	N/A	0	N/A	8,787
Analysis and Support	C/Various	Various/ Various	1,059	0	N/A	0	N/A	1,059
Intelligence								
Intelligence Support Center	SS/CPAF	JNIC - Northrop Grumman/ Colorado Springs, CO	5,100	0	N/A	0	N/A	5,100
Scenario Applications	C/Various	SMDC - TSC/ Huntsville, AL	9,770	0	N/A	0	N/A	9,770
Characterization	SS/CPAF	JNIC - Northrop Grumman/ Colorado Springs, CO	8,451	0	N/A	0	N/A	8,451
Current Intel & Portal	C/Various	Various/ Various	4,830	0	N/A	0	N/A	4,830

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Wargaming	SS/CPAF	JNIC - Northrop Grumman/ Colorado Springs, CO	1,852	0	N/A	0	N/A	1,852
Studies & Scenario Development	C/Various	Various/ Various	2,357	0	N/A	0	N/A	2,357
Subtotal Support Costs			42,206	0		0		42206

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
BMDS Certification								
Certification & Validation Support	SS/FFRDC	Aerospace/ Los Angeles, CA & Ft Monmouth, NJ	6,646	0	N/A	0	N/A	6,646
Intelligence								
Project Management Support	SS/FFRDC	Aerospace/ Los Angeles, CA	3,480	0	N/A	0	N/A	3,480

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Project Management	C/FFP	BAH/ McLean, VA	15,468	0	N/A	0	N/A	15,468
Project Management	SS/TM	PRA/ San Deigo, CA	4,451	0	N/A	0	N/A	4,451
Subtotal Management Services			30,045	0		0		30045

Remarks

Project Total Cost			72,251	0		0		72,251

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Intelligence																												
Update and Maintain Foreign Missile Knowledge Base	▲	—	—	▲																								
Intelligence Briefings	▲	—	—	▲																								
Wargaming Support	▲	—	—	▲																								
Intelligence Support Center	▲	—	—	▲																								
Studies and Scenario Development	▲	—	—	▲																								
Counterintelligence																												
CI Investigations & Operations Updates	▲	—	—	▲																								
Defense Threat Assessments	▲	—	—	▲																								
Intelligence Information Reports	▲	—	—	▲																								
Multi-Discipline CI Threat Assessments	▲	—	—	▲																								
Travel Briefings & Debriefings	▲	—	—	▲																								
BMDS Certification																												

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

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2008
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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BMDS Certification																												
Certification and Accreditation	▲	—	—	▲																								
Systems Engineering & Validation	▲	—	—	▲																								

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Intelligence							
Update and Maintain Foreign Missile Knowledge Base	1Q-4Q						
Intelligence Briefings	1Q-4Q						
Wargaming Support	1Q-4Q						
Intelligence Support Center	1Q-4Q						
Studies and Scenario Development	1Q-4Q						
Counterintelligence							
CI Investigations & Operations Updates	1Q-4Q						
Defense Threat Assessments	1Q-4Q						
Intelligence Information Reports	1Q-4Q						
Multi-Discipline CI Threat Assessments	1Q-4Q						
Travel Briefings & Debriefings	1Q-4Q						
BMDS Certification							
Certification and Accreditation	1Q-4Q						
Systems Engineering & Validation	1Q-4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX28 Intelligence & Security	0	21,368	23,035	33,587	48,726	46,423	47,176
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content in YX28 is a continuation of the efforts reported in 0102 and was explained in that project(s) in PB08.

A. Mission Description and Budget Item Justification

The Security and Intelligence Project captures three specific areas:
1) Intelligence
2) Counterintelligence
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). Specifically, the activities include:
1. Intelligence: The intelligence process begins when the Intelligence Community (IC) collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are given to the Ballistic Missile Defense System (BMDS) System Engineer who uses the threats to develop and change the BMDS. Through this activity threat data are provided to support BMDS architecture design, testing, modeling, and wargaming. This information reduces risk and improves system performance. 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, IC 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 (CI). Pursuant to Executive Order 12333, (US Intelligence Activities), DoD Directive 5240.2 (DoD Counterintelligence), and other DoD CI policy issuances, the MDA Counterintelligence Division (DOSC) is charged with undertaking activities as part of an integrated DoD and national effort, to detect, identify, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, other intelligence activities, sabotage, espionage, sedition, subversion and terrorist activities directed against MDA personnel, information, materials, facilities, and activities or against U.S. national security. As a member of the DoD CI community, DOSC's portfolio includes the following missions & functions:

- Pursuant to DoD Instruction 5240.4 (CI investigations and Preliminary Inquiries), DOSC conducts CI preliminary investigations to determine the initial facts and circumstances surrounding suspected clandestine relationships between MDA personnel and Foreign Intelligence Security

Services (FISS) agents or individuals associated with terrorist organizations. When allegations are substantiated, DOSC refers these matters to the appropriate Title 10, U.S.C. jurisdiction (Army, Navy or United States Air Force CI Organization, DCIS or Federal Bureau of Investigation (FBI), as appropriate).

- Pursuant to DoD Instruction 5240.17 (DoD CI Collection and Reporting), DOSC systematically collects CI information from US and foreign counterpart intelligence, CI, security and law enforcement (LE) entities through routine liaison activities associated with multi-national BMD conferences overseas, RDT&E activities and BMDS deployments worldwide. DOSC also conducts briefings and debriefings of MDA personnel who travel outside continental United Stated (OCONUS) for CI relevant information. Information gleaned from these activities is reported to the US intelligence community via Intelligence Information Reports, as appropriate, to answer validated DoD CI collection requirements.
- Pursuant to DoD Instruction 5240.18, (CI Analysis and Production), DOSC conducts research and prepares timely and relevant analytic products that address the threat from espionage, international terrorism, subversion, sabotage, assassination, other clandestine or covert activities, and any other similar activities that are reasonably believed to have a foreign nexus. This includes threats to MDA personnel and property, RDT&E activities and conferences worldwide, and intelligence collection threats to MDA technology, information systems or infrastructure.
- Pursuant to DoD Instruction 5240.16 (CI Functional Services): DOSC serves as the focal point within MDA for specialized CI technical services support to include Technical Surveillance Countermeasures (TSCM) surveys/inspections, CI-Scope polygraph exams and computer forensic examinations in support of CI and LE investigations resulting from insider abuse or foreign computer intrusions. DOSC provides specialized support to MDA special access programs to protect the most critical BMDS technologies and capabilities from FISS collection and exploitation throughout the entire acquisition lifecycle. DOSC directs and manages the MDA CI research and technology protection effort by leveraging organic and external DoD and National CI resources to provide on-site support to T&E activities conducted at various test ranges, MDA operational locations and during overseas multi-national BMD conferences to protect information, technology, personnel, facilities and activities from FISS, criminal or terrorism threats. DOSC develops and executes other defensive programs such as the insider threat program with the objective of detecting computer abuse or other nefarious activities detrimental to MDA interests.
- Pursuant to DoD Instruction 5240.6 (CI Awareness, Briefing and Reporting Program): DOSC provides initial (MDA Newcomer's briefing) and periodic CI awareness training to the entire MDA Government and DoD Contractor workforce on the threats posed by FISS, international terrorists, computer intruders, unauthorized disclosures and insider activities, and individual reporting responsibilities. In addition to CI awareness, DOSC provides mandatory foreign travel threat briefings to all MDA OCONUS travelers to familiarize them with potential terrorism, criminal, health, political and FISS threats. Follow-up debriefings are done to capture pertinent CI information that is shared with other MDA travelers and the US intelligence community, as appropriate.

3. BMDS Security Assessment and Certification Directorate: This directorate 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 DOSA team must interface with relevant IA domain experts to 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 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 directorate's functions entail 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 Security Test and Evaluation (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 assessments and to recommend enhancements in the technical implementation and design.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Counterintelligence	0	4,093	4,574
RDT&E Articles (Quantity)	0	0	0

Pursuant to Department of Defense (DOD) policy [DOD Directive 5240.2 - DOD Counterintelligence Program; DOD Instruction 5240.4 - CI investigations and Preliminary Inquiries; DOD Instruction 5240.6 - CI Awareness, Briefing and Reporting; DOD Instruction 5240.16 - CI Functional Services; DOD Instruction 5240.17 - CI Collection and Reporting; and DOD Instruction 5240.18 - CI Analysis and Production]; the DOSC, Missile Defense Agency (MDA) performs two broad functions:

Through a collaborative, community analytical processes, DOSC identifies those foreign intelligence, criminal or terrorist personnel and organizations, whose aim or intention is to reduce the mission effectiveness of the Agency or its personnel and programs through criminal acts, intelligence collection activities or terrorist operations.

In concert with the military service CI components, the FBI and other international, Federal, State and local CI, law enforcement (LE) and counterterrorist (CT) activities, DOSC assists in undertaking actions that negate or exploit adversarial intelligence collection, investigate and prosecute criminal deeds or prevent terrorist operations targeting the MDA, its personnel, programs, information or technology.

FY 2008 Planned Program
Serve as MDA's Advocate to the National CI Community:
Represent MDA to the national and DOD CI, LE and CT communities. Articulate the MDA's activities and programs, their development and fielding process, and the operational architectures in order to achieve a common community operating picture.

- Represent MDA at International, national and DOD boards, conferences, work groups and other symposia.

- Develop and provide informational presentations about MDA and its responsibilities to educate the CI/LE/CT community to allow for the development of combined concepts strategies aimed at defeating adversarial actions.
- Create and foster community research assignments, analytical projects and vulnerability assessments that result in the identification and prioritization of threats, targeted activities/technologies, and events vulnerable to foreign collection or exploitation.
- Cultivate within the national CI/LE community, the need for exploring and applying new approaches that support identifying and resolving standing and emerging CI issues.

Ensure MDA's Knowledge of the Threat is Complete, Accurate and Enduring:

Identify FISS, together with their methods of operation which are targeting or threatening the BMDS, MDA, its personnel, programs, information or technology.

- Develop and register explicit collection requirements with the national intelligence community through approved, tasking channels and processes.
- Maintain an on-going, persistent dialogue with the FBI, the Central Intelligence Agency (CIA), and the intelligence components of the DOD to ensure requirements visibility, understanding and priority.
- Engage subject matter experts within the intelligence community and undertake joint assessments of FISS capabilities versus BMDS assets. Produce products that identify which aspects of the BMDS are vulnerable to which FISS organization and to which FISS capability.
- Host focused symposia featuring expert speakers to educate and inform specific communities within MDA.
- Provide on-going educational and awareness-enhancing products, interactive sessions and take-away tools for the MDA workforce and extended family of BMDS private sector suppliers.

Focus Resource Allocation Through Identification of Authentic, Factual Threats:

Lead community efforts in the identification of those aspects of the BMDS that represent high-value collection targets, targets susceptible to adversarial collection, and those components and activities of the BMDS requiring advanced countermeasures and protection.

- Through joint efforts with the concerned geographical combatant commander (COCOM), [North America / Northern Command/ NORTHCOM, the Pacific theater - Pacific Command/PACOM and the European theater/ European Command/EUCOM] - conduct detailed, comprehensive and penetrating CI assessments of BMDS activities around the globe for the purpose of identifying specific, on-going threats, the actors involved and the modus operandi being used.
- In association with the FBI, employ wide-ranging, acute analysis of foreign agent actions that are targeting the BMDS private sector supplier community.
- Apply community best practice methodologies and emerging technologies together with an internal, subject matter expert council to establish and orchestrate an insider threat, perpetrator identification strategy.

- Utilize IC resources to assess and identify which foreign nations are militarily or economically pursuing technology that is inherent within the BMDS, and which means is being used to further foreign collection goals.
- Conduct internal reviews in concert with individual BMDS program managers to ferret out and capture those program characteristics, technologies or processes that stand out as candidates for designation as protection priorities.

Establish, Validate and Execute CI Support Initiatives for Private Sector Partners:

Develop enduring, broad approaches that introduce and embrace embedding CI measures and processes into the contractual relationship between and among MDA and its private-sector providers.

- Engage in opportunities for private sector management and Federal CI community leaders to discuss mutually supportive needs, methods for future cooperative out-reach/reach-back relationships.
- Participate in fostering positive, dynamic changes to existing views and philosophies between and among research centers and academic institutions and the Federal CI community. Identify intersections of interests that serve as the entrée point for introduction of CI measures into the research efforts of future BMDS technologies.
- Develop and provide to MDA's approximately 1700 cleared defense contractor community, CI threat and analytical products that ensure private sector partners possess a clear, unambiguous perspective of the foreign intelligence challenges which threatens both their corporate relevance and the national security.
- Assist in ensuring that the BMDS private sector work force is both sensitized and informed, and clearly understands which CI countermeasures is to be employed in which circumstance to ensure the propriety of the company, and the integrity and security of the BMDS.
- Institute within the national CI community and on-going effort to identify, track, exploit or neutralize pertinent threats to the business and academic enterprise that creates and builds the technology which becomes the BMDS.

FY 2009 Planned Program

DOSC continues efforts identified in FY2008 as follows:

- Represent MDA to the national and DOD CI, LE and CT communities. Articulate the MDA's activities and programs, their development and fielding process, and the operational architectures in order to achieve a common community operating picture
- Identify foreign intelligence and security services (FISS), together with their methods of operation which are targeting or threatening the Ballistic Missile Defense System (BMDS), MDA, its personnel, programs, information or technology.
- Lead community efforts in the identification of those aspects of the BMDS that represent high-value collection targets, targets susceptible to adversarial collection, and those components and activities of the BMDS requiring advanced countermeasures and protection.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Develop enduring, broad approaches that introduce and embrace embedding CI measures and processes into the contractual relationship between and among MDA and its private-sector providers.

	FY 2007	FY 2008	FY 2009
Intelligence	0	14,142	14,952
RDT&E Articles (Quantity)	0	0	0

The Missile Defense Agency (MDA) Intelligence Requirements Office defines MDA's intelligence requirements for the IC, and then engages them to develop, study, and exploit relevant, actionable threat information. As MDA's intelligence broker and link to the IC, the Intel Requirements Office is MDA's single office to go to for foreign missile threat information. Through this activity, authoritative, current and projected threat data are provided to support all levels of designers of missile defense to include MDA leadership; BMDS Program Elements and systems engineers for architecture design, testing, and modeling; and the MDA Warfighter Support Center.

FY2008 Planned Program:
Intelligence Requirements: The MDA Intelligence Requirements Office is the single intelligence requirements integration office within MDA and is designated as the intermediary with the Intelligence Community (IC). This office maintains a continuous dialog with the IC to make certain they have a focused, prioritized, and complete understanding of the vast requirements for foreign intelligence necessary to build a comprehensive Ballistic Missile Defense System (BMDS). This cadre of seasoned intelligence professionals in this office are uniquely qualified to define and relay MDA's intelligence needs to the IC since they are the single MDA organization with the body of knowledge and experience to fully understand both the foreign ballistic missile threat and the Ballistic Missile Defense System, thus they are able to discern, consolidate, and succinctly articulate MDA specific intelligence requirements to the IC. This single MDA voice to the IC:

- Identifies and deconflicts BMDS-specific intelligence requirements
- Communicates these requirements to the IC through formal and informal processes
- Reviews intelligence data received from the IC to ensure it is the high fidelity information required to meet MDA's needs
- Disseminates the resulting intelligence to the MDA customer
- Follows-up with MDA clients to ensure ongoing specific intelligence needs have been met

OUTCOME: Ensures that the IC explicitly understands, then accurately and timely fulfills MDA's current and future prioritized intelligence requirements. The IC collects and analyzes collected threat data and then disseminates finished intelligence based on MDA's intelligence requirements.

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Collection Requirements: MDA's Intelligence Requirements Office manages the MDA's intelligence collection requirements and engages the IC to ensure MDA requirements are documented, validated, collected, and understood. Tasks include planning intelligence collections support for missile defense tests and documenting requirements in IC requirements management systems. This additionally includes maintaining and updating Measurement and Signatures Intelligence (MASINT), Geospatial Intelligence (GEOINT), and Signals Intelligence (SIGINT) requirements on advances in foreign ballistic missile technology and for all MDA events.

OUTCOME: Broker BMDS test support collection requirements with the IC, maintain current MDA information needs and collection requirements against adversary ballistic missile programs, and advise MDA leadership, Program Elements, and system engineers on the status and capabilities of relevant IC sensors.

Intelligence Community Liaison: Maintain an ongoing, persistent, focused dialog with all members of the IC to ensure MDS intelligence requirements are viewed in the proper context, receive the proper level of priority, and are explicitly understood by the Intelligence Community. As MDA's voice for requirements within the IC, this office has direct and constant interaction with the:

- Defense Intelligence Agency (DIA): Missile Defense Threat Estimates, Threat Immersion Days, and General Military Intelligence
- Missile and Space Intelligence Center (MSIC): Short range ballistic missiles
- National Air and Space Intelligence Center (NASIC): Intercontinental ballistic missiles, intermediate and medium range ballistic missiles, cruise missiles, and space systems
- Office of Naval Intelligence (ONI): Sea-launched ballistic and cruise missiles
- National Ground Intelligence Center (NGIC): Artillery rockets, threats to Army locations
- Central Intelligence Agency (CIA): Strategic systems, Weapons of Mass Destruction
- National Security Agency (NSA): Signals intelligence
- National Geospatial Intelligence Agency (NGA): Imagery and geo-spatial needs

OUTCOME: Make sure that MDA's intelligence needs and finished intelligence requirements are understood and fulfilled by the IC while ensuring the IC is involved in technical interchange meetings and symposiums.

MDA Requirements: Make certain the IC responds to intelligence requirements of all levels of builders of missile defense with the most up to-date and accurate intelligence. The Intelligence Requirements office pursues updated, finished intelligence by maintaining a detailed understanding of the BMDS developer's and senior leadership's specific requirements:

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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- MDA Leadership: Ensure situational awareness of the foreign ballistic missile threat to senior MDA leadership by providing current intelligence support to the MDA Director, his principal staff officers, and the Missile Defense Operations Center (MOC). Intelligence Community produced current intelligence products are disseminated daily to the Senior Staff through the Daily Intelligence Read books, Executive Daily Intelligence Summary (EDIS), and updates at the Director's Stand-ups. Intelligence Community information that is time sensitive and required immediately for senior leadership decision making (such was the case during the North Korea test launches that occurred in the summer of 2006) and foreign threat perception data is acquired from the IC and provided as quickly as possible.
- BMDS Program Offices: Provide direct and constant intelligence requirements support to the geographically separated MDA Program Elements such as Aegis BMD, the Ground Based Mid-course Defense System, Kinetic Energy Interceptors, Theater High Altitude Area Defense (THAAD) Office, Targets and Countermeasures, Air-borne Laser, Command and Control Battle Management and Communications System (C2BMC), Sensors Directorate as well as the System Engineering Directorate and the Lead System Architect. Each Program Element as well as the System Engineering Directorate has an Intelligence Requirements Office staff member assigned to ensure their requirements are represented and understood by the IC. The infusion of intelligence into each of these activities is accomplished by understanding each programs intelligence requirements, ensuring the IC understands these needs then answers them. An example of one persistent need is to maintain an up-to-date data base of over 400 performance parameters for some 85 foreign threat missiles. This data is required to be inserted into System Engineering and Program Element design documents. Other standing requirements include:
- Technical characteristics of threat missiles
- Documents describing signatures and behavior across all phases of flight
- How adversaries may employ missiles
- Types, numbers, locations of foreign threat missiles
- Intelligence about events and conditions effecting BMDS development and deployment
- Political and military intelligence on foreign nations
- Threats to BMDS components and operations
- Information related to Tech Transfer and Proliferation
- MDA Warfighter Support: Ensure IC information is provided to the MDA Warfighter Support Center located in Colorado Springs by maintaining a watch staff in the Intelligence Support Center. This office provides situational awareness by monitoring terrorist threat levels, force protection information, high interest vessels, intelligence spot reports and all hour crisis support for real-world events. This is accomplished by high intensity 24 hour real time coordination with the IC through IC links and databases.

OUTCOME: MDA leadership, builders of missile defense, and those supporting the MDA warfighter mission partners operate from a position of high confidence and thorough understanding of the intelligence picture affecting the BMDS.

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Threat Ballistic Missile Knowledge Base: Provide an encyclopedic, all source, and all encompassing knowledge base of the foreign ballistic missile threat. This includes development, enhancement, and population of the Secret and TS/SCI Missile Threat Portal with IC produced finish intelligence documents. These portals have the most up-to-date current intelligence to provide immediate situational awareness, technical intelligence data to be used by the BMDS Program Elements and System Engineers, and direct linkages to the Intelligence Community to support the MDA warfighter support center.

OUTCOME: An all encompassing, one-stop shop portal for all required intelligence and counterintelligence to support the building of the Ballistic Missile Defense System.

Intelligence Simulation Requirements: Universal Missile Protocol Instantiation Requester Environment (UMPIRE) is a tool that provides MDA analysts a single interface to ballistic missile modeling tools. Historically, the analysts have had to learn and understand diverse IC-developed software to model short-range, medium-range and long-range ballistic missile flight, object dynamics and trajectories. This often resulted in mistakes and additional work to learn disparate IC simulations. UMPIRE alleviates this problem by providing a consistent and unified input/output interface to all missile defense community users and by employing consistent standards in factors such as earth, gravity and other physics-based models. UMPIRE provides utilities that assist the analyst in understanding the ballistic missile threat. The graphical user interface integrates four missile modeling tools sponsored by the intelligence agencies, and a fifth sponsored by MDA. This tool provides a powerful, interactive 3-D visualization and analysis capability.

OUTCOME: Umpire is designed to minimize the misinterpretation and misuse of IC and engineering tools that can ultimately result in lost productivity redesigns and higher production costs of ballistic missile defense systems. Provide UMPIRE to developers and testers to increase overall productivity and to lower the cost of BMDS production.

FY2009 Planned Program
Continue to be the single intelligence requirements integration office within MDA and its designated intermediary with the IC. Continue to maintain a continuous dialog with the IC to make sure they have a focused, prioritized, and a complete understanding of the vast requirements for foreign intelligence necessary to build a comprehensive BMDS.

Continue to manage the intelligence collection requirements and engages the IC to ensure MDA requirements are documented, validated, collected, and understood. Tasks include planning intelligence collections support for missile defense tests and documenting requirements in IC requirements

management systems. This additionally includes maintaining and updating MASINT, GEOINT, and SIGINT requirements on advances in foreign ballistic missile technology and for all MDA events.

Continue to maintain an ongoing, persistent, focused dialog with all members of the IC to ensure MDA intelligence requirements are viewed in the proper context, receive the proper level of priority, and are explicitly understood by the IC.

Make certain the IC responds to all levels of builders of missile defense intelligence requirements with the most up to-date and accurate intelligence. The Intelligence Requirements office pursues updated, finished intelligence by having a detailed understanding of the BMDS developer's and senior leadership's particular requirements:

- Ensure situational awareness of the foreign ballistic missile threat to senior MDA leadership by providing current intelligence support to the MDA Director, his principal staff officers, and the Missile Defense Operations Center (MOC).
- Provide direct and constant intelligence requirements support to the geographically separated MDA Program Elements such as Aegis BMD, the Ground Based Mid-course Defense System, Kinetic Energy Interceptors, Theater High Altitude Area Defense (THAAD) Office, Targets and Countermeasures, Air-borne Laser, Command and Control Battle Management and Communications System (C2BMC), Sensors Directorate as well as the System Engineering Directorate and the Lead System Architect. Each Program Element as well as the System Engineering Directorate has an Intelligence Requirements Office staff member assigned to ensure their requirements are represented and understood by the IC.
- Ensure IC information is provided to the MDA Warfighter Support Center by maintaining a watch staff in Intelligence Support Center. This office provides situational awareness by monitoring terrorist threat levels, force protection information, high interest vessels, intelligence spot reports and all hour crisis support for real-world events then prepares a daily Intelligence/Situational Awareness briefing for the Warfighter Support Center. This is accomplished by high intensity 24 hour day real time coordination with the IC through Intelligence Community links and databases.

Continue to provide the MDA foreign threat ballistic missile knowledge base by provide an encyclopedic, all source, and all encompassing knowledge base of the foreign ballistic missile threat. This includes development, enhancement, and population of the Secret and TS/SCI Missile Threat Portal with IC produced finish intelligence documents. These portals have the most up to date current intelligence to provide immediate situational awareness, technical intelligence data to be used by the BMDS Program Elements and System Engineers, and direct linkages to the IC to support the MDA warfighter support center.

Further expand intelligence application tool, UMPIRE, (a universal tool to allow BMDS planners and warfighters to access disparate Intelligence Community databases using a single interface). This will give users a six degree of freedom tool vice a three degree of freedom tool thereby allowing a higher level of fidelity in the development of missile trajectories.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009
BMDS Certification	0	3,133	3,509
RDT&E Articles (Quantity)	0	0	0

BMDS Information Assurance Directorate: This directorate is responsible for executing the mission of the BMDS Information Assurance (IA) Functional Manager (FM) and enhancing the cyber infrastructure of theMDA BMDS. In this capacity, this directorate will provide expert Information Assurance/Computer Network Defense (IA/CND) guidance, direction, and support throughout the acquisition lifecycle. This directorate will also assist in the identification of current IA/CND issues and threats, while coordinating and collaborating with BMDS elements and stakeholders to integrate cyber threat(s) into the systems security engineering process. In addition, this organization will assist in the development of mitigations strategies designed to proactively counter adversary threats.

FY2008
Define IA requirements for Continental United States (CONUS) and non-CONUS based BMDS assets consistently, comprehensively and definitively.

- Define IA/CND and cyber security infrastructure intelligence requirements to focus IC collection, analysis and production to target MDA/BMDS vulnerabilities.
- Define DoD mandated and mission specific IA/CND requirements.
- Define requirements to address IC, joint Task Force - Global Network Operations (JTF-GNO) and DoD identified threats.
- Coordinate with systems engineering activities to create Defense-in-Depth across the BMDS enterprise.
- Support key design reviews with authoritative direction on IA/CND standards, protocols and approved hardware/software components.
- Develop IA/CND Functional/Operational Test Planning and Assessment Criteria.
- Serve as the authoritative source for DoD policy, commercial best practices and as an engineering resource to advise Program Managers (PMs) on proven techniques and technologies to mitigate risks and vulnerabilities of the BMDS.

Outcomes: Definitized and comprehensive set of Information Assurance related requirements for incorporation into the systems engineering process.

Enhance the Information Assurance posture of the BMDS by delivering expert, responsive, relevant IA/CND products and services supporting the PMs to meet BMDS and Element IA/CND needs and requirements.

- Assess the IA/CND security architecture to address gaps, to enhance interoperability, and realize efficiencies across all mission systems.
- Define the “As Built” IA architecture to support assessments.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Develop the goal "To Be" IA architecture and roadmap to facilitate compliance.
- Assess new and emerging IA-enabled products and technologies to determine their suitability for use within the BMDS.
- Assess risks and identify mitigation strategies for each block migration through active engagement with the relevant two-letters and key staff members.

Outcomes: Information assurance/Computer Network Defense (IA/CND) architecture guidance and direction.

Assist in the sustainment of an acceptable IA/CND security posture for the Director, Missile Defense Agency, through various initiatives at each stage of the program's lifecycle.

- Evaluate the baseline architecture and communication systems of CONUS and Non-CONUS based BMDS assets to assess the critical infrastructure and software development process for inherent cyber vulnerabilities and design gaps in order to enhance the IA posture of all components.
- Develop and Coordinate an Integrated and Synchronized Computer Network Defense Architecture that supports Combatant Commander (COCOM) and MDA infrastructures
- Support the MDA Director and executing Managers by developing consistent Information Assurance Manager (IAM) policies and practices necessary to achieve a more secure BMDS, increase/enhance IA/CND situational awareness, and provide enhanced IA/CND support to the MDA/Element PMs.
- Ensure consistent implementation of IAM policies and practices across the Agency
- Provide trained and qualified personnel in accordance with DoD, MDA, and other applicable policies back to elements whose organic IA staff have been realigned under DOS.
- Coordinate and oversee the efforts of all BMDS and Element IAM and subordinate staff to ensure optimum allocation of resources, responsibilities and sub-functions within their functional areas with the goal of reducing redundancy, increasing efficiency and consistency, lowering staff response time, and minimizing risk.
- Support the development of Warfighter transition and transfer planning

Outcomes: Increased rigor in IA and enhanced overall IA/CND systems posture.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY2009

Define IA requirements for CONUS and non-CONUS based BMDS assets consistently, comprehensively and definitively.

- Define IA/CND and cyber security infrastructure intelligence requirements to focus IC collection, analysis and production to target MDA/BMDS vulnerabilities.
- Define DoD mandated and mission specific IA/CND requirements.
- Define requirements to address IC, JTF-GNO and DoD identified threats.
- Coordinate with systems engineering activities to create Defense-in-Depth across the BMDS enterprise.
- Support key design reviews with authoritative direction on IA/CND standards, protocols and approved hardware/software components.
- Develop IA/CND Functional/Operational Test Planning and Assessment Criteria.
- Serve as the authoritative source for DoD policy, commercial best practices and as an engineering resource to advise PMs on proven techniques and technologies to mitigate risks and vulnerabilities of the BMDS.

Outcomes: Definitized and comprehensive set of IA related requirements for incorporation into the systems engineering process.

Enhance the IA posture of the BMDS by delivering expert, responsive, relevant IA/CND products and services supporting the PMs to meet BMDS and Element IA/CND needs and requirements.

- Assess the IA/CND security architecture to address gaps, to enhance interoperability, and realize efficiencies across all mission systems.
- Define the “As Built” IA architecture to support assessments.
- Develop the goal “To Be” IA architecture and roadmap to facilitate compliance.
- Assess new and emerging IA-enabled products and technologies to determine their suitability for use within the BMDS.
- Assess risks and identify mitigation strategies for each block migration through active engagement with the relevant two-letters and key staff members.

Outcomes: Information assurance/Computer Network Defense (IA/CND) architecture guidance and direction.

Assist in the sustainment of an acceptable IA/CND security posture for the Director, Missile Defense Agency, through various initiatives at each stage of the program's lifecycle.

- Evaluate the baseline architecture and communication systems of CONUS and Non-CONUS based BMDS assets to assess the critical infrastructure and software development process for inherent cyber vulnerabilities and design gaps in order to enhance the IA posture of all components.
- Develop and Coordinate an Integrated and Synchronized Computer Network Defense Architecture that supports COCOM and MDA infrastructures
- Support the MDA Director and executing Managers by developing consistent IAM policies and practices necessary to achieve a more secure BMDS, increase/enhance IA/CND situational awareness, and provide enhanced IA/CND support to the MDA/Element PMs.
- Ensure consistent implementation of IAM policies and practices across the Agency
- Provide trained and qualified personnel in accordance with DoD, MDA, and other applicable policies back to elements whose organic IA staff have been realigned under DOS.
- Coordinate and oversee the efforts of all BMDS and Element IAM and subordinate staff to ensure optimum allocation of resources, responsibilities and sub-functions within their functional areas with the goal of reducing redundancy, increasing efficiency and consistency, lowering staff response time, and minimizing risk.
- Support the development of Warfighter transition and transfer planning

Outcomes: Increased rigor in IA and enhanced overall IA/CND systems posture.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Counterintelligence								
Analysis and Support	C/FFP	Beta Analytics Inc/ Wash DC	0	3,526	1/2Q	3,989	1/2Q	7,515
Analysis and Support	C/CPFF	Telecommuniation Systems/MD	0	67	1/2Q	75	1/2Q	142
Analysis and Support	SS/MIPR	Various/Various	0	500	1/2Q	510	1/2Q	1,010
Intelligence								
Intelligence Support Center	SS/CPAF	MDIOC - Northrop Grumman/ Colorado Springs, CO	0	1,884	1/2Q	1,941	1/2Q	3,825
Intelligence Applications	C/Various	SMDC / Huntsville, AL	0	858	1/2Q	1,200	1/2Q	2,058
Scenario Applications	SS/CPAF	MDIOC - Northrop Grumman/ Colorado Springs, CO	0	2,366	1/2Q	2,558	1/2Q	4,924
Subtotal Support Costs			0	9,201		10,273		19474

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

MDIOC-Missile Defense Integration & Operations Center

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Intelligence								
Project Management Support	SS/FFRDC	Aerospace/ Los Angeles, CA	0	335	1/2Q	360	1/2Q	695
Project Management	C/FFP	BAH/ McLean, VA	0	6,941	1/2Q	6,982	1/2Q	13,923
Project Management	C/FFP	SAIC/ San Diego, CA	0	500	1/2Q	565	1/2Q	1,065
Project Management	C/FFP	ASR/ McLean, VA	0	758	1/2Q	781	1/2Q	1,539
Project Management	SS/MIPR	CECOM/ Fort Monmouth,NJ	0	500	1/2Q	565	1/2Q	1,065
BMDS Certification								
Certification & Validation Support	SS/FFRDC	Aerospace/ Los Angeles, CA and FT Manmouth, NJ	0	3,133	1Q	3,509	1Q	6,642

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Management Services			0	12,167		12,762		24929

Remarks

Project Total Cost			0	21,368		23,035		44,403

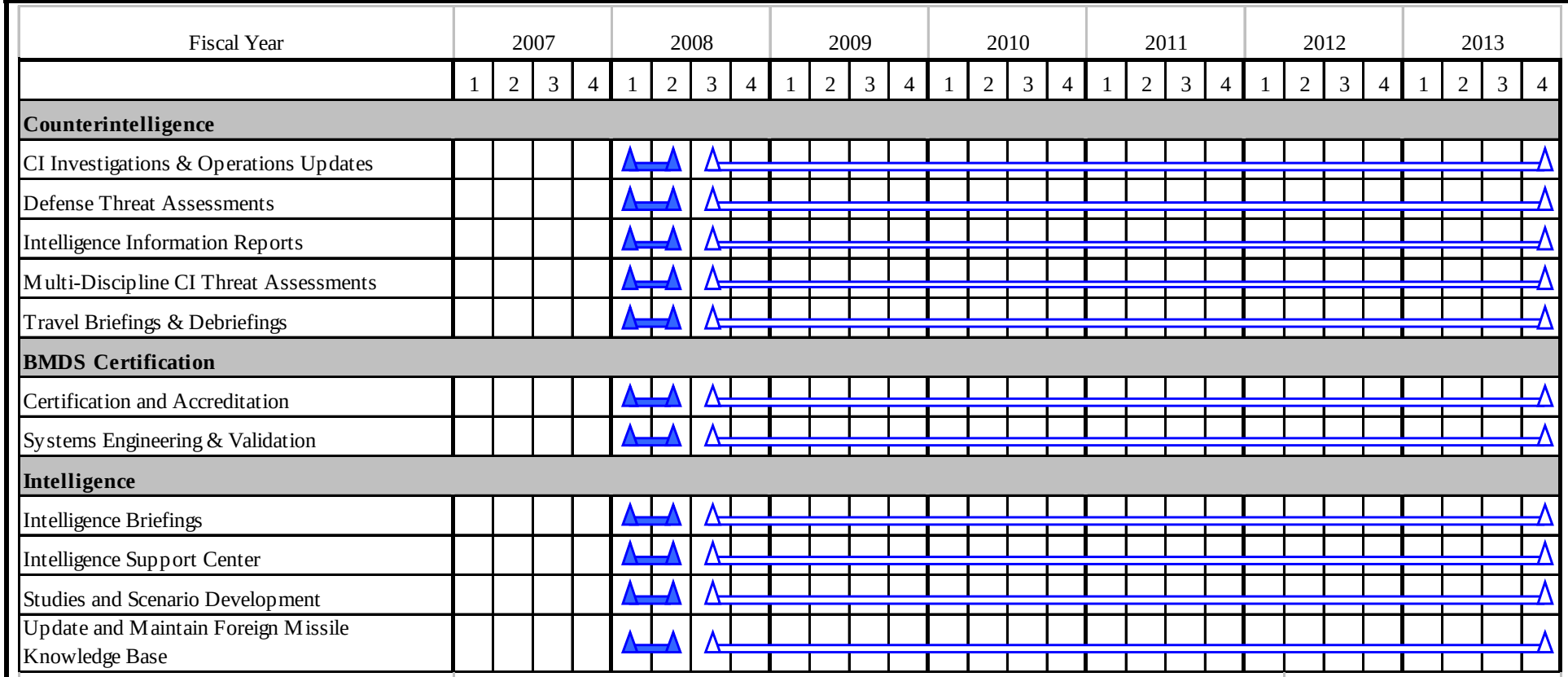
Remarks

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

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core



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

Date
February 2008

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Intelligence																												
Wargaming Support																												

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Counterintelligence							
CI Investigations & Operations Updates		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
Intelligence Information Reports		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
Travel Briefings & Debriefings		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
Systems Engineering & Validation		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Intelligence							
Intelligence Briefings		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
Studies and Scenario Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update and Maintain Foreign Missile Knowledge Base		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Wargaming Support		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0103 Producibility & Manufacturing Technology	33,898	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content previously planned in Project 0103 for FY08-13 has been captured in Project YX29 in accordance with the MDA revised block structure

A. Mission Description and Budget Item Justification

Producibility and Manufacturing Technology is integral to MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition. As an essential component of strong systems engineering practices, Producibility Manufacturing 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. Producibility Manufacturing furthers efforts in commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts.

Producibility and Manufacturing Technology 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 Producibility Manufacturing 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 Next Generation Sensor Producibility Program. All Producibility and Manufacturing Technology 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.

MDA has designated Producibility Manufacturing as the command focal point for Continuous Process Improvement (CPI) which includes the utilization of tools such as Lean, Six Sigma, and the Theory of Constraints to assist in the elimination of waste, reducing process variability, and insuring first time quality for internal and external customers. Producibility and Manufacturing is also representing MDA on the OSD CPI Steering Committee which is establishing policy, procedures, and responsibilities to institutionalize continuous process improvement as a primary approach to analyze and improve DoD processes to be more efficient and effective in support of the warfighter.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Power Systems	2,500	0	0
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 Interceptor 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 (EKV) and THAAD Kill Vehicles are mostly handmade, built from drawings and procedures that are not sufficiently capable of conveying the subtleties of construction. Improve EP responsiveness with respect to quality, delivery and price by initiating several Manufacturing and Producibility improvement projects. This includes the implementation of six-sigma lean and best manufacturing techniques in order to optimize oxyhalide battery production. Under the MDA effort, the oxyhalide manufacturing area underwent a full Value Stream Mapping (VSM) exercise that resulted in an optimized “to be” layout that improves production flow, reduces task time and production costs. EP plans to implement these changes as the EKV and THAAD production schedules allow. There is also a plan to 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 includes a program to assist Eagle-Picher in developing high fidelity battery design, performance, and process models that allow for optimized and improved design and manufacturability of MDA batteries. Lastly, next generation Lithium-Ion (Li-ion) cell manufacturing and testing for MDA space systems is scheduled to begin as part of a multi-agency effort. The objective is to supplant Nickel-Hydrogen (NiH2) cells for energy intensive applications within six years.

ENSER Projects: Follow-on efforts for several SBIR derived improvements to thermal batteries are planned to commence. These efforts are enabling for MKV KV and Aegis BMDS TDACS batteries. Both are currently volume constrained and implementing in-situ cathode and tape-cast production processes (both proven technologies) allow these currently state-of-the art thermal batteries to achieve program stretch goals. These efforts are complemented and leveraged by Defense Production Act Title III investment at ENSER.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY07 Program Accomplishments:

- Completed second source battery for GBI EKV (on hold in FY06 pending program delay).
- MDA Battery Steering Group - Maintained and prioritized MDA/DEP Battery investments.
- Completed the majority of the Eagle Picher (EP) manufacturing improvement projects.
- Continued development of Advanced Lithium-Ion Battery for space applications.
- Began THAAD KVB re-qualification, implemented the first round of manufacturability improvements.
- Began optimization of THAAD electrolyte to address a reliability issue.
- Started first round validation testing of a joint EP/Sandia Labs thermal battery modeling effort.
- Demonstrated ENSER next generation thermal battery technologies.

	FY 2007	FY 2008	FY 2009
Radiation Hardening	11,753	0	0
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. These generic radiation hardening advancements executed in this area do not relate to Ballistic Missile Defense System specific contractor deficiencies nor indicate security sensitivities.

FY07 Program Accomplishments:

- Augmented MDA-STD-005 with a MDA core standard for adaptable guidance navigation and control (GNC)
- Started Common IMU design development in support of MDA-STD-005 with interface electronics capable of IMU interchangeability
- Continued RT FPGA development and assessment involving the use of commercial FPGAs without hard wired PowerPC processor cores.
- Started RT sensor chip assembly testing of Space Tracking and Surveillance System very long wave (VLW) IR and visible sensors relative to MDA-STD-001
- Continued HAENS standard testing of focal plane array test structures (one and two color IR, visible or associated cryogenic read-out integrated circuits) and other commercial electronic devices to include Common IMU interface, IEEE 1394b-2002 electronics

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
Manufacturing Process Improvements	1,500	0	0
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 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.

FY07 Program Accomplishments:

- Deployed an interactive supply chain map project that will allow geographic presentation of suppliers, as well as mapping by functional subsystem and across missile systems.
- Expanded risk assessment tools to include manufacturing readiness levels and Engineering Manufacturing Readiness Levels evaluation capability.
- Enhanced MRL tool features and expand/improve MRL Assist knowledge base.
- Continued industry and government collaborative activities in technology roadmapping for obsolescence management and technology insertion management.
- Completed Obsolescence Desk Guide for MDA.
- Continued inter-service activities in manufacturing technology.
- Completed PAC-3 Lean Pathways effort.
- Began rollout of Continuous Process Improvement in MDA.
- Completed and issue Interim Conformal Coating Guideline and conduct Coating modeling, polymer improvements, and accelerated testing for development of “Whisker Tough” coatings.
- Hosted the Defense Manufacturing Conference.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009
Electro-Optics/Infrared (EO/IR)	8,145	0	0
RDT&E Articles (Quantity)	0	0	0

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.

FY07 Program Accomplishments:

- Continued to assess and develop of the RH Scalable Missile Telescopes and radiation hardening of alternative materials.
- Developed Silicon Carbide (SiC) Mirrors polishing and radiation hardened coatings technology.
- Continued the LIDAR Detector radiation hardening
- Developed and improve RH (proton radiation) large 256X256 array VLWIR Detectors for missile and satellite applications.
- Developed RH Visible Sensors for missile and satellite surveillance applications.

	FY 2007	FY 2008	FY 2009
Radar RF / Electronics	2,000	0	0
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.

FY07 Program Accomplishments:

- Continued the High Power Electronics Reliability Test program - complete reliability testing of High Voltage GaAs MMICs at NRL.
- Continued to conduct reliability testing of GaN devices and MMICs at NRL and AFRL.
- Continued the 4-inch Diameter SI SiC Wafer Producibility program - introduce second source for 4-inch SI SiC wafers.
- Initiated the Joint (with AFRL) GaN wafer Producibility Program to develop a source for large area GaN wafers to support GaN devices.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
Propulsion	4,000	0	0
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.

FY07 Program Accomplishments:

- Executed hot gas tests for the risk reduction program for the MKV program. These tests will provide data to verify analytic results from the design engineers. Additional activities will include a knowledge point to change the packaging techniques and size of the controllable solid DACS.
- Executed hot gas testing of braided C-SiC thruster assemblies
- Continued material characteristics testing of high temperature materials for propulsion system applications
- Generated a developmental roadmap to guide technology development for future controllable solid DACS systems
- Executed program to complete detailed design and initial hardware fabrication for low cost liquid DACS components for testing in FY08.
- Executed a program to assess the capability of Lyocell as a domestically available rayon replacement material for use in solid rocket motor nozzles.

	FY 2007	FY 2008	FY 2009
Advanced Materials & Structures	2,000	0	0
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.

FY07 Program Accomplishments:

- Initiated effort to characterize and qualify Lyocell material as a substitute for rayon fiber for solid rocket motor nozzle components
- Developed a modular, scalable, low cost, producible mirror assembly structure that is more amenable to radiation hardening

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Developed a modular, scalable, low cost, producible Liquid Divert and Attitude Control System (LDACS) Structure
- Redesigned the SM3/SM6 dorsal fin for improved performance and enhanced production
- Invested in producibility enhancements for KEI nosecone that passes rain erosion tests
- Developed a modular, scalable, low cost, producible bulkhead for the KEI Attitude Control System

	FY 2007	FY 2008	FY 2009
Anti-Tamper	2,000	0	0
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 Program Accomplishments:

- Continued high-level plan involving three focus areas: (1) Command Destruct continue to mature command destruct technology to protect data residing on computer hard-drives, while limiting collateral damage to surrounding systems or personnel. (2) Software Solutions continue to develop protective software solutions that provide robust tamper protection at minimal cost and with minimal system redesign and (3) Specialized Solutions continue to leverage DoD investment in long-lead time protection technologies that will provide robust protection while minimizing non-recurring expenses.
- Leveraged DoD investments to develop and mature the following protective technologies:
  - Tamper-resistant embedded processors for BMDS family of Kill Vehicles.
  - Conduct links for hidden AT circuit applications.
  - Lightweight passive and active protective coatings (X-ray obscurants, etc).
  - Energetic materials for assured destruction of critical technologies and information.
  - Technology enhancements to facilitate protection of Real Time Operating Systems (RTOS).
  - Insertion of protective capabilities during legacy code re-use for JTAG protection.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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. 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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
Battery Efforts	MIPR	NSWC/Crane, IN	8,224	0	1Q	0	1Q	8,224
Radiation Hardening								
Rad Hard	CPFF	AFRL/ Kirtland, NM	14,094	0	4Q	0	4Q	14,094
Rad Hard	MIPR	SMDC/ Huntsville, AL	10,796	0	4Q	0	4Q	10,796
Rad Hard	MIPR	NRL/Wash, DC	10,545	0	4Q	0	4Q	10,545
Manufacturing Process Improvements								
Tech Refresh/RLSN	CPFF	ATI	2,600	0	4Q	0	4Q	2,600
Tin Whisker	CPFF	ONR/VA	1,108	0	4Q	0	4Q	1,108
Manufacturing Processes	MIPR	Crane	391	0	4Q	0	4Q	391
Electro-Optics/Infrared (EO/IR)								
EO/IR	MIPR	AFRL/ Kirtland, NM	13,338	0	4Q	0	4Q	13,338
EO/IR	CPFF	Fibertek/ Hendon, VA	6,304	0	4Q	0	4Q	6,304
EO/IR	CPFF	Ampwave/ Cleveland, OH	6,387	0	4Q	0	4Q	6,387
EO/IR	MIPR	DMEA/ MCLELLAN, CA	3,000	0	4Q	0	4Q	3,000
Radar RF / Electronics								
SiC MMIC	CPFF	AFRL/ Kirtland, NM	2,450	0	4Q	0	4Q	2,450
RF Device Test	MIPR	NRL/ Washington, DC	1,757	0	4Q	0	4Q	1,757
High Voltage GaAs	CPFF	Triquint/TX	1,767	0	4Q	0	4Q	1,767

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
RF	MIPR	AFRL/Kirtland	1,625	0	4Q	0	4Q	1,625
Propulsion								
SMDC	CPFF	Aerojet/ Sacramento, CA	7,947	0	4Q	0	4Q	7,947
Propulsion	MIPR	NSWCCD/MD	1,265	0	4Q	0	4Q	1,265
Propulsion	MIPR	ATK/Elkton, MD	1,265	0	4Q	0	4Q	1,265
Propulsion	MIPR	China Lake, CA	1,227	0	4Q	0	4Q	1,227
Advanced Materials & Structures								
Advanced Materials	CPFF	San Diego Composites/ San Diego, CA	3,759	0	4Q	0	4Q	3,759
Advanced Materials	CPFF	Mentis Sciences, Inc./ Manchester, NH	1,082	0	4Q	0	4Q	1,082
Advanced Structures	CPFF	SMDC/ Huntsville, AL	2,594	0	4Q	0	4Q	2,594
Anti-Tamper								
Anti-Tamper	MIPR	NSWC CRANE/ CRANE, IN	1,188	0	4Q	0	4Q	1,188
Subtotal Product Development			104,713	0		0		104713

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
Battery Efforts	MIPR	NSWC/Crane, IN	910	0	4Q	0	4Q	910
SETA	FFP	DRC, SPARTA/ VA	1,490	0	4Q	0	4Q	1,490
Radiation Hardening								
Rad Hard	CPFF	AFRL/ Kirtland, NM	1,623	0	4Q	0	4Q	1,623
Rad Hard	MIPR	SMDC/ Huntsville, AL	1,168	0	4Q	0	4Q	1,168
Rad Hard	MIPR	NSWC CRANE/ IN	1,272	0	4Q	0	4Q	1,272
SETA	FFP	DRC, SPARTA/ VA	1,786	0	4Q	0	4Q	1,786
Manufacturing Process Improvements								
Tech Support	MIPR	REDCOM/AL	393	0	4Q	0	4Q	393
Tech Support	MIPR	NSWC/ Crane, IN	331	0	4Q	0	4Q	331
JDMTP	MIPR	ONR/VA	214	0	4Q	0	4Q	214
SETA	FFP	DRC, SPARTA/ VA	1,348	0	4Q	0	4Q	1,348
Electro-Optics/Infrared (EO/IR)								
EO/IR	MIPR	AFRL/ Kirtland, NM	1,238	0	4Q	0	4Q	1,238
EO/IR	CPFF	Fibertek/ Herndon, VA	712	0	4Q	0	4Q	712
EO/IR	CPFF	Ampwave/ Cleveland, OH	760	0	4Q	0	4Q	760

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
SETA	FFP	DRC, SPARTA/ VA	1,391	0	4Q	0	4Q	1,391
Radar RF / Electronics								
SiC MMIC	CPFF	CREE/NC/ Triquint/TX	182	0	4Q	0	4Q	182
RF Device Test	MIPR	NRL/ Washington, DC	242	0	4Q	0	4Q	242
High Voltage GaAs	CPFF	Triquint/TX	260	0	4Q	0	4Q	260
RF	CPFF	AFRL Kirtland, NM	309	0	4Q	0	4Q	309
SETA	FFP	DRC, SPARTA/ VA	1,593	0	4Q	0	4Q	1,593
Propulsion								
SMDC	CPFF	Aerojet/ Sacramento, CA	847	0	4Q	0	4Q	847
Propulsion	MIPR	NSWCCD/MD	176	0	4Q	0	4Q	176
Propulsion	MIPR	ATK/Elkton, MD	176	0	4Q	0	4Q	176
Propulsion	MIPR	China Lake/CA	154	0	4Q	0	4Q	154
SETA	FFP	DRC, SPARTA/ VA	1,454	0	4Q	0	4Q	1,454
Advanced Materials & Structures								
Advanced Materials	CPFF	San Diego Composites/ San Diego, CA	442	0	4Q	0	4Q	442
Advanced Materials	CPFF	Mentis Sciences, Inc./ Manchester, NH	151	0	4Q	0	4Q	151

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Advanced Structures	CPFF	SMDC/ Huntsville, AL	301	0	4Q	0	4Q	301
SETA	FFP	DRC, SPARTA/ VA	1,159	0	4Q	0	4Q	1,159
Anti-Tamper								
SETA	FFP	DRC, SPARTA / VA	375	0	4Q	0	4Q	375
ANTI-TAMPER	MIPR	NSWC CRANE/ CRANE, IN	200	0	4Q	0	4Q	200
Subtotal Support Costs			22,657	0		0		22657

Remarks

III. Test and Evaluation Cost ($ in Thousands)

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

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Radiation Hardening								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Manufacturing Process Improvements								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Electro-Optics/Infrared (EO/IR)								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Radar RF / Electronics								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Propulsion								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Advanced Materials & Structures								
Govt Personnel		MDA/VA	885	0	4Q	0	4Q	885
Anti-Tamper								
Govt Personnel		MDA/VA	237	0	4Q	0	4Q	237
Subtotal Management Services			6,432	0		0		6432

Remarks

Project Total Cost			133,802	0		0		133,802

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Power Systems																												
Li-Ion Battery Mgnt System Line	▲	—	—	▲																								
Complete Eagle Picher Projects				▲																								
Radiation Hardening																												
Block 10/12 Hardening Projects	▲	—	—																									
HAENS Testing	▲	—	—	▲																								
IMU Core Standard	▲	—	—	▲																								
(PAC) 7-2	▲	—	—	▲																								
Manufacturing Process Improvements																												
Robust Lean Supplier Network Demonstration	▲	—	▲																									
Dev and Deplmnt of Sup Chain Dec Spt	▲	—	▲																									
Demonstrate Tech Refresh Tool Int Concpt	▲	—	▲																									
EO/IR																												

Legend

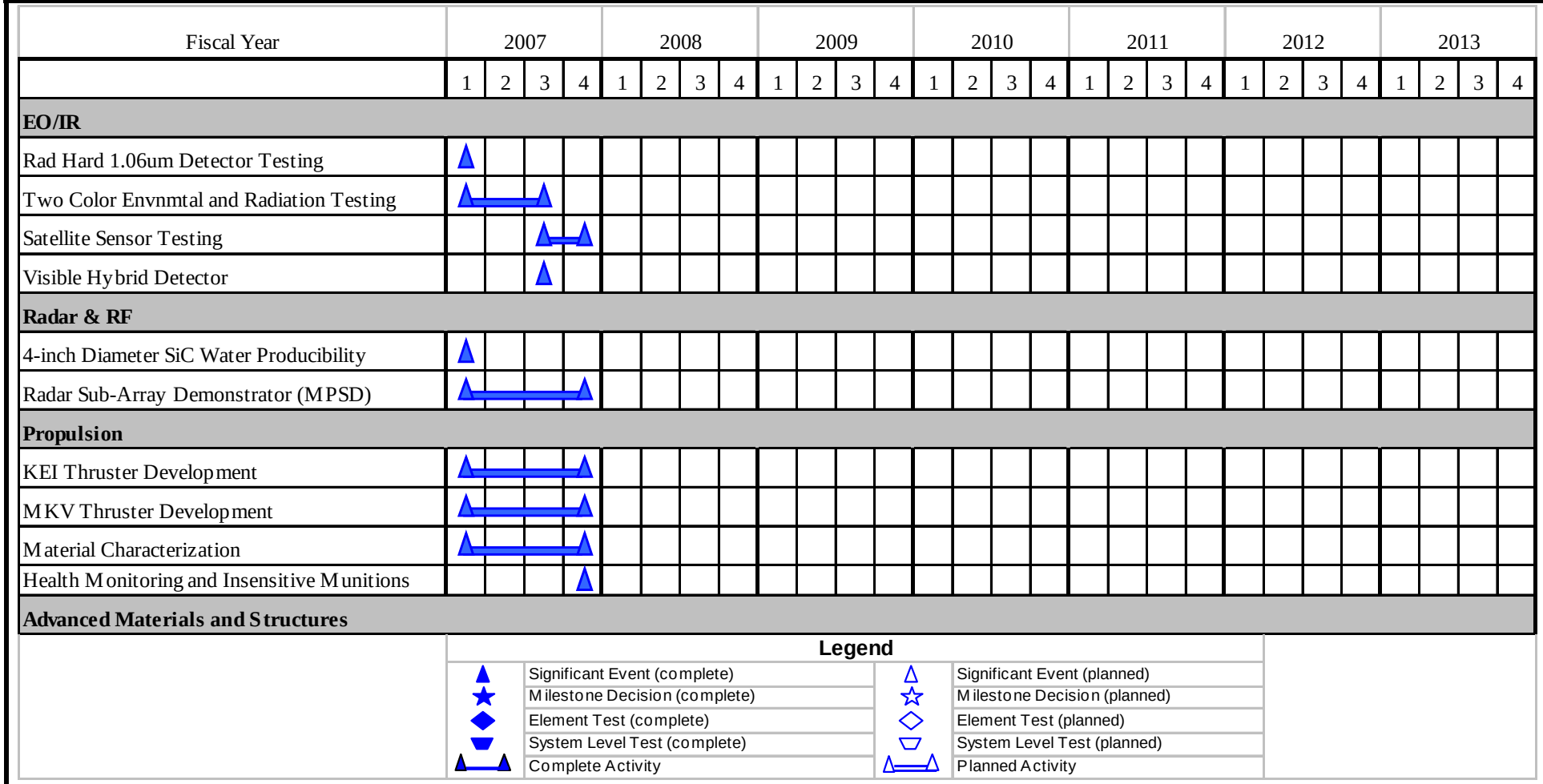
▲	Significant Event (complete)	△	Significant Event (planned)
★	Milestone Decision (complete)	☆	Milestone Decision (planned)
◆	Element Test (complete)	◇	Element Test (planned)
▼	System Level Test (complete)	▽	System Level Test (planned)
▲—▲	Complete Activity	△—△	Planned Activity

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

Date: **February 2008**

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

R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



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

Date
February 2008

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Advanced Materials and Structures																												
KEI Cost/Weight Reduction																												
Dorsal and Control Surf Cost Reduction																												
Anti Tamper																												
AT Studies																												
Command Destruct																												
Software Modifications																												
Specialized Solutions																												

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	

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Power Systems							
Li-Ion Battery Mgnt System Line	1Q-4Q						
Complete Eagle Picher Projects	4Q						
Radiation Hardening							
Block 10/12 Hardening Projects	1Q-3Q						
HAENS Testing	1Q-4Q						
IMU Core Standard	1Q-4Q						
(PAC) 7-2	1Q-4Q						
Radiation Tolerant FPGA Device Trials	4Q						
Manufacturing Process Improvements							
Robust Lean Supplier Network Demonstration	1Q-3Q						
Dev and Deplmnt of Sup Chain Dec Spt	1Q-3Q						
Demonstrate Tech Refresh Tool Int Concpt	1Q-3Q						
EO/IR							
Rad Hard 1.06um Detector Testing	1Q						
Two Color Envnmtal and Radiation Testing	1Q-3Q						
Satellite Sensor Testing	3Q-4Q						
Visible Hybrid Detector	3Q						
Radar & RF							
4-inch Diameter SiC Water Producibility	1Q						
Radar Sub-Array Demonstrator (MPSD)	1Q-4Q						
Propulsion							
KEI Thruster Development	1Q-4Q						
MKV Thruster Development	1Q-4Q						
Material Characterization	1Q-4Q						
Health Monitoring and Insensitive Munitions	4Q						
Advanced Materials and Structures							
KEI Cost/Weight Reduction	1Q-4Q						
KEI Payload Shock and Vibration Mitigation Testing	1Q						
Dorsal and Control Surf Cost Reduction	2Q						
Block 08/10 Component Material Upgrades	4Q						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Anti Tamper							
AT Studies	1Q-4Q						
Command Destruct	2Q-4Q						
Software Modifications	3Q-4Q						
Specialized Solutions	3Q-4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX29 Producibility and Manufacturing Technology	0	29,668	33,338	38,626	47,673	44,856	45,582
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content in Project YX29 is a continuation of the efforts reported in Project 0103 and was explained in that project in PB08.

A. Mission Description and Budget Item Justification

Producibility and Manufacturing Technology 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 and sustaining a strong industrial base for production of spares and/or upgrades for the deployed BMDS. As an essential component of strong systems engineering practices, Producibility Manufacturing provides common, integrated programs and core technology interface standards across the BMDS Elements to ensure mature industrial manufacturing capabilities are available to the Blocks through risk reduction, cost reduction/avoidance, and performance enhancement. Producibility Manufacturing furthers efforts in achieving commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts.

Producibility and Manufacturing Technology provides cross-cutting 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 Producibility Manufacturing 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 Next Generation Sensor Producibility Program. All Producibility and Manufacturing Technology 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. MDA has designated Producibility and Manufacturing as the command focal point for Continuous Process Improvement (CPI) which includes the utilization of tools such as Lean Six-Sigma, and the Theory of Constraints to assist in the elimination of waste, reducing process variability, and insuring first time quality for internal and external customers. Producibility and Manufacturing is also representing MDA on the OSD CPI Steering Committee which is establishing policy, procedures, and responsibilities to institutionalize continuous process improvement as a primary approach to analyze and improve DoD processes to be more efficient and effective in support of the warfighter.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Power Systems	0	3,242	3,658
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 Interceptor 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 (EKV) and THAAD Kill Vehicles are mostly handmade, built from drawings and procedures that are not sufficiently capable of conveying the subtleties of construction. The objective is to improve EP's responsiveness with respect to quality, delivery and price by initiating several Producibility and Manufacturing improvement projects. This includes the implementation of Lean Six-Sigma and best manufacturing techniques in order to optimize oxyhalide battery production. Under the MDA effort, the oxyhalide manufacturing area underwent a full Value Stream Mapping (VSM) exercise that resulted in an optimized “to be” layout that improves production flow, reduces task time and production costs. EP will implement these changes as the EKV and THAAD production schedules allow. There is also a plan to 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 include a program to assist EP in developing high fidelity battery design, performance, and process models that allow for optimized and improved design and manufacturability of MDA batteries. Lastly, next generation Lithium-Ion (Li-ion) cell manufacturing and testing for MDA space systems will be part of a multi-agency effort. The objective is to supplant Nickel-Hydrogen (NiH2) cells for energy intensive applications within six years.

ENSER Projects: Follow-on efforts for several SBIR derived improvements to thermal batteries have begun and will benefit MKV KV and Aegis BMDS TDACS batteries. Both are currently volume constrained and implementing in-situ cathode and tape-cast production processes. These are both proven technologies which will enable these state-of-the art thermal batteries to achieve program stretch goals. These efforts are complemented and leveraged by Defense Production Act Title III investments at ENSER.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY08 Planned Program:

- Completion of all EP Projects except advanced modeling effort (reduces production process variability).
- Complete THAAD improved KVB efforts. · MDA Battery Steering Group - Maintaining and prioritizing MDA/MP Battery investments.
- EKV second source battery ready for qualification. · Begin life cycle testing and performance model estimations for advanced Li-ion cells.
- Complete effort for insertion of ENSER next generation thermal battery technology.

FY09 Planned Program:

- Continue projects that were started in FY08 and include demonstrations that allow for the transition of producible, modular, scalable, and affordable technology to the BMDS.

	FY 2007	FY 2008	FY 2009
Radiation Hardening	0	3,377	3,566
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 the BMDS. Efforts include: support of programs at established foundries for critical devices being developed under the Radiation Hardening Oversight Council; support of programs at specified commercial foundries that utilize special Hardness by Isolation 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. These generic radiation hardening advancements, executed in this area, do not relate to Ballistic Missile Defense System specific contractor deficiencies nor indicate security sensitivities.

FY08 Planned Program:

- Continue Common Inertial Measurement Unit (IMU)/Guidance, Navigation and Control producibility demonstration in support of MDA-STD-005 with nuclear survivability capability per MDA-STD-001.
- Conduct High Altitude Exoatmospheric Nuclear Survivability (HAENS) standard testing of survivable optoelectronics devices to include Common IMU optical components.

FY 09 Planned Program:

- The FY09 effort will continue projects that were started in FY08 and include demonstrations that will aid in the transition of producible, modular, scalable, and affordable technology to the BMDS.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Continue RT Field Programmable Gate Array (FPGA) development and assessment involving the use of commercial FPGAs with hard wired processor cores.
- Start RT sensor chip assembly testing of Multiple Kill Vehicles long wave Infrared and visible sensors relative to MDA-STD-001.

	FY 2007	FY 2008	FY 2009
Manufacturing Process Improvements	0	2,537	2,843
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 objective include: reducing unit cost for major MDA subsystems, exploiting commercial practices to reduce capitalization costs, reducing timelines for long-lead items through rapid prototyping, eliminating hazardous or difficult to obtain materials that increase the program's cost and schedule, introducing metrics such as Engineering and Manufacturing Readiness Levels 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.

FY08 Planned Program:

- Investigate Supply Chain Management of Tin Whiskers Issue leading to guidelines/best practices.
- Integrate technology refresh and critical supplier results into corporate MDA risk mitigation strategy.
- MDA Mission reliability issues- examine unique identification codes for MDA system parts to address parts quality, origin, traceability, and other performance supply chain issues.
- Expand interactive supply chain mapping capability to other MDA programs.
- Develop improved Imbedded Die tooling for enhanced production throughput.
- Develop/deploy Manufacturing Readiness Levels Desktop Application including interface with with Know How and Best Manufacturing Practices Databases.
- Complete development of "Whisker Tough" coatings; draft and issue report/guidelines.
- Initiate Continuous Process Improvement efforts for internal and external MDA customers.

FY09 Planned Program:

- The FY09 effort will continue projects that were started in FY08 and include demonstrations that will aid in the transition of producible, modular, scalable, and affordable technology to the BMDS.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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	FY 2007	FY 2008	FY 2009
Electro-Optics/Infrared (EO/IR)	0	8,602	9,854
RDT&E Articles (Quantity)	0	0	0

The Electro-Optics/Infrared (EO/IR) objective is to execute producibility and manufacturing readiness programs to assure availability of radiation hardened and radiation tolerant, infrared and visible Focal Plane Arrays (FPAs), and associated electronics, cryocoolers, and optics to meet the diverse and extreme requirements of BMDS sensor systems for missile and satellite environments.

FY08 Planned Program:

- Conduct a Flight Experiment to assess supplier readiness and the survivability and performance of their next generation sensor subsystems/component technologies: 1) Silicon carbide based optical telescopes, 2) integrated dewars with cryostat and cryocooled two-color IR FPAs and an uncooled visible FPA with a digital readout, 3) together with common sensor electronics, and 4) a 200 Mbit Ku-band telemetry subsystem to enable down-link of lossless imagery.

FY09 Planned Program:

- Commence multiple low (3-5 units) quantity production and radiation testing of both improved performance and radiation tolerant next generation sensor subsystems/component technologies for a second flight experiment planned for FY10 involving two sensor guided divert and attitude control system (DACS). The planned sensor technologies are : 1) both one and two color digital (up to 200 frames/sec) FPAs, 2) a common (missile and space) dual-use split-cryocooler configuration, 3) subwavelength gratings in lieu of coatings to improve the efficiency of both transmissive and reflective optics, and 4) laser cross-link telemetry between two separately launched payloads (sensor with DACS).

	FY 2007	FY 2008	FY 2009
Radar RF / Electronics	0	2,377	2,658
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.

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FY08 Planned Program:

- Continue the High Power Electronics Reliability Test program support for MDA and other Joint DoD applications.
- Conduct reliability testing of High Voltage Gallium Arsenide X-band monolithic microwave integrated circuits.
- Conduct reliability testing of Gallium Nitride (GaN) X-band discrete devices.
- Conduct performance testing of GaN devices fabricated on GaN substrates.
- Continue the 4-inch Diameter Semi-insulating (SI) Silicon Carbide (SiC) Wafer Producibility program and introduce second source for 4-inch SI SiC wafers for utilization by MDA and other DoD radar programs.
- Improve the quality of the substrate material. · Improve diameter expansion technique.
- Initiate the 4-inch Diameter Semi-insulating (SI) GaN Wafer Producibility program.
- Improve diameter expansion to 2-inch diameter by the end of FY08.

FY09 Planned Program:

- Continue the High Power Electronics Reliability Test program support for MDA and other joint DoD applications.
- Conduct reliability testing of High Voltage Gallium Arsenide X-band monolithic microwave integrated circuits.
- Conduct reliability testing of Gallium Nitride (GaN) X-band discrete devices.
- Conduct performance testing of GaN devices fabricated on GaN substrates.
- Continue the 4-inch Diameter Semi-insulating (SI) Silicon Carbide (SiC) Wafer Producibility program and introduce second source for 4-inch SI SiC wafers for utilization by MDA and other DoD radar programs.
- Improve the quality of the substrate material.
- Improve diameter expansion technique.
- Continue the 4-inch Diameter Semi-insulating (SI) GaN Wafer Producibility program.
- Improve diameter expansion to 3-inch diameter by the end of FY09.
- Initiate the X-band GaN MMIC Producibility program to support MDA and other joint DoD applications.
- Develop repeatable, producible, and cost affordable process for the production of GaN based MMIC ‘s/T-R modules for insertion into BMDS X-band radars.
- Initiate development of a Radar Demonstrator to aid in the transnsition of producible, modular, scalable, and affordable technology to the BMDS.

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	FY 2007	FY 2008	FY 2009
Propulsion	0	5,492	6,258
RDT&E Articles (Quantity)	0	0	0

The Propulsion program is focused on providing affordable, reliable components and materials for propulsion systems/subsystems used in the BMDS Elements. Projects structured to achieve this objective include: developing and characterizing 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. Additional activities include evaluating and investing in reliable long life sensor technology for hypergolic leak detection as part of safely deploying hypergolic liquids.

FY08 Planned Program:

- Conduct trade studies and hardware design and fabrication for the next generation controllable solid DACS as a risk reduction activity for MDA interceptors.
- Execute component level testing of the low cost liquid DACS components such as valves, regulators, pressurization systems and tanks.
- Continue to complete material characterization for ultra high temperature materials and components developed under the SBIR and core funded activities.
- Execute program to address near-term technology needs for future BMDS interceptor propulsion systems.

FY09 Planned Program:

- Conduct trade studies and hardware design, fabrication and test for the next generation controllable solid DACS for future BMDS interceptors.
- Execute component level testing of the low cost liquid DACS components such as valves, regulators, pressurization systems and tanks.
- Continue to complete material characterization for ultra high temperature materials and components developed under the SBIR and core funded activities.
- Execute program to address near-term technology needs for future BMDS interceptor propulsion systems.

FY10 Planned Program:

- Incorporate materials from SBIR programs and other materials development programs to design and fabricate, test and evaluate hardware for the next generation controllable solid DACS for future BMDS interceptors.
- Execute component and subsystem design, fabrication and test of a low cost liquid DACS concept to evaluate components such as valves, regulators, pressurization systems and tanks.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Continue to complete material characterization for ultra high temperature materials and components developed under the SBIR and core funded activities.

	FY 2007	FY 2008	FY 2009
Advanced Materials & Structures	0	2,731	3,066
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.

FY08 Planned Program:

- Continue to focus on advanced materials in radiation hardening, rain erosion material characterization, 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.

FY09 Planned Program:

- The FY09 effort will continue projects that were started in FY08 and include demonstrations that will aid in the transition of producible, modular, scalable, and affordable technology to the BMDS.

	FY 2007	FY 2008	FY 2009
Anti-Tamper	0	1,310	1,435
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.

FY 08 Planned Program

- Continue development of protective Anti-Tamper technologies.
- Continue development of tamper-resistant embedded processors for BMDS family of Kill Vehicles.

- Conduct assessments on Anti-Tamper technologies to evaluate likely effectiveness.
- Initiate transition plans and tailor above Anti-Tamper technologies for utilization on and protection of BMDS systems.
- Work with the BMDS to identify critical technologies and identify Anti-Tamper solutions.

FY09 Planned Program:

- The FY09 effort will continue projects that were started in FY08 and include demonstrations that will aid in the transition of producible, modular, scalable, and affordable technology to the BMDS.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505

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	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
Battery Efforts	MIPR	NSWC/Crane, IN	0	2,507	1/3Q	2,895	1/3Q	5,402
Radiation Hardening								
Rad Hard	CPFF	Draper	0	22	2/3Q	23	1/3Q	45
Rad Hard	CPFF	Kearfott	0	2,506	2/3Q	2,666	1/3Q	5,172
Manufacturing Process Improvements								
BMDS Suppy Chain	CPFF	ATI	0	760	1/2Q	851	1/2Q	1,611
CPI	CPFF	DRC	0	552	2/3Q	618	2/3Q	1,170
COTS	MIPR	Crane	0	190	2/3Q	275	2/3Q	465
Electro-Optics/Infrared (EO/IR)								
EO/IR	CPFF	BAE/Kirtland, NM	0	300	2/3Q	300	2/3Q	600
EO/IR	CPFF	Fibertek/ Hendon, VA	0	1,025	1/3Q	981	1/3Q	2,006
EO/IR	CPFF	Miltec	0	1,700	1/3Q	2,000	1/3Q	3,700
EO/IR	MIPR	DMEA/ MCLELLAN, CA	0	1,200	1/3Q	1,800	1/3Q	3,000
EO/IR	MIPR	NASA/ Wallops Island	0	2,000	1/3Q	2,260	1/3Q	4,260
EO/IR	CPFF	AXSYS	0	1,642	2/3Q	1,750	1/3Q	3,392
Radar RF / Electronics								
Bulk SI GaN for RF	CPFF	AFRL/Kirtland	0	400	1/3Q	495	1/3Q	895
Reliability Testing	MIPR	NRL/Washington, DC	0	200	1/3Q	200	1/3Q	400
Tri-Service Rel. Testing	MIPR	AFRL/Kirtland	0	442	1/4Q	600	1/4Q	1,042
Producibility of 100mm SI SiC Substrates	MIPR	AFRL/Kirtland	0	600	1/3Q	600	1/3Q	1,200
Propulsion								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
SMDC	CPFF	Aerojet/ Sacramento, CA	0	4,000	2/4Q	4,650	2/4Q	8,650
Propulsion	MIPR	NSWCCD/MD	0	593	2/3Q	680	2/3Q	1,273
Propulsion	MIPR	China Lake, CA	0	50	2Q	51	2Q	101
Advanced Materials & Structures								
Advanced Materials	CPFF	SMDC/San Diego Composites/ San Diego, CA	0	1,659	2/3Q	1,898	2/3Q	3,557
Advanced Materials	MIPR	SORI	0	200	2/3Q	258	2/3Q	458
Advanced Materials	MIPR	DCMA/IAC	0	25	2Q	35	2Q	60
Anti-Tamper								
Anti-Tamper	MIPR	NSWC CRANE/ CRANE, IN	0	575	N/A	672	N/A	1,247
Subtotal Product Development			0	23,148		26,558		49706

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Radiation Hardening								
SETA	FFP	DRC, SPARTA/ VA	0	493	N/A	513	N/A	1,006

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Other DoD		SMDC / Huntsville AL	0	114	2/4Q	114	2/4Q	228
Manufacturing Process Improvements								
JDMTP	CPFF	Tiburon	0	150	N/A	168	2/4Q	318
Tin Whisker/PCB Tech	MIPR	ONR/VA	0	150	2/3Q	168	2/4Q	318
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Electro-Optics/Infrared (EO/IR)								
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Radar RF / Electronics								
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Propulsion								
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Other DoD		SMDC/ Huntsville AL	0	114	2/4Q	114	2/4Q	228
	SS		0	0	N/A	0	N/A	
Advanced Materials & Structures								
SETA	FFP	DRC, SPARTA/ VA	0	493	1/3Q	513	1/3Q	1,006
Other DoD		SMDC/ Huntsville AL	0	112	2/4Q	112	2/4Q	224
Anti-Tamper								
SETA	FFP	DRC, SPARTA / VA	0	493	N/A	513	1/2Q	1,006

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Support Costs			0	4,584		4,780		9364

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Power Systems								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Radiation Hardening								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Manufacturing Process Improvements								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Electro-Optics/Infrared (EO/IR)								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Radar RF / Electronics								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Propulsion								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Advanced Materials & Structures								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Anti-Tamper								
Govt Personnel		MDA/VA	0	207	1/4Q	213	1/4Q	420
CIV Travel		MDA/VA	0	35	1/4Q	37	1/4Q	72
Subtotal Management Services			0	1,936		2,000		3936

Remarks

Project Total Cost			0	29,668		33,338		63,006

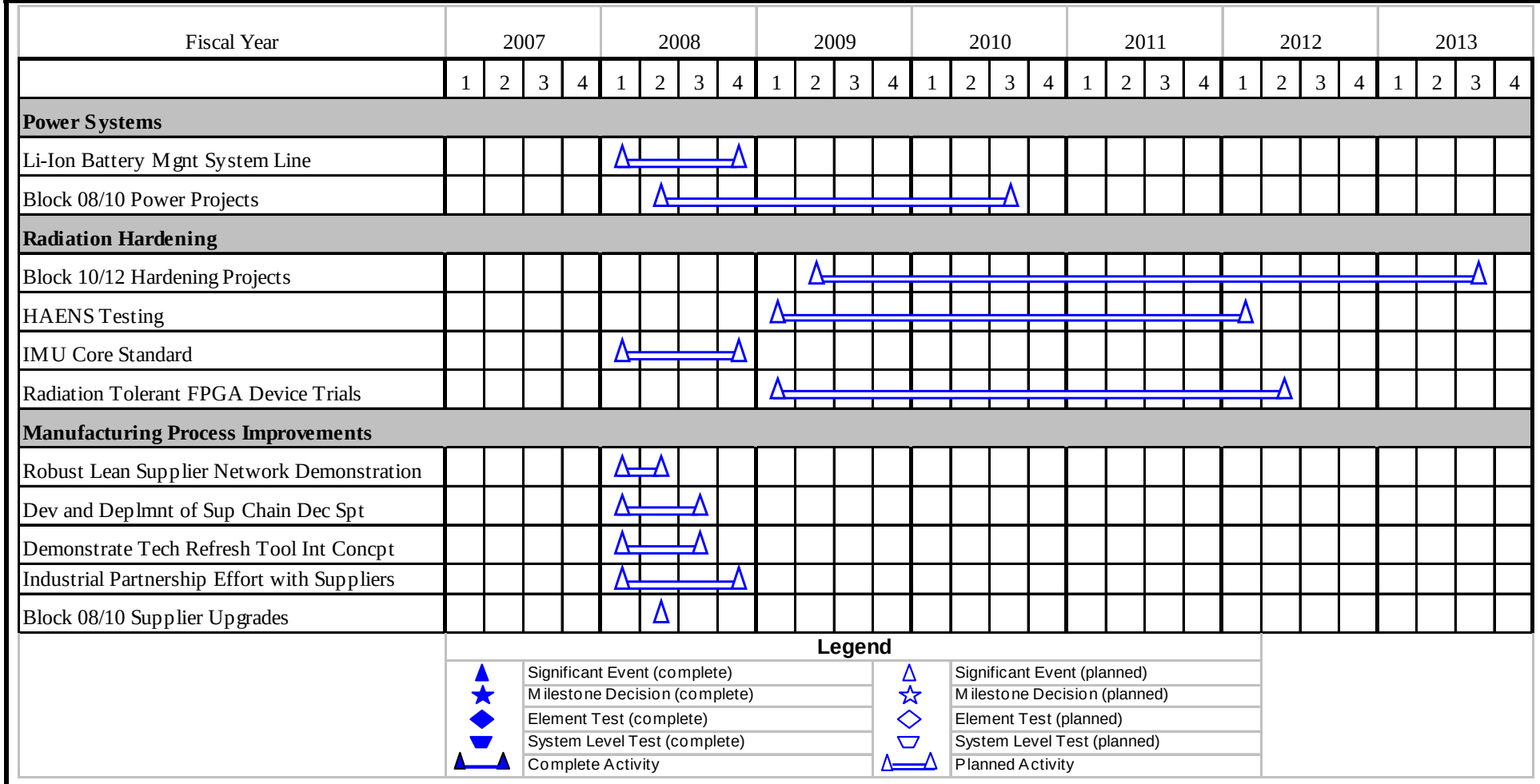
Remarks

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

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

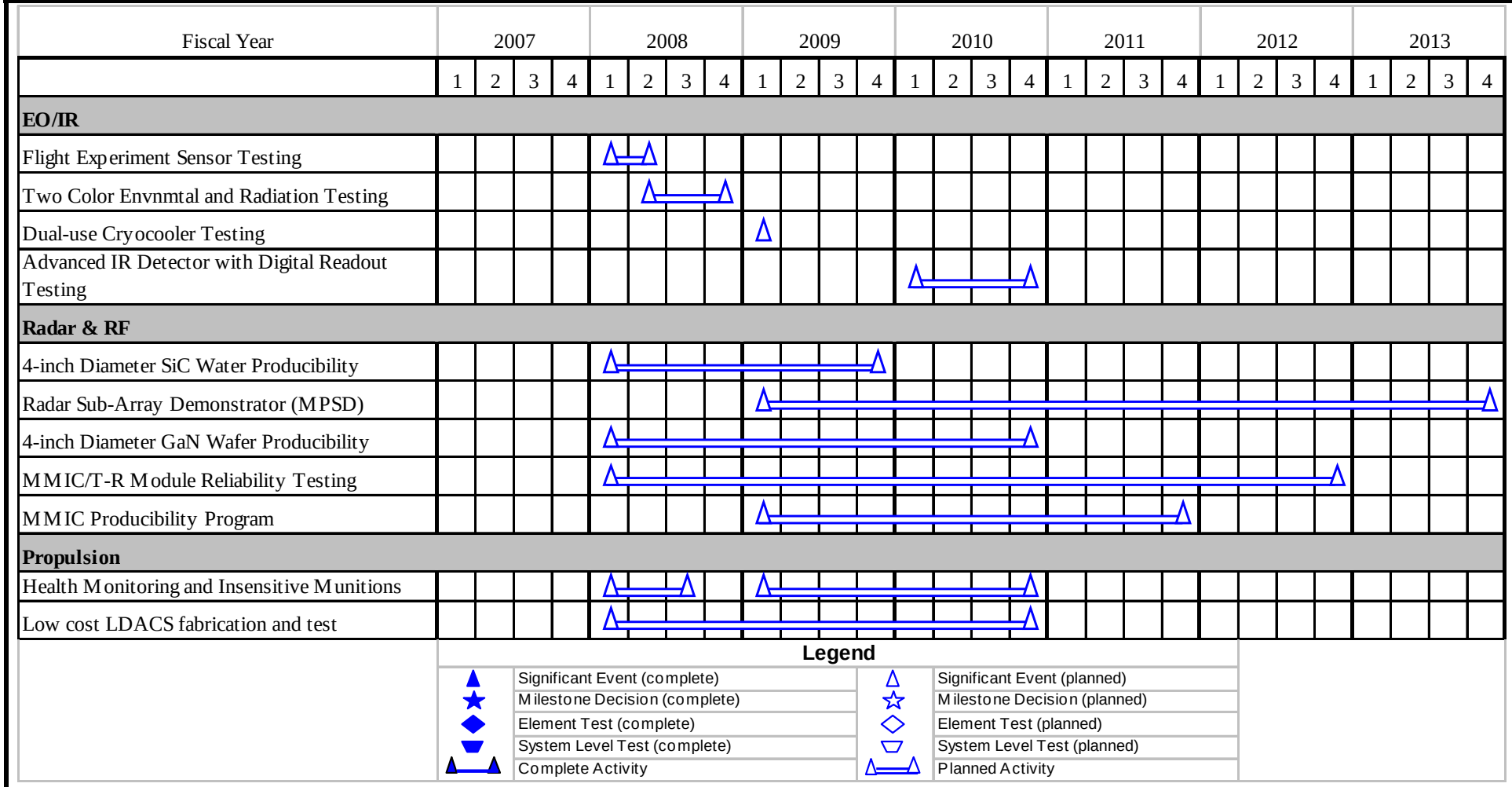


Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

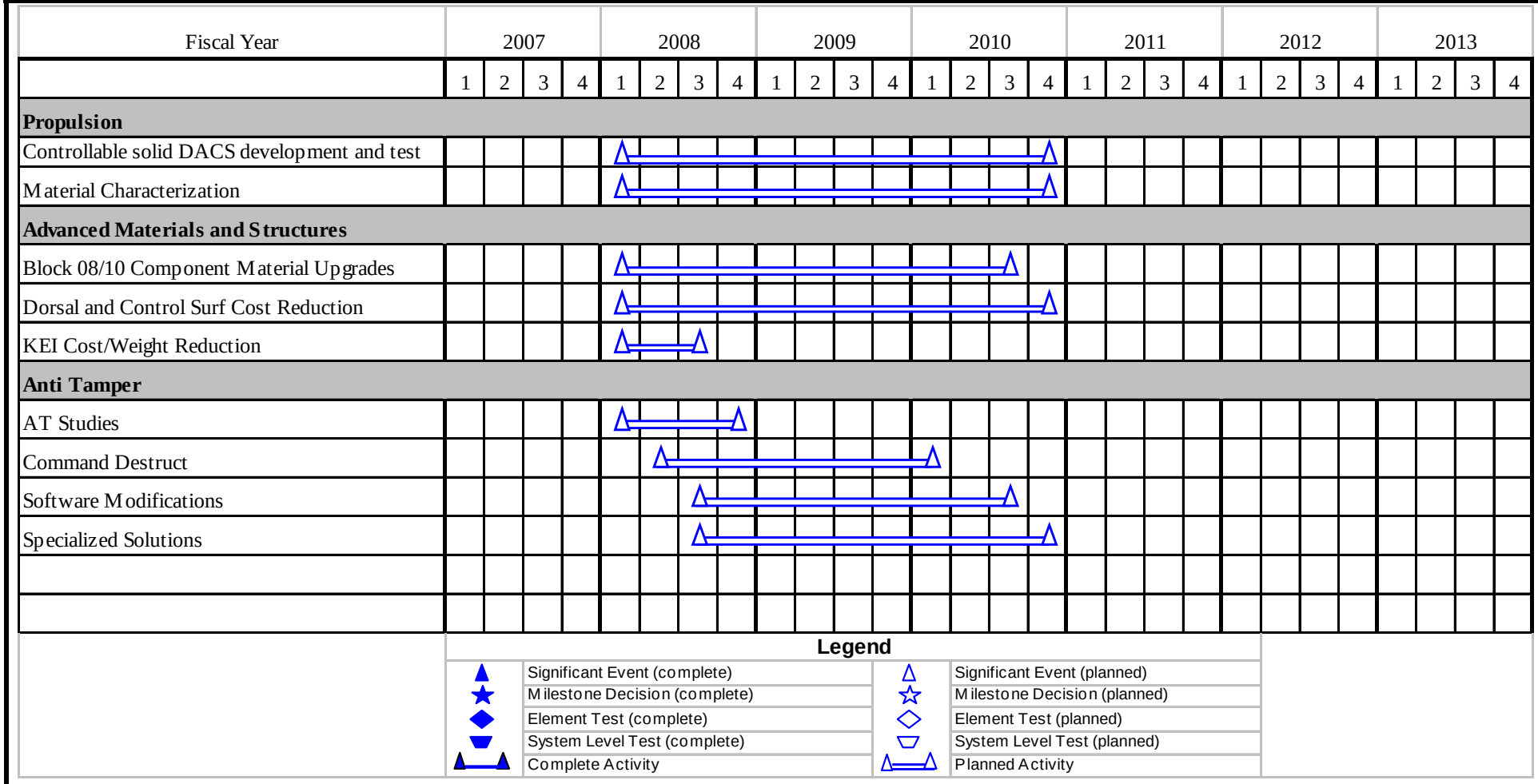


Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date: **February 2008**

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

R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Power Systems							
Li-Ion Battery Mgnt System Line		1Q-4Q					
Block 08/10 Power Projects		2Q-4Q	1Q-4Q	1Q-3Q			
Radiation Hardening							
Block 10/12 Hardening Projects			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
HAENS Testing			1Q-4Q	1Q-4Q	1Q-4Q	1Q	
IMU Core Standard		1Q-4Q					
Radiation Tolerant FPGA Device Trials			1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q	
Manufacturing Process Improvements							
Robust Lean Supplier Network Demonstration		1Q-2Q					
Dev and Deplmnt of Sup Chain Dec Spt		1Q-3Q					
Demonstrate Tech Refresh Tool Int Concpt		1Q-3Q					
Industrial Partnership Effort with Suppliers		1Q-4Q					
Block 08/10 Supplier Upgrades		2Q					
EO/IR							
Flight Experiment Sensor Testing		1Q-2Q					
Two Color Envnmtal and Radiation Testing		2Q-4Q					
Dual-use Cryocooler Testing			1Q				
Optical Mat`ls (Subst./Coatings) Radiation Testing			1Q				
Advanced IR Detector with Digital Readout Testing				1Q-4Q			
Radar & RF							
4-inch Diameter SiC Water Producibility		1Q-4Q	1Q-4Q				
Radar Sub-Array Demonstrator (MPSD)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
4-inch Diameter GaN Wafer Producibility		1Q-4Q	1Q-4Q	1Q-4Q			
MMIC/T-R Module Reliability Testing		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
MMIC Producibility Program			1Q-4Q	1Q-4Q	1Q-4Q		
Propulsion							
Health Monitoring and Insensitive Munitions		1Q-3Q	1Q-4Q	1Q-4Q			
Low cost LDACS fabrication and test		1Q-4Q	1Q-4Q	1Q-4Q			
Controllable solid DACS development and test		1Q-4Q	1Q-4Q	1Q-4Q			
Material Characterization		1Q-4Q	1Q-4Q	1Q-4Q			

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Advanced Materials and Structures							
Block 08/10 Component Material Upgrades		1Q-4Q	1Q-4Q	1Q-3Q			
Dorsal and Control Surf Cost Reduction		1Q-4Q	1Q-4Q	1Q-4Q			
KEI Cost/Weight Reduction		1Q-3Q					
Anti Tamper							
AT Studies		1Q-4Q					
Command Destruct		2Q-4Q	1Q-4Q	1Q			
Software Modifications		3Q-4Q	1Q-4Q	1Q-3Q			
Specialized Solutions		3Q-4Q	1Q-4Q	1Q-4Q			

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0104 BMD Information Management Systems	102,710	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content previously planned in Project 0104 BMD Information Management Systems for FY08-13 has been captured in Project YX30 in FY08-13 in accordance with the MDA revised block structure.

A. Mission Description and Budget Item Justification

Information Management Systems 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, MDA networks, classified and unclassified Video Teleconferencing services and the Joint Worldwide Intelligence Connectivity System (JWICS). Connectivity to the JWICS is essential to the MDA Intelligence project to obtain and provide intelligence data used to feed the Command, Control, Battle Management and Communication project, the Hercules Project, the Countermeasures/Counter-Countermeasures project, and Modeling and Simulation project. The above initiatives will provide for the efficient operation and safeguarding of all agency information.

This project also funds IM/IT operations for multiple systems in existing as well as new facilities during the MDA transition to Huntsville, AL; Dahlgren, VA and Ft Belvoir in Alexandria, VA.

This Project funds initiatives that support the MDA Systems Engineering and Integration mission for the BMDS System including:

- Information Assurance (IA) controls and Computer Network Defense of MDA networks
- Certification and Accreditation processes that support the 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
- Business Management Modernization Program 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 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

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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The BMD Information Management Systems project, includes the following Task areas:

- Enterprise Architecture and Engineering
- MDA General Service Wide Area Network (WAN) (formerly called MDA Enterprise Communications Infrastructure)
- Enterprise Information Assurance (IA)
- Core Enterprise Applications
- MDA Knowledge On-Line (formerly called Enterprise Information Management Services)
- MDA Video Teleconferencing (formerly called Enterprise Video Teleconferencing)
- Enterprise Plans and Policies
- US National Capital Metropolitan Area Network (MAN) (combined Computing Infrastructure (USNCR) and Computing and Network Management Services (US National Capital Region (NCR)
- US South Metropolitan Area Network (US South MAN) (formerly called Computing Infrastructure (USSOUTH))
- US West Metropolitan Area Network (US West MAN) (separated from US South MAN in FY09PBR
- Service IM/IT for Executing Agents

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Enterprise Architecture and Engineering	3,335	0	0
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 that is compliant with the DoD Federal enterprise architecture standards. The MDA enterprise architecture 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.

FY07 Accomplishments:

- Developed designs and implementation plans for MDA enterprise communication network support to BMDS sites at Shiriki, Japan and Moor, United Kingdom
- Continued revisions to the realignment and transition plan in support of the MDA transition efforts to Huntsville, and Ft Belvoir

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Developed implementation plans to meet continued evolution of information assurance controls to ensure compliance with DoD Instruction 8500.2, Information Assurance (IA) Implementation (encryption device upgrades and situational awareness tools)
- Developed designs and implementation plans for secure wireless solutions across the MDA enterprise
- Developed disaster recovery implementation plans for unclassified systems in the Huntsville area
- Developed implementation plans for consolidation of helpdesk services across the MDA enterprise

	FY 2007	FY 2008	FY 2009
Core Enterprise Applications	14,457	0	0
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, BMDS Integrated Master Schedule, Electronic Records Management System, E-Tasker, Integrated Acquisition Environment, data management tool, financial management tools, personnel tracking system, MDA Identify and Management Infrastructure application, Computer-Aided Facilities Management, and the MDA Corporate University Enterprise (web-based learning management system). The Defense Information Systems Agency sponsored collaboration tool (IBM Collaboration Suite) will be implemented to allow real-time collaboration throughout the MDA enterprise, the BMDS operational sites and the Combatant Command Headquarters.

FY07 Accomplishments:

- Began implementation of the BMDS Integrated Master Schedule and continued upgrades of the BMD Asset Management Tool
- Continued implementation of the Software Asset Management Program
- Continued implementation of a Collaboration Suite to support real-time research, test and operational information exchange
- Continued implementation of DoD mandated business management modernization applications
- Began implementation of metadata taxonomy to standardize information storage and to facilitate data mining across MDA

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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	FY 2007	FY 2008	FY 2009
Enterprise Plans, Policies and Analyses	4,161	0	0
RDT&E Articles (Quantity)	0	0	0

This initiative funds efforts that support development and implementation of Agency-wide Information Management/Information Technologies (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, the Presidents Management Agenda - E-Government reporting, and Office of Management and Budget 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 process. This initiative also includes budget formulation and execution as well as contract management and oversight.

FY07 Accomplishments:

- Developed, updated, coordinated and published policies, guidelines and processes to comply with applicable legislation, DoD and MDA guidance
- Updated budget plans, documentation and reports for future years to comply with OMB, OSD and MDA guidance
- Executed, tracked and reported the FY07 IT budget
- Conducted assessments, prepared status and reported metrics to MDA Senior Leadership, OSD, OMB, and DoD

	FY 2007	FY 2008	FY 2009
MDA General Service WAN	13,733	0	0
RDT&E Articles (Quantity)	0	0	0

In FY07 this initiative was renamed from the Enterprise Communications Infrastructure initiative to the MDA General Service WAN to be consistent with the title in the MDA DoD IT Portfolio Registry. This initiative consists of telecommunications equipment and leased communications for classified and unclassified voice and data circuits, video teleconferencing capabilities and circuit access to the Joint Worldwide Intelligence Communications System. The MDA Special Access Program Wide Area Network supports BMDS planning and contingency operations. Circuits and associated services are provided by the Defense Information Systems Agency as well as the Defense Research and Engineering Network. These circuits provide access to over 80 government and industry locations to enable information sharing of BMD-related data throughout the global MDA Enterprise.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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FY07 Accomplishments:

- Completed the implementation of the MDA Special Access Program Wide Area Network to Dahlgren, VA and Huntsville, AL
- Upgraded network equipment to comply with information assurance controls per DoD Instruction 8500.2
- Continued implementation of the DoD-mandated transition to Internet Protocols in support of the DoD Global Information Grid architecture plan
- Completed regional implementation of a secure wireless network for portable devices
- Funded recurring maintenance agreements on MDA Enterprise network equipment
- Funded MDA Enterprise leased communications

Refer to Project YX30 for the FY08 and FY09 Planned Program.

	FY 2007	FY 2008	FY 2009
Enterprise Information Assurance	20,978	0	0
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, Network Situational Awareness, and Certification and Accreditation activities, and IA Workforce training and certification to comply with DoD IA directives, instructions and guidelines. The IA program provides system security engineering, development, and testing to ensure that command, control, communications, computing and intelligence 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. The MDA Enterprise Network Operations Security Center manages network situational awareness in coordination with the Joint Task Force-Global Network Operations. This ensures the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems.

FY07 Accomplishments:

- Provided system security planning, engineering and test support to the spiral development of BMDS Blocks 04/06
- Provided assistance in development of the BMDS Block 04/06 IA certification package
- Sustained certification and accreditation for the IT systems reported to DoD and Office of Management and Budget (OMB)
- Implemented the classified disaster recovery storage systems (Huntsville AL)
- Implemented network situational awareness tools for the Enterprise Network Operations Security Center and the Alternate Network Operations Security Center
- Coordinated the implementation of Vulnerability Assessments across the MDA Enterprise

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Conducted certification evaluations of mission, test and administrative systems and assist in the development of the Plan of Actions and Milestones to correct IA deficiencies
- Continued implementation of the IA Workforce Improvement Program to certify IA professionals in compliance with DoD Manual 8570.1 and achieve the DoD certification goal of 40% in FY07
- Completed annual IA user training for the MDA workforce
- Provided IA engineering and planning guidance for all MDA IT acquisition programs
- Implemented Public Key Infrastructure-enabled applications (MDA Portal)
- Installed IT equipment for the classified disaster recovery storage systems (Huntsville AL)
- Continued transition to the new DoD Information Assurance Certification and Accreditation Process

	FY 2007	FY 2008	FY 2009
Service IM/IT Executing Agents	5,325	0	0
RDT&E Articles (Quantity)	0	0	0

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). 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, 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.

FY07 Accomplishments:
- Operated and maintained IT networks, systems and helpdesk services in support of MDA efforts in Army facilities located in Huntsville, AL
- Updated and maintained the Program Resource Internet Database Environment database management tool
- Provided helpdesk services to MDA users
- Provided IT support to MDA international programs and conferences

Refer to Project YX30 for the FY08 and FY09 Planned Program.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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	FY 2007	FY 2008	FY 2009
US National Capital Region MAN	22,671	0	0
RDT&E Articles (Quantity)	0	0	0

In FY07 the Computing Infrastructure and the Computing and Network Management Services initiatives were combined and renamed US National Capital Region MAN to align with the DoD IT Portfolio Registry. This initiative consists of IT support services required to operate and maintain the classified and unclassified local area networks in the National Capital Region (approximately 2500 users) as well as procurement of consumables such as printer toner, network routing and switching gear, servers, storage devices and desktop computers. 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. The National Capital Region Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations.

FY07 Accomplishments:

- Sustained the BMDS Mission Operation Center
- Implemented IA Vulnerability Assessments in the National Capital Region
- Implemented IA control improvements in accordance with established Plan of Action and Milestone
- Monitored networks for user compliance with DoD policies, and reported incidents
- Maintained IT system configuration control
- Performed preventative maintenance on IT systems
- Tested and implemented software application upgrades
- Maintained the network and help desk services at 99% readiness
- Provided web-based and classroom training to MDA users on new applications and upgrades
- Funded hardware and software maintenance agreements for the NCR
- Funded recurring maintenance for the MDA NCR classified and unclassified networks
- Procured IT consumables (printer toner cartridges, CDs, tapes)

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
MDA Video Teleconferencing	6,606	0	0
RDT&E Articles (Quantity)	0	0	0

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 capability to enhance resolution and reduce per-minute unit cost. Primary MDA video-teleconferencing sites include the National Capital Region, Joint National Integration Center, Airborne Laser at Kirtland Air Force Base, and Space Tracking and Surveillance System at Los Angeles AFB. Future sites will include numerous offices in Huntsville, AL including Terminal High Altitude Area Defense, Targets and Countermeasures, and Ground Based Missile Defense.

FY07 Accomplishments:

- Operated the VTC Scheduling Operations Center capability in support of classified and unclassified MDA mission, test and business operations
- Implemented video over internet to MDA sites in Kirtland AFB, NM, Edwards AFB, CA, and Los Angeles AFB, CA
- Expanded recurring operations and maintenance support to include the new Dahlgren, VA and Huntsville, AL facilities
- Funded recurring operations and maintenance support for VTC facilities and equipment

	FY 2007	FY 2008	FY 2009
Computing Infrastructure (USNCR)	0	0	0
RDT&E Articles (Quantity)	0	0	0

In FY07, the Computing Infrastructure initiative was combined with the Computing and Network Management Services initiative and renamed US National Capital Region MAN.

See the US National Capital Region MAN for FY07 accomplishments.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
US SOUTH MAN	3,320	0	0
RDT&E Articles (Quantity)	0	0	0

In FY07 the Computing Infrastructure (US South) initiative was renamed US SOUTH MAN to be consistent with the title in the MDA DoD IT Portfolio Registry. This initiative consists of IT support services required to operate and maintain the classified and unclassified local area networks in the Huntsville region. 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. The US South Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. The increase in funding is for IM/IT operations in support of new facilities in Huntsville, AL.

FY07 Accomplishments:

- Implemented IA Vulnerability Assessments in the Huntsville region
- Implemented IA control improvements in accordance with established Plan of Action and Milestones
- Monitored networks for user compliance with DoD policies, and reported incidents
- Maintained IT system configuration control
- Performed preventative maintenance on IT systems
- Tested and implemented software application upgrades
- Maintained the network and help desk services at 99% readiness
- Provided web-based and classroom training to MDA users on new applications and upgrades

	FY 2007	FY 2008	FY 2009
MDA Knowledge On-Line	8,054	0	0
RDT&E Articles (Quantity)	0	0	0

In FY07 the Enterprise Information Management Services initiative was renamed MA Knowledge On-Line to align to the title in the MDA DoD IT Portfolio Registry. This 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, a state-of-the-art, high capacity graphic and video production center, which provides services to senior leadership and agency employees.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY07 Accomplishments:

- Continued implementation of the Portal user interfaces upgrade project to improve access to BMDS data and Director's plans, policies and guidance
- Continued implementation of the MDA information cataloging project hosted on the MDA Portal
- Developed and implement MDA Portal (web-based) training programs to include information assurance, business applications, workforce certification, security, and ethics
- Funded recurring operations and maintenance of graphic and video production capabilities
- Funded recurring operations and maintenance of Portal services

	FY 2007	FY 2008	FY 2009
US WEST MAN	70	0	0
RDT&E Articles (Quantity)	0	0	0

This initiative consists of IT support services of the Information Technology Officer, West (ITO West) office to monitor and sustain the operations of the MDA classified and unclassified metropolitan area network in Albuquerque, NM. ITO West coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. The ITO West Office was established in FY2006, but was reported within the US South Computing Infrastructure Unit, now titled US South MAN.

FY07 Accomplishments:

- Provided communications capabilities between the Airborne Laser Program Office in Albuquerque, NM to personnel in various MDA locations through the implementation of MDA Classified and Unclassified network.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

D. Acquisition Strategy

MDA employs a federated acquisition strategy for the procurement and sustainment of the MDA Enterprise. This strategy utilizes an Engineering and Architectural Planning support contractor with 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).

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Enterprise Architecture and Engineering								
Arc & Eng	C/CPAF	FEDSIM/ Fairfax, VA	3,023	0	N/A	0	N/A	3,023
SETA	C/TM	General Dynamics IT/Fairfax, VA	312	0	N/A	0	N/A	312
Core Enterprise Applications								
Enterprise Application	C/CPAF	FEDSIM/VA	8,850	0	N/A	0	N/A	8,850
PRIDE and RADS SW support	MIPR	SMDC/CIMS/AL	1,284	0	N/A	0	N/A	1,284
SETA Support	CPFF	General Dynamics IT/VA	1,560	0	N/A	0	N/A	1,560
Application support	C/CPAF	Northrop Grumman/CO	2,748	0	N/A	0	N/A	2,748
SPS SW support	C/CPFF	SPS JPMO/VA	15	0	N/A	0	N/A	15
Enterprise Plans, Policies and Analyses								
SETA Support	C/CPFF	General Dynamics IT/VA	2,560	0	N/A	0	N/A	2,560
CIO Support	Various	Various/CO	177	0	N/A	0	N/A	177

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
CIO Support	C/CPFF	Decisive Analytics/ VA	1,000	0	N/A	0	N/A	1,000
CIO Travel			215	0	N/A	0	N/A	215
Publications			209	0	N/A	0	N/A	209
MDA General Service WAN								
Leased Comms	MIPR	DISA/VA	990	0	N/A	0	N/A	990
Circuits	MIPR	DREN/MD	2,299	0	N/A	0	N/A	2,299
Wireless	C/BPA	DTSW/VA	664	0	N/A	0	N/A	664
Network Engineering	C/CPAF	Northrop Grumman/CO	9,305	0	N/A	0	N/A	9,305
SETA Support	C/TM	General Dynamics/ VA	468	0	N/A	0	N/A	468
Hub site support	MIPR	Hanscomb AFB/ MA	7	0	N/A	0	N/A	7
Enterprise Information Assurance								
Certification & Accreditation Support	C/MIPR	FEDSIM/ VA	1,567	0	N/A	0	N/A	1,567
SETA C&A Support	C/MIPR	General Dynamics IT/VA	3,548	0	N/A	0	N/A	3,548
NCR Info Assurance	C/CPAF	SI Intl/VA	4,753	0	N/A	0	N/A	4,753
Enterprise Network Op Security Center	C/CPAF	Northrop Grumman/CO	9,156	0	N/A	0	N/A	9,156
PKI Support	C/CPAF	FEDSIM/VA	538	0	N/A	0	N/A	538
IA & BMDS NOSC support	C/CPFF	Booz Allen Hamilton/CO	650	0	N/A	0	N/A	650
SETA Support	C/CPAF	JTAAS/CO	766	0	N/A	0	N/A	766
Service IM/IT Executing Agents								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Service IM/IT	C/CPAF	SMDC/SAIC/ AL	5,000	0	N/A	0	N/A	5,000
Service IM/IT	C/CPAF	PEO ASMD/SAIC/ AL	300	0	N/A	0	N/A	300
Service IM/IT	C/CPFF	USAF/SAIC/CA	25	0	N/A	0	N/A	25
US National Capital Region MAN								
US NCR MAN O&M	C/CPFF	SI International/ CO	18,783	0	N/A	0	N/A	18,783
SETA Support	C/CPFF	General Dynamics IT/ VA	3,888	0	N/A	0	N/A	3,888
MDA Video Teleconferencing								
VTC Support and Maintenance	SS/CPAF	SGICOM/VA	6,274	0	N/A	0	N/A	6,274
SETA Support	C/CPFF	General Dynamics IT/VA	332	0	N/A	0	N/A	332
Computing Infrastructure (USNCR)								
US SOUTH MAN								
Network Eng Support	C/CPAF	GSA/FEDSIM/VA	1,445	0	N/A	0	N/A	1,445
SETA Support	C/TM	General Dynamics/ AL	156	0	N/A	0	N/A	156
IT Integration Support	C/CPAF	GSA/Synergy/ AL	1,719	0	N/A	0	N/A	1,719
MDA Knowledge On-Line								
Portal and VIPC support	SS/CPFF	CSC/VA	8,054	0	N/A	0	N/A	8,054
US WEST MAN								
SETA Support	C/TM	General Dynamics IT/VA	70	0	N/A	0	N/A	70

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Support Costs			102,710	0		0		102710

Remarks

Remarks:

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost			102,710	0		0		102,710

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2008
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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Architecture and Engineering																												
Plan disaster recovery capability																												
Design/upgrade IA Architecture and Plans																												
Develop plans to transition comms networks																												
Plan server/helpdesk consolidation																												
MDA General Service WAN																												
Upgrade/Consolidate comms networks																												
Implement Secure Wireless Network																												
Implement, O&M Special Access Program WAN																												
Migrate comms to IP v6																												
Enterprise Information Assurance																												
Implement PKI/CAC enabled applications																												
Establish/sustain IA Workforce Improvement Prog.																												
Implement Phased Disaster Recovery Capability																												

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

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Information Assurance																												
Implement, O&M Primary & Alt NOSC																												
Test and accredit MDA networks and systems																												
Update BMDS Block 04/06 DIACAP																												
Core Enterprise Applications																												
Implement Collaborative Tools																												
Implement Phased Elec Records Mgmt																												
Implement DoD-mandated improvements																												
Transition financial management applications																												
MDA Knowledge On-line																												
Improve portal access to BMDS data																												
Sustain Video Information Production Center (VIPC)																												
Fund recurring O&M of the MDA Portals																												
MDA Video Teleconferencing																												

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

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2008
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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDA Video Teleconferencing																												
Sustain BMDS VTC O&M																												
Enterprise Plans, Policies, and Analyses																												
Develop strategic IT plans and policies																												
Develop agency IT budgets and monitor execution																												
US NCR Metropolitan Area Network (US NCR MAN)																												
Sustain O&M of IM/IT infrastructure (USNCR)																												
US SOUTH MAN																												
Sustain O&M of IM/IT infrastructure (USSOUTH)																												
Service IM/IT Executing Agents																												
Sustain O&M of IM/IT for MDA Research support																												

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	

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Enterprise Architecture and Engineering							
Plan disaster recovery capability	1Q-4Q						
Design/upgrade IA Architecture and Plans	1Q-4Q						
Develop plans to transition comms networks	1Q-4Q						
Plan server/helpdesk consolidation	1Q-4Q						
MDA General Service WAN							
Support recurring maintenance agreements	1Q-4Q						
Sustain operations of the MDA Wide Area Network	1Q-4Q						
Upgrade/Consolidate comms networks	1Q-4Q						
Execute Service Level Agreements for hub services	1Q-4Q						
Fund Agency leased communications	1Q-4Q						
Implement Secure Wireless Network	1Q-4Q						
Implement, O&M Special Access Program WAN	1Q-4Q						
Migrate comms to IP v6	1Q-4Q						
Enterprise Information Assurance							
Implement PKI/CAC enabled applications	1Q-4Q						
Establish/sustain IA Workforce Improvement Prog.	1Q-4Q						
Implement Phased Disaster Recovery Capability	1Q-4Q						
Annual update of IA Program Plan	1Q-4Q						
Implement, O&M Primary & Alt NOSC	1Q-4Q						
Test and accredit MDA networks and systems	1Q-4Q						
Update BMDS Block 04/06 DIACAP	1Q-4Q						
Provide Annual IA User Training	3Q-4Q						
Core Enterprise Applications							
Fund recurring enterprise application license fees	1Q-4Q						
Implement Collaborative Tools	1Q-4Q						
Implement Phased Elec Records Mgmt	1Q-4Q						
Consolidate Microsoft licenses to Enterprise	1Q-2Q						
Implement DoD-mandated improvements	1Q-4Q						
Implement a Software asset management program	1Q-4Q						
Transition financial management applications	1Q-4Q						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MDA Knowledge On-line							
Improve portal access to BMDS data	1Q-4Q						
Sustain Video Information Production Center (VIPC)	1Q-4Q						
Develop/provide Portal-based training	1Q-4Q						
Fund recurring O&M of the MDA Portals	1Q-4Q						
Implement phased information cataloging to Portal	1Q-4Q						
MDA Video Teleconferencing							
Sustain BMDS VTC O&M	1Q-4Q						
Design/Engineer VTC capability for MDA sites	1Q-4Q						
Implement VOIP across the MDA	1Q-4Q						
Enterprise Plans, Policies, and Analyses							
Develop strategic IT plans and policies	1Q-4Q						
Develop agency IT budgets and monitor execution	1Q-4Q						
Measure performance against IT strategic goals	1Q-4Q						
Submit Qtly PMA/E-Gov scorecard	1Q,2Q,3Q,4Q						
Submit annual FISMA Report	4Q						
US NCR Metropolitan Area Network (US NCR MAN)							
Continue operations of the NCR LAN/WAN	1Q-4Q						
Support BRAC and transition planning	1Q-4Q						
Sustain O&M of IM/IT infrastructure (USNCR)	1Q-4Q						
Update/maintain SW licenses for USNCR	1Q-4Q						
US SOUTH MAN							
Sustain O&M of IM/IT infrastructure (USSOUTH)	1Q-4Q						
Update/maintain SW licenses for USSOUTH	1Q-4Q						
US WEST MAN							
Sustain O&M of US WEST MAN	1Q-4Q						
Service IM/IT Executing Agents							
Sustain O&M of IM/IT for MDA Research support	1Q-4Q						
Update/maintain SW licenses	1Q-4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX30 BMD Information Management Systems	0	111,675	106,832	127,455	156,943	137,550	139,778
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content in BMD Information Management Systems in Project YX30 is a continuation of the efforts reported in FY07 Project 0104 BMD Information Management Systems and was explained in that project in PB08.

A. Mission Description and Budget Item Justification

Information Management Systems 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, MDA networks, classified and unclassified Video Teleconferencing services and the Joint Worldwide Intelligence Connectivity System (JWICS). Connectivity to the JWICS is essential to the MDA Intelligence project to obtain and provide intelligence data used to feed the Command, Control, Battle Management and Communication project, the Hercules Project, the Countermeasures/Counter-Countermeasures project, and Modeling and Simulation project. The above initiatives will provide for the efficient operation and safeguarding of all agency information.

This project also funds Information Management/Information Technology (IM/IT) operations for multiple systems in existing as well as new facilities during the MDA transition to Huntsville, AL; Dahlgren, VA and Ft Belvoir in Alexandria, VA.

This Project funds initiatives that support the MDA Systems Engineering and Integration mission for the BMDS System including:

- Information Assurance (IA) controls and Computer Network Defense of MDA networks
- Certification and Accreditation processes that support the 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
- Business Transformation Agency (BTA) 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 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

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

The BMD Information Management Systems project, includes the following Task areas:

- Enterprise Architecture and Engineering
- MDA General Service Area Networks (WAN) (formerly called MDA Enterprise Communications Infrastructure)
- Enterprise Information Assurance (IA)
- Core Enterprise Applications
- MDA Knowledge On-line (formerly called Enterprise Information Management Services)
- MDA Video Teleconferencing (formerly called Enterprise Video Teleconferencing)
- Enterprise Plans, Policies and Analyses
- US National Capital Metropolitan Area Network (MAN) (combined Computing Infrastructure (USNCR) and Computing and Network Management Services (US National Capital Region (NCR)
- US South Metropolitan Area Network (US South MAN) (formerly called Computing Infrastructure (USSOUTH))
- US West Metropolitan Area Network (US West MAN) (formerly combined with US South MAN in PB08)
- Service IM/IT for Executing Agents

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Enterprise Architecture and Engineering	0	2,636	2,632
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 that is compliant with the DoD Federal enterprise architecture standards. The MDA enterprise architecture 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.

FY08 Planned Program:

- Develop designs and implementation plans for MDA enterprise communications network support to BMDS research facilities and operational sites at Shriever AFB, Colorado and Kirtland AFB, New Mexico
- Continue revisions to realignment and transition plans in support of the MDA transition efforts to Dahlgren, VA

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- Develop designs and implementation plans to expand MDA enterprise network capacity to support test data transfers and research collaboration
- Develop disaster recovery implementation plans for unclassified systems at the MDA Integrated Operations Center, Shriever AFB, Colorado

FY09 Planned Program:

- Develop designs and implementation plans for MDA enterprise communications network support to BMDS research facilities in and operational sites at Huntsville, AL; Alexandria, VA, Ft Greeley, Alaska
- Continue revisions to realignment and transition plans in support of the MDA transition efforts to Huntsville and Fort Belvoir
- Develop designs and implementation plans to expand MDA enterprise network capacity to support test data transfers and research collaboration
- Develop disaster recovery implementation plans for unclassified systems at Alexandria, VA and Albuquerque, NM

	FY 2007	FY 2008	FY 2009
MDA General Service Area Networks	0	11,284	13,343
RDT&E Articles (Quantity)	0	0	0

In FY07 this initiative was renamed from the Enterprise Communications Infrastructure initiative to the MDA General Service Area Networks to be consistent with the title in the MDA DoD IT Portfolio Registry. This initiative consists of telecommunications equipment and leased communications for classified and unclassified voice and data circuits, video teleconferencing capabilities and circuit access to the Joint Worldwide Intelligence Communications System. The MDA Special Access Program Wide Area Network supports BMDS planning and contingency operations. Circuits and associated services are provided by the Defense Information Systems Agency as well as the Defense Research and Engineering Network. These circuits provide access to over 80 government and industry locations to enable information sharing of BMD-related data throughout the global MDA Enterprise.

FY08 Planned Program:

- Implement upgrades to network equipment to comply with information assurance controls per DoD Instruction 8500.2
- Implement the DoD-mandated transition to Internet Protocols in support of the DoD Global Information Grid architecture plan
- Implement regional implementation of a secure wireless network for portable devices
- Fund recurring maintenance agreements on MDA Enterprise network equipment
- Fund MDA Enterprise leased communications

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FY09 Planned Program:

- Continue to upgrade network equipment to comply with information assurance controls per DoD Instruction 8500.2
- Continue implementation of the DoD-mandated transition to Internet Protocols in support of the DoD Global Information Grid architecture plan
- Continue implementation of a secure wireless network for portable devices
- Fund recurring maintenance agreements on MDA Enterprise network equipment
- Fund MDA Enterprise leased communications

	FY 2007	FY 2008	FY 2009
Enterprise Information Assurance	0	26,100	23,726
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 Assurance (IA), Computer Network Defense, Network Situational Awareness, and Certification and Accreditation activities, and IA Workforce training and certification to comply with DoD IA directives, instructions and guidelines. The IA program provides system security engineering, development, and testing to ensure that command, control, communications, computing and intelligence 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. The MDA Enterprise Network Operations Security Center manages network situational awareness in coordination with the Joint Task Force-Global Network Operations. This ensures the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems.

FY08 Planned Program:

- Provide system security planning, engineering and test support to the spiral development of BMDS Blocks
- Provide assistance in development of the BMDS Block IA certification packages
- Sustain certification and accreditation for the IT systems reported to DoD and OMB
- Continue implementation of network situational awareness tools for the Enterprise Network Operations Security Center and the Alternate Network Operations Security Center
- Coordinate the implementation of Vulnerability Assessments across the MDA Enterprise
- Conduct certification evaluations of mission, test and administrative systems and assist in the development of the Plan of Actions and Milestones to correct IA deficiencies
- Continue implementation of the IA Workforce Improvement Program to certify IA professionals in compliance with DoD Manual 8570.1 and achieve the DoD certification goal of 40% in FY08

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- Complete annual IA user training for the MDA workforce
- Provide IA engineering and planning guidance for all MDA IT acquisition programs
- Continue implementation of Public Key Infrastructure-enabled applications
- Continue transition to the new DoD Information Assurance Certification and Accreditation Process
- Begin implementation of the Unclassified Disaster Recovery Storage Systems at Colorado Springs, CO

FY09 Planned Program:

- Provide system security planning, engineering and test support to the spiral development of BMDS Blocks
- Provide assistance in development of the BMDS Block IA certification packages
- Sustain certification and accreditation for the IT systems reported to DoD and Office of Management and Budget (OMB)
- Continue implementation of network situational awareness tools for the Enterprise Network Operations Security Center and the Alternate Network Operations Security Center
- Coordinate the implementation of Vulnerability Assessments across the MDA Enterprise
- Conduct certification evaluations of mission, test and administrative systems and assist in the development of the Plan of Actions and Milestones to correct IA deficiencies
- Continue implementation of the IA Workforce Improvement Program to certify IA professionals in compliance with DoD Manual 8570.1 and achieve the DoD certification goal of 70% in FY09
- Complete annual IA user training for the MDA workforce
- Provide IA engineering and planning guidance for all MDA IT acquisition programs
- Continue implementation of Public Key Infrastructure-enabled applications
- Continue implementation of the Unclassified Disaster Recovery Storage Systems at Colorado Springs, CO

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	FY 2007	FY 2008	FY 2009
Core Enterprise Applications	0	14,674	10,816
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, BMDS Integrated Master Schedule, Electronic Records Management System, E-Tasker, Integrated Acquisition Environment, data management tool, financial management tools, personnel tracking system, MDA Identify and Management Infrastructure application, Computer-Aided Facilities Management, and the MDA Corporate University Enterprise (web-based learning management system). The Defense Information Systems Agency sponsored collaboration tool (IBM Collaboration Suite) will be implemented to allow real-time collaboration throughout the MDA enterprise, the BMDS operational sites and the Combatant Command Headquarters.

FY08 Planned Program:

- Continue implementation of the IBM Collaboration Suite to support real-time research, test and operational information exchange
- Continue implementation of the Software Asset Management Program
- Continue implementation of DoD mandated business management modernization applications
- Continue implementation of metadata taxonomy to standardize information storage and to facilitate data mining across MDA
- Fund recurring enterprise application license fees

FY09 Planned Program:

- Continue implementation of the BMDS Integrated Master Schedule and continue upgrades of the BMD Asset Management Tool
- Continue implementation of the IBM Collaboration Suite to support real-time research, test and operational information exchange
- Continue implementation of the Software Asset Management Program
- Continue implementation of DoD mandated business management modernization applications
- Continue implementation of metadata taxonomy to standardize information storage and to facilitate data mining across MDA
- Fund recurring enterprise application license fees

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	FY 2007	FY 2008	FY 2009
MDA Knowledge On-Line	0	9,800	9,389
RDT&E Articles (Quantity)	0	0	0

This 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, a state-of-the-art, high capacity graphic and video production center, which provides services to senior leadership and agency employees.

FY08 Planned Program:

- Move MDA Portal Core Services from National Capital Region to Hunsville, AL
- Continue implementation of the MDA information cataloging project hosted on the MDA Portal
- Continue implementation of MDA Portal (web-based) training programs to include information assurance, business applications, workforce certification, security, and ethics
- Fund recurring operations and maintenance of graphic and video production capabilities
- Fund recurring operations and maintenance of Portal services

FY09 Planned Program:

- Continue implementation of the MDA information cataloging project hosted on the MDA Portal
- Continue implementation of MDA Portal (web-based) training programs to include information assurance, business applications, workforce certification, security, and ethics
- Fund recurring operations and maintenance of graphic and video production capabilities
- Fund recurring operations and maintenance of Portal services

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	FY 2007	FY 2008	FY 2009
MDA Video Teleconferencing	0	6,938	7,152
RDT&E Articles (Quantity)	0	0	0

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 capability to enhance resolution and reduce per-minute unit cost. Primary MDA video-teleconferencing sites include the National Capital Region, MDA Integration Operations Center, Airborne Laser at Kirtland Air Force Base, and Space Tracking and Surveillance System at Los Angeles AFB. Future sites will include numerous offices in Huntsville, AL including Terminal High Altitude Area Defense, Targets and Countermeasures, and Ground Based Missile Defense.

FY08 Planned Program:

- Operate the VTC Scheduling Operations Center in support of classified and unclassified MDA mission, test and business operations
- Fund recurring operations and maintenance for VTC equipment in existing facilities
- Fund recurring operations and maintenance for VTC equipment in new facilities at Dahlgren, VA and Huntsville, AL

FY09 Planned Program:

- Operate the VTC Scheduling Operations Center in support of classified and unclassified MDA mission, test and business operations
- Fund recurring operations and maintenance for VTC facilities and equipment to include the Dahlgren, VA and Huntsville, AL facilities
- Fund recurring operations and maintenance for VTC equipment in new facilities at Dahlgren, VA and Huntsville, AL

	FY 2007	FY 2008	FY 2009
Enterprise Plans, Policies and Analyses	0	4,819	4,842
RDT&E Articles (Quantity)	0	0	0

This initiative funds efforts that support development and implementation of Agency-wide Information Management/Information Technologies (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, the Presidents Management Agenda - E-Government reporting, and Office of Management and Budget 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 process. This initiative also includes budget formulation and execution as well as contract management and oversight.

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FY08 Planned Program:
- Develop, update, coordinate and publish policies, guidelines and processes to comply with applicable legislation, DoD and MDA guidance
- Update budget plans, documentation and reports for future years to comply with OMB, OSD and MDA guidance
- Execute, track and report the FY08 IT budget
- Conduct assessments, prepare status and report metrics to MDA Senior Leadership, OSD, OMB, and DoD

FY09 Planned Program:
- Develop, update, coordinate and publish policies, guidelines and processes to comply with applicable legislation, DoD and MDA guidance
- Update budget plans, documentation and reports for future years to comply with OMB, OSD and MDA guidance
- Execute, track and report the FY08 IT budget
- Conduct assessments, prepare status and report metrics to MDA Senior Leadership, OSD, OMB, and DoD

	FY 2007	FY 2008	FY 2009
US National Capital Region MAN	0	18,979	17,485
RDT&E Articles (Quantity)	0	0	0

This initiative consists of IT support services required to operate and maintain the classified and unclassified local area networks in the National Capital Region and Dahlgren, VA. (approximately 2200 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. The National Capital Region Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations.

FY08 Planned Program:
- Sustain the BMDS Mission Operation Center
- Implement IA Vulnerability Assessments in the National Capital Region
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems
- Test and implement software application upgrades
- Maintain the network and help desk services at 99% readiness

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- Provide web-based training to MDA users on new applications and upgrades

FY09 Planned Program:
- Sustain the BMDS Mission Operation Center
- Implement IA Vulnerability Assessments in the National Capital Region
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems
- Test and implement software application upgrades
- Maintain the network and help desk services at 99% readiness
- Provide web-based training to MDA users on new applications and upgrades

	FY 2007	FY 2008	FY 2009
US SOUTH MAN	0	12,126	15,000
RDT&E Articles (Quantity)	0	0	0

This initiative consists of IT support services required to operate and maintain the classified and unclassified local area networks in the Huntsville region. 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. The US South Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. The increase in funding is for IM/IT operations in support of new facilities in Huntsville, AL.

FY08 Planned Program:
- Implement Vulnerability Assessments in the Huntsville region
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems
- Test and implement software application upgrades

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- Maintain the network and help desk services at 99% readiness
- Provide web-based training to MDA users on new applications and upgrades

FY09 Planned Program:
- Implement Vulnerability Assessments in the Huntsville region
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems
- Test and implement software application upgrades
- Maintain the network and help desk services at 99% readiness
- Provide web-based training to MDA users on new applications and upgrades

	FY 2007	FY 2008	FY 2009
US WEST MAN	0	194	198
RDT&E Articles (Quantity)	0	0	0

The initiative was part of the US South MAN initiative 0498 in PB08. This initiative consists of IT support services of the Information Technology Officer, West (ITO West) office to monitor and sustain the operations of the MDA classified and unclassified metropolitan area network in Albuquerque, NM. ITO West coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations.

FY08 Planned Program:
- Implement Vulnerability Assessments in the Albuquerque area
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems

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FY09 Planned Program:
- Implement Vulnerability Assessments
- Implement IA control improvements in accordance with established Plan of Action and Milestones
- Monitor networks for user compliance with DoD policies, and reported incidents
- Maintain IT system configuration control
- Perform preventative maintenance on IT systems

	FY 2007	FY 2008	FY 2009
Service IM/IT Executing Agents	0	4,125	2,249
RDT&E Articles (Quantity)	0	0	0

This initiative provides recurring funds to two MDA Executing Agents in support of BMDS research and mission related efforts. The Executing Agents include U.S. Army Space and Missile Defense Command (SMDC), and the U.S. Army Program Executive Office, Air, Space and Missile Defense (PEO ASMD). 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, 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.

FY08 Planned Program:
- Operate and maintain IT networks in support of MDA efforts in Army facilities located in Huntsville
- Update and maintain the Program Resource Internet Database Environment database management tool
- Provide helpdesk services to MDA users
- Provide IT support to MDA international programs and conferences

FY09 Planned Program:
- Operate and maintain IT networks in support of MDA efforts in Army facilities located in Huntsville, AL
- Update and maintain the Program Resource Internet Database Environment database management tool
- Provide helpdesk services to MDA users
- Provide IT support to MDA international programs and conferences

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C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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D. Acquisition Strategy

MDA employs a federated acquisition strategy for the procurement and sustainment of the MDA Enterprise. This strategy utilizes an Engineering and Architectural Planning support contractor with 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).

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Enterprise Architecture and Engineering								
Enterprise Architecture & Engineering	C/CPAF	FEDSIM/SRA/ VA	0	2,467	2Q	2,459	N/A	4,926
SETA Support	C/CPFF	General Dynamics IT/ VA	0	169	N/A	173	N/A	342
MDA General Service Area Networks								
Leased Communications	MIPR	DISA/ IL	0	1,200	1/3Q	1,236	1/3Q	2,436
Leased Communications	MIPR	Army Rsch Lab/ MD	0	2,964	1/2Q	3,053	1/2Q	6,017
WAN Transport	C/CPAF	Northrop Grumman/ CO	0	5,954	2Q	7,836	2Q	13,790
Hub Services	MIPR	AFRL Hanscom/ MA	0	5	1Q	5	1Q	10
Leased Communications	MIPR	DTSW/ VA	0	655	1/3Q	693	1/3Q	1,348

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
SETA Support	CPFF	General Dynamics IT/ VA	0	506	1/3Q	520	1/3Q	1,026
Enterprise Information Assurance								
Certification & Accreditation Support	MIPR	FEDSIM/ VA	0	1,617	1/2Q	1,460	1/2Q	3,077
Certification & Accreditation documentation	TM	General Dynamics IT/ VA	0	3,012	2Q	1,087	2Q	4,099
NCR IA Situation Awareness	C/CPAF	Northrop Grumman/ VA	0	1,677	1/2Q	760	1/2Q	2,437
Enterprise Network Op Security Center	C/CPAF	Northrop Grumman/ CO	0	10,172	2Q	7,915	2Q	18,087
Disaster Recovery	C/CPAF	Northrop Grumman/ CO	0	0	4Q	2,054	N/A	2,054
PKI/CAC Support	C/CPAF	FEDSIM/SRA/ VA	0	200	1/2Q	200	1/2Q	400
IA & BMDS NOSC support	C/CPFF	Booz Allen Hamilton/ CO	0	1,376	N/A	1,205	N/A	2,581
IA SETA Support	C/CPAF	JTAAS/ CO	0	828	N/A	851	N/A	1,679
PKI/CAC and RAPIDS	C/MIPR	WHS/ VA	0	187	N/A	187	N/A	374
COMSEC	MIPR	NSA	0	330	2Q	253	2Q	583

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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
IA Workforce Improvement/Trainig	C/TM	General Dynamics IT/ VA	0	1,396	2Q	1,443	2Q	2,839
ENOSC SETA support	C/CPAF	General Dynamics IT/ VA	0	507	2Q	520	2Q	1,027
Certification & Accreditation BMDS documentation	MIPR	Booz Allen Hamilton/ CO	0	650	1Q	721	1Q	1,371
IA Situation Awareness HSV	C/CPAF	ASD/ AL	0	4,148	1Q	5,070	1Q	9,218
Core Enterprise Applications								
Enterprise Application Implementation	C/CPAF	FEDSIM/ VA	0	9,230	1/2Q	3,191	1/2Q	12,421
PRIDE Maintenance and Support	MIPR	SMDC/CIMS/ AL	0	981	1Q	989	1Q	1,970
SETA Support	C/CPFF	General Dynamics IT/ VA	0	1,687	1/3Q	1,733	1/3Q	3,420
Application support	C/CPAF	Northrop Grumman/ CO	0	2,754	2Q	4,881	2Q	7,635
Standard Procurement Sys Support	C/MIPR	SPS JPMO/ VA	0	22	1/2Q	22	1/2Q	44
MDA Knowledge On-Line								
MDA Portal	C/CPAF	Phacil/ VA	0	5,800	1Q	5,389	1Q	11,189
Video Info Production Ctr	SS/CPFF	CSC/ VA	0	4,000	1/3Q	4,000	N/A	8,000
MDA Video Teleconferencing								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
SETA Support	C/CPFF	General Dynamics IT/ VA	0	338	N/A	347	N/A	685
VTC Support & Maintenance	C/CPAF	SIGCOM	0	6,600	3Q	0	N/A	6,600
VTC Support & Maintenance	C/CPAF	TBD	0	0	N/A	6,805	3Q	6,805
Enterprise Plans, Policies and Analyses								
SETA Support	C/CPFF	General Dynamics IT/ VA	0	2,659	1/3Q	2,324	1/3Q	4,983
CIO Support	Various	Various/ CO	0	725	N/A	1,051	N/A	1,776
CIO Support	C/CPFF	Decisive Analytics/ VA	0	973	N/A	1,000	N/A	1,973
CIO Travel			0	252	N/A	252	N/A	504
Publications	Various	Various	0	210	1/4Q	215	1/4Q	425
US National Capital Region MAN								
Computing & Network Services	C/CPFF	Northrop Grumman/ VA	0	16,984	N/A	15,826	N/A	32,810
IM/IT SETA Support	C/CPFF	General Dynamics IT/ VA	0	1,995	N/A	1,659	N/A	3,654
US SOUTH MAN								
IT Equipment	C/Various	Various	0	3,000	N/A	3,081	N/A	6,081
Arch & Eng Support	C/CPAF	GSA/FEDSIM/ VA	0	1,377	N/A	1,414	N/A	2,791
IT Integration Support	C/CPAF	ASD/ AL	0	6,130	N/A	8,838	N/A	14,968

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
SETA Support	C/TM	General Dynamics IT/ AL	0	179	1/3Q	184	1/3Q	363
Army DOIM	MIPR	Army/ AL	0	600	N/A	618	N/A	1,218
Wireless	C/BPA	Verizon/ AL	0	840	N/A	865	N/A	1,705
US WEST MAN								
SETA Support	C/TM	General Dynamics IT/ NM	0	194	1/3Q	198	1/3Q	392
Service IM/IT Executing Agents								
Service IM/IT	C/CPAF	SMDC/SAIC/ AL	0	4,000	N/A	2,120	N/A	6,120
Service IM/IT	C/CPAF	PEO ASMD/SAIC/ AL	0	125	N/A	129	N/A	254
Subtotal Support Costs			0	111,675		106,832		218507

Remarks

III. Test and Evaluation Cost ($ in Thousands)

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

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost			0	111,675		106,832		218,507

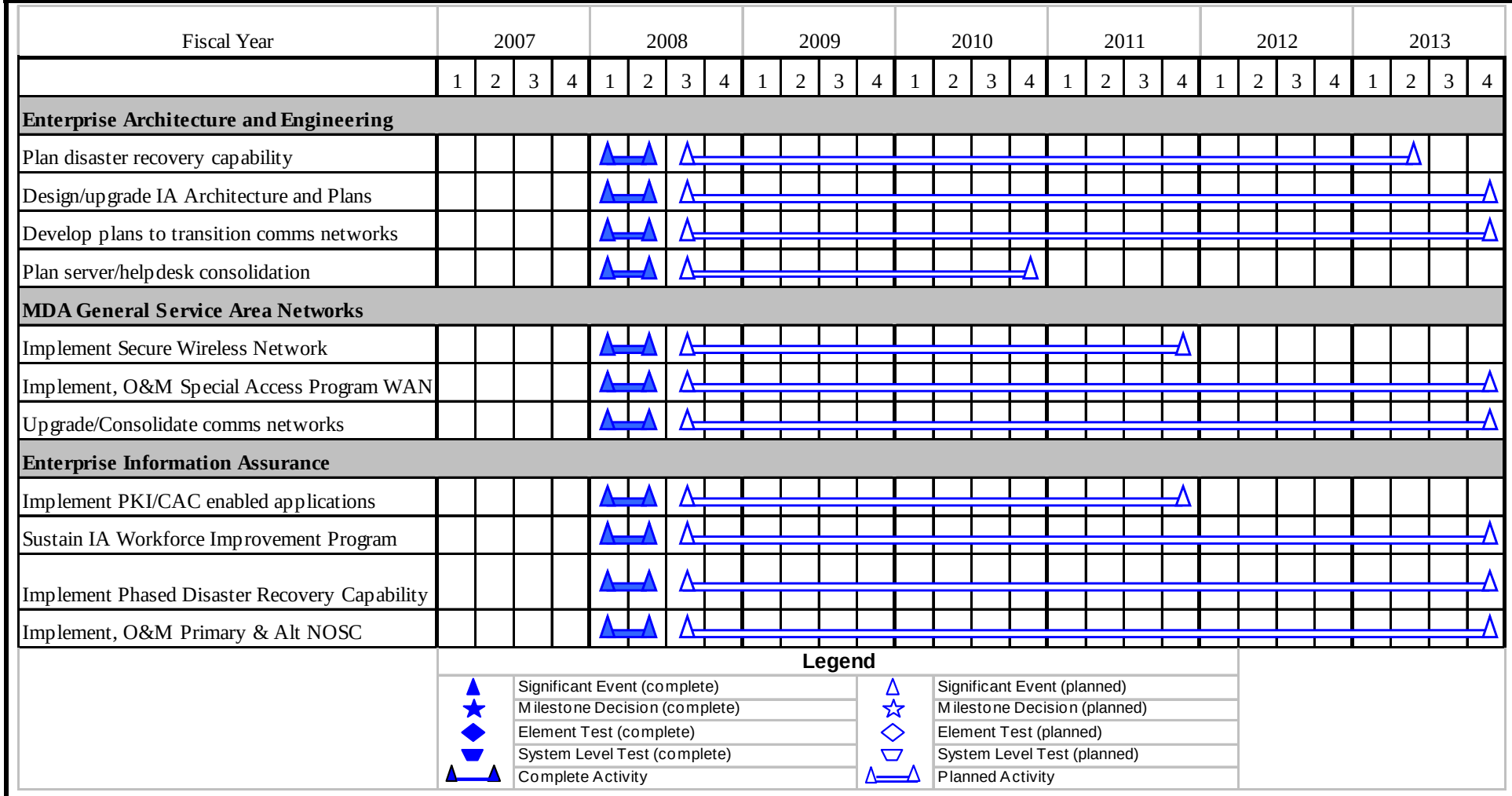
Remarks

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

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

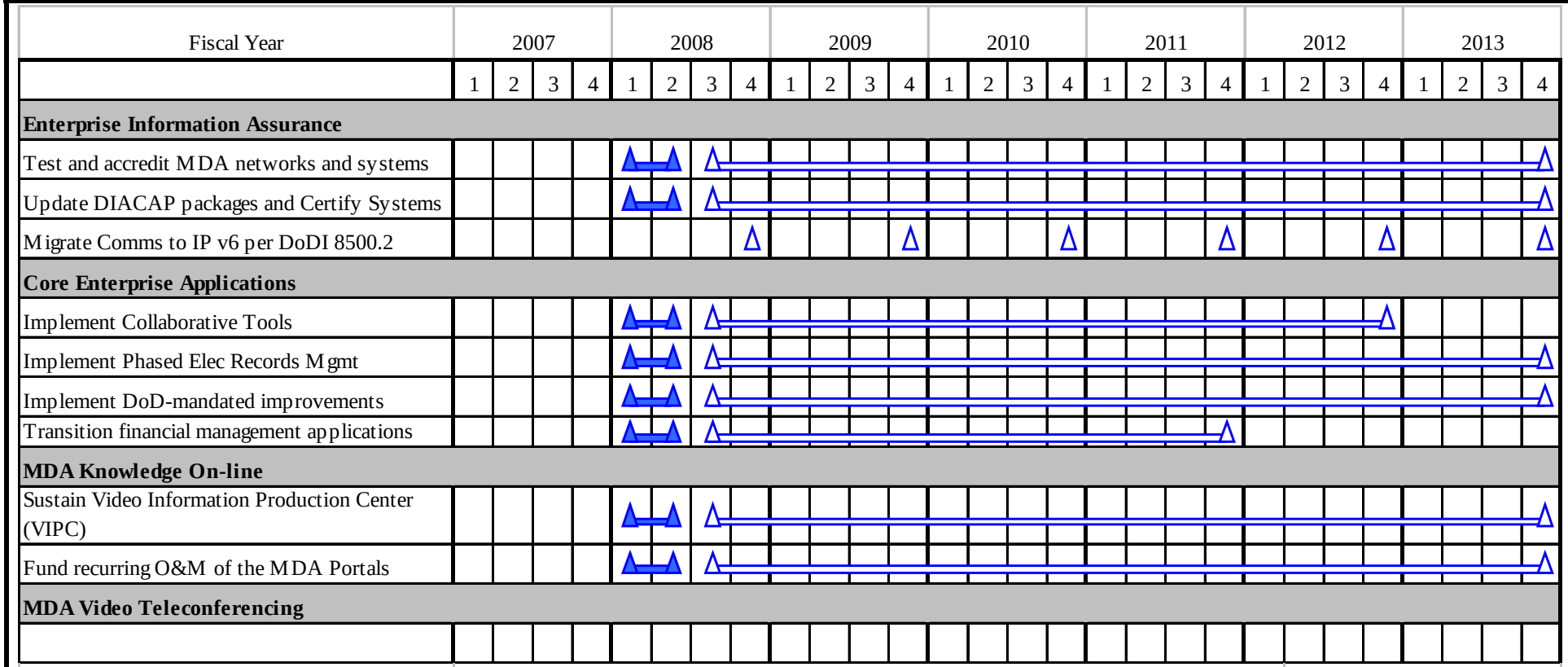


Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date: **February 2008**

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

R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**



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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDA Video Teleconferencing																												
Sustain BMDS VTC O&M					▲	▲	△																					
Enterprise Plans, Policies, and Analyses																												
Develop strategic IT plans and policies					▲	▲	△																					
Develop agency IT budgets and monitor execution					▲	▲	△																					
Submit Qtly PMA/E-Gov scorecard					▲	▲	△																					
Submit annual FISMA Report							△				△				△				△				△				△	
US NCR Metropolitan Area Network (US NCR MAN)																												
Sustain O&M of IM/IT infrastructure (USNCR)					▲	▲	△																					
US SOUTH MAN																												
Sustain O&M of IM/IT infrastructure (USSOUTH)					▲	▲	△																					
Service IM/IT Executing Agents																												
Sustain O&M of IM/IT for MDA Research support					▲	▲	△																					

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Enterprise Architecture and Engineering							
Plan disaster recovery capability		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q
Design/upgrade IA Architecture and Plans		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-4Q
Plan server/helpdesk consolidation		1Q-4Q	1Q-4Q	1Q-4Q			
MDA General Service Area Networks							
Execute Service Level Agreements for hub services		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Fund Agency leased communications		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement Secure Wireless Network		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Implement, O&M Special Access Program WAN		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Support recurring maintenance agreements		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Sustain operations of the MDA Wide Area Network		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Upgrade/Consolidate comms networks		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Enterprise Information Assurance							
Implement PKI/CAC enabled applications		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Sustain IA Workforce Improvement Program		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement Phased Disaster Recovery Capability		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement, O&M Primary & Alt NOSC		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Test and accredit MDA networks and systems		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update DIACAP packages and Certify Systems		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update IA Program Plan		2Q		2Q		2Q	
Migrate Comms to IP v6 per DoDI 8500.2		4Q	4Q	4Q	4Q	4Q	4Q
Provide IA User Training		4Q	4Q	4Q	4Q	4Q	4Q
Core Enterprise Applications							
Fund recurring enterprise application license fees		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	
Implement Phased Elec Records Mgmt		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement DoD-mandated improvements		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement a Software asset management program		1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
Transition financial management applications		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
MDA Knowledge On-line							

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Sustain Video Information Production Center (VIPC)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Develop/provide Portal-based training		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Fund recurring O&M of the MDA Portals		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Implement phased information cataloging to Portal		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
MDA Video Teleconferencing							
Sustain BMDS VTC O&M		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Design/Engineer VTC capability for MDA sites		1Q-4Q	1Q-4Q	1Q-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
Provide Quarterly DITPR Updates		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Submit Qtly PMA/E-Gov scorecard		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Submit annual FISMA Report		3Q	3Q	3Q	3Q	3Q	3Q
Measure performance against IT strategic goals		4Q	4Q	4Q	4Q	4Q	4Q
Submit biannual DOJ Section 508 survey			1Q		1Q		1Q
US NCR Metropolitan Area Network (US NCR MAN)							
Continue operations of the NCR LAN/WAN		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		
Sustain O&M of IM/IT infrastructure (USNCR)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update/maintain SW licenses for USNCR		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
US SOUTH MAN							
Sustain O&M of IM/IT infrastructure (USSOUTH)		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update/maintain SW licenses for USSOUTH		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
US WEST MAN							
Sustain O&M of US West MAN		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Service IM/IT Executing Agents							
Sustain O&M of IM/IT for MDA Research support		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Update/maintain SW licenses		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0106 Modeling & Simulation	91,488	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content previously planned in 0106 for FY08-13 has been captured in YX31 in accordance with the MDA revised block structure.

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 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 decreases the area from which our enemy can launch, as well as minimizes the number of weapons needed in the inventory. Likewise, a modeling and simulation framework is being developed that reflects the open architecture envisioned for the Ballistic Missile Defense System.

The mission of the Agency's Modeling and Simulation program is to establish a tool set and computational facilities/resources at the Advanced Research Center (ARC) and Simulation Center (SimCtr) for planning, engineering, testing and operating an integrated ballistic missile defense system. Specific modeling and simulation products map to the six agency venues: system ground tests, system flight tests, war games/exercises, 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 (M&S) Centers of Excellence at the U.S. Army Space and Missile Defense Command 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 servicing the design, development and testing needs of the Agency. The Agency's Modeling and Simulation Directorate is comprised of a simulation-literate team of government, Research and Development Centers and University Affiliated Research Center staff; it sets policy, leads system engineering and centrally manages the Agency-wide enterprise.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

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 Warfighter needs (described in the Needs Statement and subordinate requirements documents) includes modifying and sustaining our legacy tools, developing an integrated simulation based on an open architecture and framework, implementing a Common Environment and Threat Model and sustaining the M&S foundation for MDA's international missile defense initiatives.

We are implementing a Ballistic Missile Defense System (BMDS) simulation architecture that mirrors the BMDS open architecture. Significant benefits include fully integrated element models that are benchmarked to Element engineering-level models anchored to BMDS test data, and supplemented with verification and validation data. With this multi-layer modeling and simulation framework, the integrated models described above operate and, infrastructure is economized. In FY07, we apply resources to reconfigure Block 08 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 Ballistic Missile Defense System Simulation (BMDS SIM) and the Missile Defense System Exerciser (MDSE) to meet near term needs while we migrate to the framework and standards described.

In FY07, we fund upgrades to evolve the tool to continue to support these venues as well as initiate our integration of Element models for the GMD Fire Control (GFC), PATRIOT, THAAD and Aegis weapon systems. FY07 and out year resources modify the tool architecture to permit testing of the system ground testing, IGT 06-2 and migrate to Open Architecture Simulation System (OASiS) standards.

To respond to a rapidly changing threat and take advantage of advances in technology, we have defined and are implementing an Agency-wide Common Environment and Threat Model. The model provides standardized tools and capabilities 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 (debris) of missile defense engagements.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

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 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. Models and simulations anchored to data from flight and ground 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. 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 Agency's Modeling and Simulation program contributes to the BMDS Current Test, Training and Operations (CTTO) activities that will safely separate test, evaluation, and training venues from real-world activities; and allow injection of high-fidelity simulations to run realistic scenarios on operational equipment and networks. CTTO will enable end-to-end testing of the BMDS and enable BMDS training that allows operators to exercise any or all BMDS elements, as needed.

The Modeling and Simulation Strategic Plan allocates resources to the M&S Centers of Excellence for execution. The HardWare In-the-Loop (HWIL) Center of Excellence at the U.S. Army Space and Missile Defense Command operates and maintains the ARC, SimCtr and other facilities and infrastructure necessary to execute distributed ground testing. The Missile Defense System Exerciser facilitates these ground tests.

MODELING AND SIMULATION ENGINEERING AND INTEGRATION

The M&S 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, schedule development, architectural engineering, and verification, validation and accreditation (VV&A), and configuration tracking. 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 architectural engineering process to formulate implementation concepts and design specifications to enable these requirements. Development of software, integration and test, checkout and deployment of M&S capabilities to the venues are then scrutinized via the VV&A process. The VV&A process ensures that the models and simulation we implement meet the designer's intent, adequately represent reality and are appropriate for their intended use. We use the configuration tracking 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.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Model Development	62,085	0	0
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. The Agency's system engineering process guides our program strategy and implementation.

FY07 Accomplishments:

- Updated BMDS SIM to integrate additional Element models (PSEM for PATRIOT, ETE Sim for THAAD, ADAM for Aegis BMD, and the GFC model) supporting warfighter events and training.
- Upgraded the MDSE framework, began the implementation of performance assessment for the GT-02 Test Campaign; began initial Radar Digital Simulation Injection Stimulator (RDSIS) integration effort with THAAD as an HWIL proof of concept for adding radar signal and data processors; and upgraded all remote environments (REs).
- Updated Common Environment and Threat Models to include threat trajectory generation, threat signatures generation, core lethality, and battlespace environment definitions.
- Continued the Extended Air Defense Simulation (EADSIM) as Phase I (initial integration with BMDS SIM)
- Continued development of BMDS International Simulation, and BMDS Defender (Concept Exploration simulation)
- Continued migration to open architecture specifications
- Continued VV&A for BMDS-level M&S events/venues
- Continued M&S International Implementation support

	FY 2007	FY 2008	FY 2009

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

Product Test and Operations	13,300	0	0
RDT&E Articles (Quantity)	0	0	0

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 and bringing together the contributions of various elements into combined system tests. The Advanced Research Center (ARC) in Huntsville, AL, provides computational resources, infrastructure, and IT subject matter experts who support both system and element-level flight and ground testing. The infrastructure includes Element test beds and lab space, connectivity to multiple classified and unclassified DoD networks, and robust information assurance capabilities. The Simulation Center (SimCtr) on Redstone Arsenal in Huntsville, AL, provides a shared asset, high performance computing center with scientific workstations to supercomputers, high bandwidth networks, and large storage capacity supporting RDT&E missile defense, threat, and sensor technologies. The SimCtr supports multiple Agency projects and activities to include lethality/impact, plume, and flow fields; target signature/radar cross-section analysis; trajectories; and development/test support to KEI, Aegis, and Sensors.

FY07 Accomplishments:
- Sustained core facilities (ARC, SimCtr)
- Supported test events including GTD-01, GTX-02a, GTI-02, and initial GTD-02 planning

	FY 2007	FY 2008	FY 2009
Systems Engineering and Integration	16,103	0	0
RDT&E Articles (Quantity)	0	0	0

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.

FY07 Accomplishments:
- Accredited Models and Simulations for Core Intended Uses
- Developed Accreditation Reports
- Provided Facility/Test support for test events
- Released Accreditation Plans and Final Report
- Prepared Test Event Assessment Reports

- Updated Modeling and Simulation System Engineering anagement Plan
- Updated M&S Mission Needs Statement, Capabilities Requirements Document, and Implementation Plans
- Continued to refine M&S Enterprise Verification, Validation, and Accreditation Process
- Refined M&S Enterprise Requirements Engineering Process

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

D. Acquisition Strategy

The M&S acquisition strategy is to build upon an integrated open system framework. We implement a centralized movement 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 M&S requirements engineering, architecture engineering, and knowledge-based requirements will drive future investments.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Model Development								
Consolidated and Integrated M&S (CIMS)	C/CPAF	Northrup Grumman / CO	39,784	0	N/A	0	N/A	39,784
V&V	C/CPAF	Northrup Grumman / CO	5,620	0	N/A	0	N/A	5,620
MDSE	C/CPFF	TBE/ AL	16,240	0	N/A	0	N/A	16,240
MDSE - Patriot	MIPR	AMRDEC SED/ AL	1,846	0	N/A	0	N/A	1,846
MDSE - Aegis BMD	SS/CPAF	Lockheed Martin/ NJ	2,458	0	N/A	0	N/A	2,458
MDSE - Aegis BMD	MIPR	NSWC Dahlgren/ VA	1,840	0	N/A	0	N/A	1,840
MDSE - SBIRS	SS/CPAF	Northrup Grumman/ CA	1,262	0	N/A	0	N/A	1,262

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
MDSE - JTAGS	SS/CPFF	Northrup Grumman/ CA	1,777	0	N/A	0	N/A	1,777
MDSE - GMD	C/CPFF	Boeing/ AL	3,800	0	N/A	0	N/A	3,800
MDSE - FBX-T	SS/CPAF	Raytheon/ MA	0	0	N/A	0	N/A	
MDSE - TCES	MIPR	SSC San Diego/ CA	2,709	0	N/A	0	N/A	2,709
MDSE - THAAD	SS/CPAF	TMI/ AL	2,765	0	N/A	0	N/A	2,765
V&V - Verification	C/CPFF	BFA Systems/ AL	1,810	0	N/A	0	N/A	1,810
V&V - Element Validation	MIPR	Various	4,160	0	N/A	0	N/A	4,160
Risk Reduction	MIPR	Boeing/ VA	1,321	0	N/A	0	N/A	1,321
Risk Reduction	C/CPAF	Lockheed Martin/ VA	500	0	N/A	0	N/A	500
Risk Reduction	C/CPAF	Lockheed Martin and Boeing/ VA	5,811	0	N/A	0	N/A	5,811
Phenomenology	C/CPFF	TSI/ AL	6,117	0	N/A	0	N/A	6,117
CETM / Lethality	Various	Various	5,150	0	N/A	0	N/A	5,150
OASIS	Various	Various	3,508	0	N/A	0	N/A	3,508
EADSIM	C/CPFF	TBE/ AL	3,440	0	N/A	0	N/A	3,440
International	MIPR	MITRE/ VA	100	0	N/A	0	N/A	100

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
International	MIPR	SPARTA/ VA	1,443	0	N/A	0	N/A	1,443
International	MIPR	PRA/ VA	757	0	N/A	0	N/A	757
International	Various	Various	971	0	N/A	0	N/A	971
M&S Tools	Various	Various	9,339	0	N/A	0	N/A	9,339
MDSE - DMOC	MIPR	USAF DMOC/ NM	650	0	N/A	0	N/A	650
MDSE - MCUSMC	SS/CPFF	Sensis Corp/ CA	650	0	N/A	0	N/A	650
EADTB	C/CPAF	Raytheon/ AL	250	0	N/A	0	N/A	250
MDSE - ABL	MIPR	Boeing/ NM	0	0	N/A	0	N/A	
MDSE - UEWR Beale	MIPR	Raytheon/ MA	0	0	N/A	0	N/A	
MDSE - UEWR Clear	MIPR	Raytheon/ MA	0	0	N/A	0	N/A	
MDSE - UEWR Thule	MIPR	Raytheon/ MA	0	0	N/A	0	N/A	
MDSE - SBX	MIPR	AMRDEC/RSA/ AL	0	0	N/A	0	N/A	
MDSE - SBIRS STAR	MIPR	Northrop Grumman/ CO	0	0	N/A	0	N/A	
MDSE - STSS	MIPR	Raytheon/ CA	0	0	N/A	0	N/A	

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
MDSE - KEI	MIPR	Northrup Grumman/ WDC	0	0	N/A	0	N/A	
MDSE - MKV	MIPR	Lockheed Martin/ WDC	0	0	N/A	0	N/A	
MDSE - Test Infrastructure	MIPR	JNIC/ICT/ CO	850	0	N/A	0	N/A	850
MDSE Requirement	C/CPFF	TBD/Competitive	1,834	0	N/A	0	N/A	1,834
Product Test and Operations								
Computational Facilities	Various	COLSA/Madison Research/ AL	26,600	0	N/A	0	N/A	26,600
Subtotal Support Costs			155,362	0		0		155362

Remarks

III. Test and Evaluation Cost ($ in Thousands)

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

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Systems Engineering and Integration								
Requirements Engineering (UARC)	SS/CPFF	JHU/APL/MD	4,481	0	N/A	0	N/A	4,481
M&S Architecture (FFRDC)	SS/MIPR	MIT/LL/MA	3,067	0	N/A	0	N/A	3,067
Program Plans (FFRDC)	SS/CPFF	MITRE/VA	4,471	0	N/A	0	N/A	4,471
Gov`t Personnel		MDA/VA	2,273	0	N/A	0	N/A	2,273
Travel		MDA/VA	150	0	N/A	0	N/A	150
Gov`t Personnel		SMDC/AL	5,086	0	N/A	0	N/A	5,086
Travel		SMDC/AL	500	0	N/A	0	N/A	500
SETA	C	SMDC/AL	4,042	0	N/A	0	N/A	4,042
SETA	C	SRS/ JNIC / CO	1,433	0	N/A	0	N/A	1,433
MDSE Systems Engineering	C	AMRDEC/RSA/ AL	4,600	0	N/A	0	N/A	4,600
MDSE Configuration Management	C	SMDC/AL	600	0	N/A	0	N/A	600
Subtotal Management Services			30,703	0		0		30703

Remarks

Project Total Cost			186,065	0		0		186,065

Remarks

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

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Modeling and Simulation																												
Legacy M&S Tools Integration																												
GTI-02																												
Implementation Plan																												
BMDS SIM v2.0 Release																												
MDSE 6.1																												
BMDS Sim v2.1 Release																												
GTD-01																												
GTX-02a																												
MDSE 7.0																												
MDSE 7.1																												
MDSE 7.2																												
MS Requirements Engineering																												
Model Build Releases																												

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

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

Date
February 2008

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Modeling and Simulation																												
JPOW																												

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Modeling and Simulation							
Legacy M&S Tools Integration	1Q-4Q						
GTI-02	4Q						
Implementation Plan	1Q-4Q						
BMDS SIM v2.0 Release	1Q						
MDSE 6.1	1Q						
BMDS Sim v2.1 Release	4Q						
GTD-01	1Q-2Q						
GTX-02a	2Q						
MDSE 7.0	2Q						
MDSE 7.1	3Q						
MDSE 7.2	4Q						
MS Requirements Engineering	1Q-4Q						
Model Build Releases	1Q-4Q						
International Seminar	1Q,4Q						
JPOW	1Q-4Q						
Test	1Q,4Q						
USFJ Demo	1Q,4Q						

Common Environment and Threat Model, CETM; War Game, WG

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX31 Modeling & Simulation	0	91,765	103,598	97,390	119,244	112,111	113,926
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content in FY08-13 project YX31 is a continuation of the efforts reported in FY07 project 0106 and was explained in that project in PB08.

A. Mission Description and Budget Item Justification

The mission of the Agency's Modeling and Simulation (M&S) program is to engineer and deliver validated, integrated simulation solutions for the primary uses of BMDS Performance Assessment and Ground Test, with additional capability to support BMDS-Element integration, missile defense wargames & exercises (national and international), BMDS training, and BMDS concept analysis. In this role, M&S provides cost-effective and proactive tools to assess the fielded capabilities of the BMDS, analyze and foster accelerated integration of Element and component capability into the BMDS, and is a valuable training and planning tool for warfighting Concept of Operations and missile defense planning. These M&S attributes enable the BMDS acquisition program to provide warfighting capability in a faster timetable and achieve tighter systems integration. Modeling and Simulation, anchored in ground and flight test program data, is a cornerstone for both developing the BMDS and gaining confidence in its performance, given that large amounts of flight data necessary to otherwise characterize the system is cost prohibitive. Likewise, M&S open architecture and frameworks are developed and implemented to reflect the open architecture characteristic of the Ballistic Missile Defense System. MDA objective 5.3 in the Strategic Intent states: Modeling and Simulation will acquire, develop, manage, direct, and execute high-fidelity models and simulations necessary for building and operating the BMDS. MDA will deemphasize stove-piped modeling efforts and invest in updating overall BMDS simulations and tools for use in ground-testing, wargames, and system level performance assessment. To accomplish this mission, M&S is organized into two product centers and two functional offices. The functional offices are Architecture and Engineering and Verification, Validation and Accreditation (VV&A). The product centers are BMDS Digital Modeling and Simulation, and BMDS Hardware-in-the-loop (HWIL).

SIMULATION, ARCHITECTURE & ENGINEERING

Architecture and Engineering (A&E) is responsible for coordinating architectures to support MDA events, and for establishing consistent standards and specifications for all MDA models, simulations, and representations. A&E implements system-level M&S architecture processes, and specifies common simulation architectures in support of MDA M&S. In FY07 A&E participated in the MDA DE Digital Simulation Infrastructure study, which developed the path ahead for the Digital Simulation Architecture (DSA). The DSA promotes affordable, effective M&S through incorporation of simulation industry best practices including lightweight interfaces, object-orientation, domain-specific architecture and modeling, multiple integration approaches, and standards-driven content. Additionally, future architectures to support the strategic plan for test will involve combining tools from both the digital and HWIL product centers to support test events.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

VERIFICATION, VALIDATION, AND ACCREDITATION (VV&A)

Accredited system-level models and simulations (M&S) anchored to real-world events, are required to perform an accurate and comprehensive assessment of the BMDS. VV&A is responsible for implementing and documenting system-level M&S verification, validation, and accreditation which establish credibility and increases confidence in the M&S that provides a cornerstone for the Agency's simulation-based acquisition approach. The individual MDA elements and components are responsible for conducting the VV&A of their own models and providing that evidence to system-level VV&A for each event. This includes benchmarking their M&S to higher fidelity simulations, anchoring to real world events, and planning and conducting post-flight reconstruction. VV&A annually verifies, validates and, accredits multiple MDA events to include Performance Assessment, Ground Tests that support BMDS fielding decisions, and tier one COCOM exercises. VV&A is responsible for the development and promulgation of system-level VV&A policies and standards, benchmarked against leading industry practices. VV&A provides model, simulation, and event credibility across Performance Assessment, Ground Tests, Element Integration, Wargames and Exercises, Training, and all associated infrastructure that supports BMDS fielding decisions. Through the consistent practice of verifying model representations benchmarked to other higher-fidelity models, and anchored to operational tests, VV&A will continue to increase model confidence and acceptability by outside agencies like the Operational Test Agency. Due to varying architectures and configurations required for different events, VV&A provides strong coordination, thorough analysis, development and use of appropriate tools, identification of metrics, and validation of both digital and hardware in the loop modeling and simulation capability. The implementation of the Model-Test-Model process requires that VV&A maintain close collaboration with the test community, and the capability to predict system-level test results and perform post-flight test reconstruction in order to improve model confidence and future performance. Robust VV&A requires flexibility and capability to explore new BMDS concepts, and evaluate new Element representations to identify and correct flaws early in the development process.

BMDS DIGITAL MODELING AND SIMULATION

BMDS Digital Modeling and Simulation is responsible to provide and integrate system-level constructive simulation to support full-envelope BMDS performance assessment; ground test M&S capability to support BMDS performance assessment; system-level stimulus for Element integration testing; system-level M&S capabilities to augment BMDS flight tests; surrogate digital M&S to augment HWIL ground tests; M&S capability to support system-level concept definition and exploration; real-time, interactive system-level M&S capability to support warfighter-in-the-loop wargaming and exercises; capabilities to support rapid, flexible scenario development and execution control, and capabilities to support archiving and post-mission analysis. Digital M&S also is responsible for the coordination, development, and use of M&S with partner and coalition organizations, facilitating the transfer of M&S technology and capability to approved partner and coalition organizations.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

BMDS HARDWARE-IN-THE-LOOP (HWIL)

BMDS HWIL Modeling and Simulation is responsible to provide and integrate the BMDS system-level HWIL stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs. BMDS HWIL provides development, integration, and test funding to both MDA and non-MDA Elements participating in the BMDS ground test campaigns. BMDS HWIL also provides the core Lethality and Phenomenology models for use in analysis of BMDS and Element mission requirements. BMDS HWIL additionally maintains the Advanced Research Center and Simulation Center High Performance Computing Capabilities to support test and M&S requirements across MDA.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Simulation Architecture & Engineering	0	2,859	3,516
RDT&E Articles (Quantity)	0	0	0

Architecture and Engineering (A&E) is responsible for coordinating architectures to support MDA events, and for establishing consistent standards and specifications for all MDA models, simulations, and representations.

- FY08 Planned Program:
- Implement a system-level M&S Working Group with collaborative participation by BMDS Element Program Offices
- Implement a system-level M&S Event architectures engineering process
  - Update Modeling and Simulation System Engineering Management Plan
  - Update M&S Needs Statement and Product Development and Implementation Plans
- Implement a system-level M&S configuration management capability
- Specify and implement the common Digital Simulation Architecture (DSA) · Develop and implement M&S standards consistent with industry best practices
- Upgrade Common Environment and Threat Models to include threat trajectory generation, threat signatures generation, core lethality and battlespace environment definitions
- Codify the Operational Concept Descriptions for all M&S use cases
- Begin a collaborative effort to define and document the BMDS-level conceptual model

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

FY09 Planned Program:

- Expand the system-level M&S requirements process to address long-lead M&S capability and technology acquisition
- Enhance the system-level M&S architecture process to shorten Event lead times
  - Update Modeling and Simulation System Engineering Management Plan
  - Update M&S Needs Statement and Product Development and Implementation Plans
- Maintain and upgrade system-level M&S configuration management capability to increase M&S reuse
- Integrate digital and HWIL simulation frameworks for enhanced M&S affordability and flexibility
- Enforce M&S standards to ensure M&S effectiveness and efficiency
  - Continue updates of Common Environment and Threat Models to include improved trajectory generation, threat signatures generation, core lethality, and battlespace environment definitions
- Complete a collaborative effort to define and document the BMDS-level conceptual model

	FY 2007	FY 2008	FY 2009
Verification, Validation & Accreditation	0	7,128	8,271
RDT&E Articles (Quantity)	0	0	0

VV&A is responsible for implementing and documenting system-level M&S verification, validation, and accreditation which establish credibility and increases confidence in the M&S that provides a cornerstone for the Agency's simulation-based acquisition approach.

FY08 Planned Program:

- Provide and integrate validated system-level constructive simulation to support full-envelope BMDS performance assessment
- Provide and integrate validated ground test M&S capability to support BMDS performance assessment
- Provide and integrate validated system-level M&S capabilities to augment BMDS flight tests
- Provide and integrate validated M&S capability to support Element Integration
- Provide validated M&S capability for wargaming
- Implement a system-level M&S VV&A capability
  - Continue VV&A for BMDS-level M&S events/venues
  - Accredit Models and Simulations for Core Intended Uses
  - Develop Accreditation Reports
  - Provide Facility/Test support for test events
  - Release Accreditation Plans and Final Report

- Prepare Test Event Assessment Reports
- Continue to refine M&S Enterprise Verification, Validation, and Accreditation Process

- Coordinate development and use with partner and coalition organizations.
- Develop and implement M&S standards consistent with industry best practices
- Develop and collect metrics on system-level M&S
- Ensure that individual MDA elements and components are responsible for the verification and validation of their own models.
- Annually verify, validate and, accredit the Performance Assessment, Ground Tests that support BMDS fielding decisions, and two tier one COCOM exercises.

FY09 Planned Program:

- Provide integrated Verification, Validation, and Accreditation (VV&A) of MDA Models and Simulations (M&S) at the system, level for specific events, to include Performance Assessment, Ground Tests that support BMDS fielding decisions, and tier one COCOM exercises
  - Develop integrated VV&A event Plans and Reports for each event
  - Work closely with Elements, Test Community, System Engineering, and OTA to ensure M&S for event meets intended uses and objectives, and has proper VV&A documentation and evidence, to include benchmarking/anchoring pedigree
  - Conduct system-level V&V to include threat trajectory and signature V&V throughout the system; end-to-end environmental implementation is consistent and correct; communications and architecture behave properly; and interoperability is adequately addressed.
- Develop and implement M&S standards consistent with industry best practices
- Conduct annual review of MDA Element VV&A programs
- Operate a problem reporting system to capture M&S anomalies and incorporate into requirements process for M&S improvements
- Lead MDA VV&A working group to improve VV&A operations and ultimately improve BMDS performance
- Develop and implement metrics on system-level M&S to increase efficiencies and effectiveness
- Ensure that individual MDA elements and components are responsible for the proper VV&A of their own models.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

	FY 2007	FY 2008	FY 2009
BMDS Digital Modeling & Simulation	0	33,496	37,229
RDT&E Articles (Quantity)	0	0	0

Digital Modeling and Simulation is responsible for providing and integrating system-level constructive simulation to support full-envelope BMDS performance assessment, ground test M&S capability, system-level stimulus for Element integration testing, system-level M&S capabilities to augment BMDS flight tests and surrogate digital M&S to augment HWIL ground tests control, and capabilities to support archiving and post-mission analysis.

FY08 Planned Program:

- Design, integrate, deliver, and execute the Performance Assessment 08 (PA08) Composition (constructive simulation) to support full-envelope BMDS performance assessment
- Utilize the EMF-compliant models supplied by the Elements
- Utilize the OMF-compliant models supplied by the Elements
- Provide execution and analytic services for excursion cases utilizing the Performance Assessment 07 (PA07) ensemble
- Provide the digital simulation infrastructure (architecture, frameworks) to support system-level M&S constructive analytic simulations, warfighter-in-the-loop ability for wargames and exercises, test driver for element integration (a virtual BMDS for Command and Control development and test), and the Distributed Multi-Echelon Education and Training System.
- Integrate Element-provided models using the External Modeling Framework and Optimistic Modeling Framework (OMF) to the Digital Simulation Architecture (DSA)
- Provide common threat representations and scenarios to met specific event and customer requirements, across all M&S use cases
- Develop and deliver EMF interface code to provide centralized control and execution of numerous models that form a BMDS composition for a specific intended use.
- Develop and deliver OMF interface code to provide for execution of models on multiple parallel processors utilizing “optimistic” time management across a suite of parallel executions
- Continue Product Line development, sustainment, maintenance and product support for:
  - BMDS Discrete Event Simulation (provides the DSA, EMF/OMF, communications modeling, setup/analytic tools)
  - Missile Defense Space warning Tool (provides validated space-borne assets of BMDS)
  - Threat Modeling Simulation System
  - BMD International Simulation

- Continue Operations and Maintenance (O&M) of the Extended Air Defense Simulation (EADSIM) code base
  - Begin integration of EADSIM to the DSA
- Provide VV&A support to the BMDS Defender accreditation effort
- Develop and integrate capabilities to support rapid, flexible scenario development and execution control

FY09 Planned Program:

- Design, integrate, deliver and execute the Performance Assessment 09 (PA09) Composition (constructive simulation) to support full-envelope BMDS performance assessment
  - Utilize the EMF-compliant models supplied by the Elements
  - Utilize the OMF-compliant models supplied by the Elements
- Provide execution and analytic services for excursion cases utilizing the Performance Assessment 08 (PA08) Composition
- Sustain and provide the digital simulation infrastructure (architecture, frameworks) to support system-level M&S constructive analytic simulations, warfighter-in-the-loop ability for wargames and exercises, test driver for element integration (a virtual BMDS for Command and Control development and test), and the Distributed Multi-Echelon Education and Training System.
- Integrate Element-provided models using the External Modeling Framework and Optimistic Modeling Framework (OMF) to the Digital Simulation Architecture (DSA)
  - Integrate new models as the BMDS architecture evolves
- Provide common threat representations and scenarios to met specific event and customer requirements, across all M&S use cases
- Sustain and deliver EMF interface code to provide centralized control and execution of numerous models that form a BMDS composition for a specific intended use.
- Sustain and deliver OMF interface code to provide for execution of models on multiple parallel processors utilizing “optimistic” time management across a suite of parallel executions
- Continue Product Line development, sustainment, maintenance and product support for:
  - BMDS Discrete Event Simulation (provides the DSA, EMF/OMF, communications modeling, setup/analytic tools)
  - Missile Defense Space warning Tool (provides validated space-borne assets of BMDS)
  - Threat Modeling Simulation System · BMD International Simulation
- Continue Operations and Maintenance (O&M) of the Extended Air Defense Simulation (EADSIM) code base
  - Continue integration of EADSIM to the DSA
- Complete VV&A support to the BMDS Defender accreditation effort

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Re-engineer the MDST to operate using the OMF
- Extend the integrated capabilities to support rapid, flexible scenario development and execution control

	FY 2007	FY 2008	FY 2009
BMDS HWIL	0	48,282	54,582
RDT&E Articles (Quantity)	0	0	0

BMDS HWIL Modeling and Simulation is responsible to provide and integrate the BMDS system-level HWIL stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs.

FY08 Planned Program:

- Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for the GTX-03a, GTI-03, GTD-03 ground tests.
- Conduct BMDS HWIL stimulation framework V&V for BMDS GTI-03 and GTD-03 ground tests.
- Derive and design the BMDS HWIL stimulation framework for use in domestic and international BMDS M&S venues.
- Provide funding for Element integration and development testing in support of GTX-03a and GTI-03 ground tests.
- Provide O&M funding for the Advanced Research Center (ARC) in Huntsville, Alabama. The ARC supplies computational resources, infrastructure, and IT subject matter experts who support both system and element-level flight and ground testing.
- Provide O&M funding for the Simulation Center in Huntsville, Alabama. The Sim-Center supplies computational resources and infrastructure for support of MDA distributed High Performance Computing Requirements.
- Provide development, O&M, and IV&V of standardized tools and models to include active and passive signatures of threat objects and their kinematics and operational behaviors, relevant natural and perturbed battlespace environments, and a common way of dealing with the consequences of missile defense engagements.
- Upgrade the BMDS stimulation framework to support common debris for BMDS sensors.
- Initial integration of the BMDS stimulation framework with the Israeli Test Bed (ITB) and AN/TPY-2 tactical radar.

FY09 Planned Program:

- Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for the GTX-09a, GTI-09, GTD-09 ground tests. · Conduct BMDS HWIL stimulation framework V&V for BMDS GTX-09a, GTI-09 and GTD-09 ground tests.
- Derive and design the BMDS HWIL stimulation framework for use in domestic and international BMDS M&S venues.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

- Provide funding for Element integration and development testing in support of GTX-09a and GTI-09 ground tests.
- Provide O&M funding for the Advanced Research Center (ARC) in Huntsville, Alabama. The ARC supplies computational resources, infrastructure, and IT subject matter experts who support both system and element-level flight and ground testing.
- Provide O&M funding for the Simulation Center in Huntsville, Alabama. The Sim-Center supplies computational resources and infrastructure for support of MDA distributed High Performance Computing Requirements.
- Provide development, O&M, and IV&V of standardized tools and models to include active and passive signatures of threat objects and their kinematics and operational behaviors, relevant natural and perturbed battlespace environments, and a common way of dealing with the consequences of missile defense engagements.
- Upgrade the BMDS stimulation framework to support wideband debris for BMDS sensors.
- Complete integration of the BMDS stimulation framework with the Israeli Test Bed (ITB) and AN/TPY-2 tactical radar.
- Initial integration of the BMDS stimulation framework with the ARROW HWIL facility in Israel and additional MDA/SN sensors.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

D. Acquisition Strategy

The M&S acquisition strategy is to develop, acquire and deliver the integrated architectures/frameworks while the Elements develop and deliver models of their system. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by FFRDC and UARCs.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
BMDS Digital Modeling & Simulation								
PA08 BMDS DE SIM (DSA, EMF, Comms, Tools)	C/CPAF	Northrop Grumman/ Colorado Springs, CO	0	11,354	1/2Q	11,733	1/2Q	23,087
PA08 BMDS Threat Modeling - Development, Sustainment, O&M	C/CPAF	Northrop Grumman/ Colorado Springs, CO	0	1,360	1/2Q	1,578	1/2Q	2,938
PA08 MDST - Development, Sustainment, O&M, B&A	C/CPAF	Northrop Grumman/ Colorado Springs, CO	0	770	1/2Q	894	1/2Q	1,664
PA08 LTPO PATRIOT System Effectiveness Model (PSEM) devt	C/CPAF	US Army Aviation & Missile Cmd/ Huntsville, AL	0	750	1/2Q	870	1/2Q	1,620
PA08 External Collaboration - LTPO (PATRIOT)	C/CPAF	US Army Aviation & Missile Cmd/ Huntsville, AL	0	130	1/2Q	151	1/2Q	281
PA08 BMDS Threat Modeling - Development, Sustainment, O&M	C/FFP	Northrop Grumman / Colorado Springs, CO	0	1,190	1/2Q	1,381	1/2Q	2,571
PA08 BMDS DE SIM	C/CPAF	Northrop Grumman / Colorado Springs, CO	0	4,151	1/2Q	4,817	1/2Q	8,968

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
PA08 BMDS Threat Modeling - Development, Sustainment, O&M	C/CPAF	Northrop Grumman / Colorado Springs, CO	0	870	1/2Q	1,010	1/2Q	1,880
Intl Events NATO Agreements Support	MIPR	MDA/ DC	0	650	1/2Q	754	1/2Q	1,404
Intl Events Bilateral Agreement Support	C/CPAF	Northrop Grumman/ Colorado Springs, CO	0	332	1/2Q	385	1/2Q	717
Intl Events International Product Development Efforts	C/CPAF	Northrop Grumman / Colorado Springs, CO	0	2,900	1/2Q	3,365	1/2Q	6,265
BMDS Threat Modeling - Development, Sustainment, O&M	C/CPAF	Northrop Grumman / Colorado Springs, CO	0	2,360	1/2Q	2,739	1/2Q	5,099
MDST	C/CPAF	Northrop Grumman / Colorado Springs, CO	0	1,310	1/2Q	1,520	1/2Q	2,830
EADSIM	C/FFP	SMDC/ Huntsville, AL	0	1,600	1/2Q	1,658	1/2Q	3,258
Intl Events Support Travel	C/CPAF	Northrup Grumman/ Colorado Springs, CO	0	25	1/2Q	29	1/2Q	54
BMDS HWIL								
Ground Test Support - MDSE Infrastructure (Prod Dev)	Various	Various/ Huntsville, AL	0	14,556	1/2Q	16,895	1/2Q	31,451

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Ground Test Support - MDSE - Element Integration	Various	Various/ Huntsville, AL	0	9,261	1/2Q	9,298	1/2Q	18,559
Lethality - O& M	C/FFP	Various/ Huntsville, AL	0	2,283	1/2Q	2,649	1/2Q	4,932
Lethality - IV&V	C/FFP	Various/ Huntsville, AL	0	405	1/2Q	470	1/2Q	875
Phenomenology - O&M	C/FFP	Various/ Various	0	3,100	1/2Q	3,597	1/2Q	6,697
Subtotal Product Development			0	59,357		65,793		125150

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Simulation Architecture & Engineering								
Requirements, System Engineering, Architecture Dev, Elem Int	C/CPAF	Northrop Grumman/ CO	0	1,873	1/2Q	2,173	1/2Q	4,046
Requirements, System Engineering, Architecture Dev, Elem Int	C/CPAF	Northrop Grumman/ CO	0	186	1/2Q	216	1/2Q	402
Strategic M&S Planning, Requirements, Architectures, CETMS	C/CPAF	Northrop Grumman/ CO	0	189	1/2Q	219	1/2Q	408
Verification, Validation & Accreditation								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
PA 08 Integrated V&V	C/CPAF	Northrop Grumman/ CO	0	1,147	1/2Q	1,331	1/2Q	2,478
GT03 Integrated V&V	C/CPAF	Various/ CO/AL	0	2,539	1/2Q	2,946	1/2Q	5,485
GT03 Models & Anchoring	C/CPAF	Various/ CO/AL	0	220	1/2Q	255	1/2Q	475
Elem Integration VV&A Working Groups	C/CPAF	Various/ CO/AL	0	500	1/2Q	580	1/2Q	1,080
Wargames & Exercises VV&A	C/CPAF	Northrup Grumman/ CO	0	550	1/2Q	638	1/2Q	1,188
BMDS HWIL								
Subtotal Support Costs			0	7,204		8,358		15562

Remarks

III. Test and Evaluation Cost ($ in Thousands)

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

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Simulation Architecture & Engineering								
FFRDC	C/FFRDC	Various/ CO/MA/GA	0	411	1/2Q	676	1/2Q	1,087
PA08 SETA	C/FFP	SRS Technologies/ CO	0	200	1/3Q	232	1/3Q	432
Verification, Validation & Accreditation								
FFRDC	C/FFRDC	Various/ CO/MA/GA	0	1,550	1/2Q	1,799	1/2Q	3,349
PA08 SETA	C/FFP	SRS Technologies/ CO	0	622	1/3Q	722	1/3Q	1,344
BMDS Digital Modeling & Simulation								
Government Personnel		MDA/ VA	0	1,650	N/A	1,915	N/A	3,565
PA08 SETA	C/FFP	SRS Technologies/ CO	0	804	1/3Q	933	1/3Q	1,737
Government Travel		MDA/ VA	0	224	N/A	260	N/A	484
Risk Reduction/ECPs	C/FFP	Northrop Grumman/ CO	0	631	1/2Q	732	1/2Q	1,363
Elem Integration SETA	C/FFP	SRS Technologies/ CO	0	337	1/3Q	391	1/3Q	728
Government Training		MDA/ VA	0	26	N/A	30	N/A	56

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Admin Services SETA	C/FFP	SRS Technologies/ CO	0	72	1/3Q	84	1/3Q	156
BMDS HWIL								
Government Salaries		SMDC/ Huntsville, AL	0	2,755	N/A	3,197	N/A	5,952
Government Training		SMDC/ Huntsville, AL	0	20	N/A	23	N/A	43
Government Travel		SMDC/ Huntsville, AL	0	80	N/A	93	N/A	173
PA08 Huntsville SETA	C/FFP	Various/ Huntsville, AL	0	303	1/2Q	352	1/2Q	655
Sim Center Infrastructure	C/FFP	Madison Research Corp/ Huntsville, AL	0	3,300	1/2Q	3,829	1/2Q	7,129
GT03 Huntsville SETA	C/FFP	Various/ Huntsville, AL	0	318	1/2Q	369	1/2Q	687
HWIL SETA	C/FFP	Various/ Huntsville, AL	0	1,619	1/2Q	1,879	1/2Q	3,498
ARC Infrastructure	C/FFP	COLSA, Inc/ Huntsville, AL	0	10,282	1/2Q	11,931	1/2Q	22,213
Subtotal Management Services			0	25,204		29,447		54651

Remarks

Project Total Cost			0	91,765		103,598		195,363

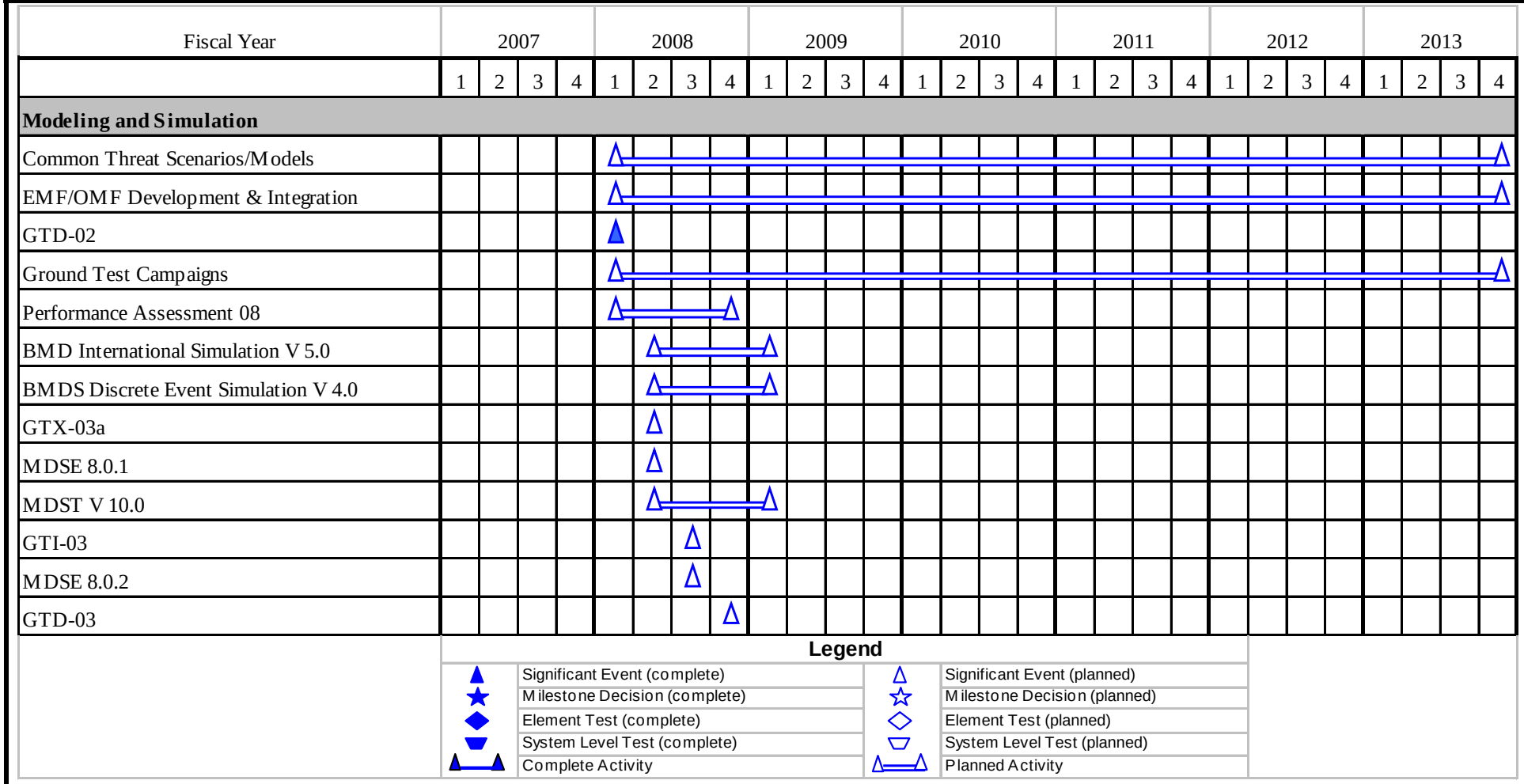
Remarks

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

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

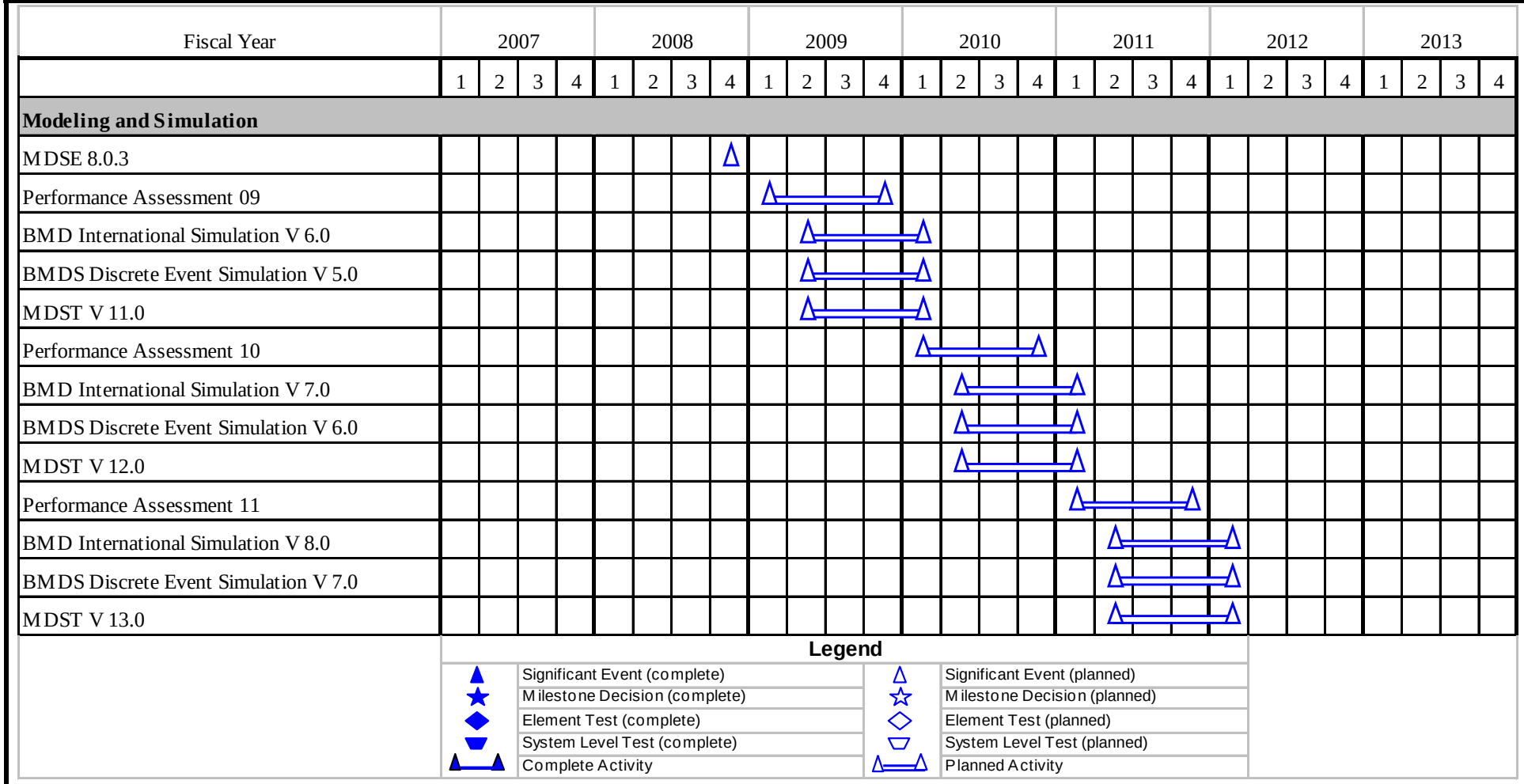


Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core

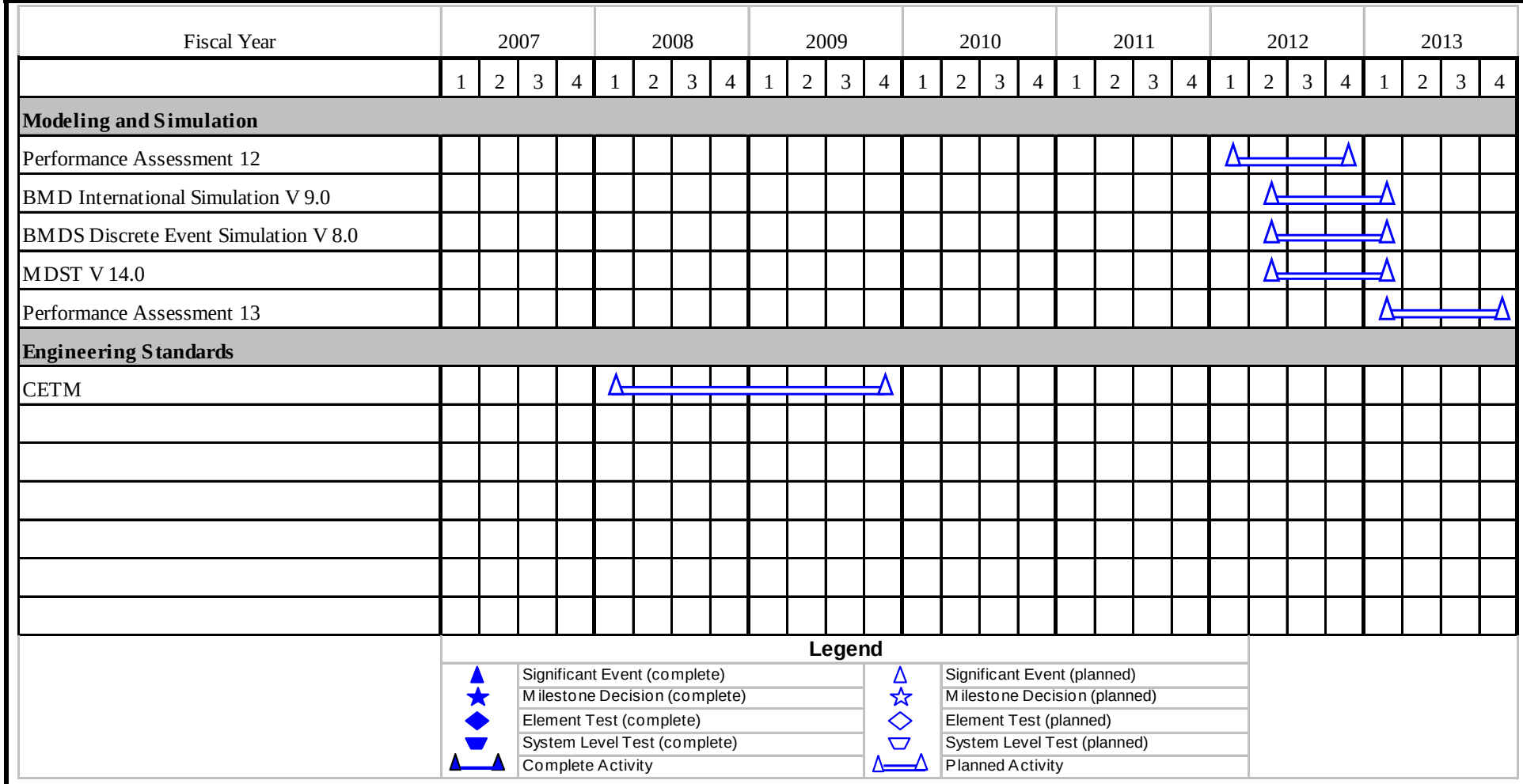


Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date
February 2008

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

R-1 NOMENCLATURE
0603890C Ballistic Missile Defense System Core



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Modeling and Simulation							
Common Threat Scenarios/Models		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
EMF/OMF Development & Integration		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
GTD-02		1Q					
Ground Test Campaigns		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Performance Assessment 08		1Q-4Q					
BMD International Simulation V 5.0		2Q-4Q	1Q				
BMDS Discrete Event Simulation V 4.0		2Q-4Q	1Q				
GTX-03a		2Q					
MDSE 8.0.1		2Q					
MDST V 10.0		2Q-4Q	1Q				
USFJ Demo		2Q,4Q	2Q,4Q				
GTI-03		3Q					
MDSE 8.0.2		3Q					
GTD-03		4Q					
MDSE 8.0.3		4Q					
Performance Assessment 09			1Q-4Q				
BMD International Simulation V 6.0			2Q-4Q	1Q			
BMDS Discrete Event Simulation V 5.0			2Q-4Q	1Q			
MDST V 11.0			2Q-4Q	1Q			
Performance Assessment 10				1Q-4Q			
BMD International Simulation V 7.0				2Q-4Q	1Q		
BMDS Discrete Event Simulation V 6.0				2Q-4Q	1Q		
MDST V 12.0				2Q-4Q	1Q		
Performance Assessment 11					1Q-4Q		
BMD International Simulation V 8.0					2Q-4Q	1Q	
BMDS Discrete Event Simulation V 7.0					2Q-4Q	1Q	
MDST V 13.0					2Q-4Q	1Q	
Performance Assessment 12						1Q-4Q	
BMD International Simulation V 9.0						2Q-4Q	1Q
BMDS Discrete Event Simulation V 8.0						2Q-4Q	1Q

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MDST V 14.0						2Q-4Q	1Q
Performance Assessment 13							1Q-4Q
Engineering Standards							
CETM		1Q-4Q	1Q-4Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0107 Safety, Quality and Mission Assurance	22,110	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content previous planned in 0107 for FY08-13 has been captured in YX32 in accordance with the MDA revised block structure.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Quality, Safety and Mission Assurance (QS) Directorate provides the Agency with expertise and capability necessary to enhance the probability of success of the Ballistic Missile Defense System (BMDS). The Agency Director has emphasized the significant role of QSMA in mission success and the importance of protecting personnel and facilities from catastrophic accidents and failures.

Over the past few years, the QS Directorate has driven dramatic improvements that significantly impacted, and continues to impact, BMDS development, testing and operations. A combination of enforcing the MDA Assurance Provisions on all BMDS suppliers, establishing a Parts, Materials and Processes Plan affecting critical BMDS parts and continuing the established Mission Assurance and Safety Audit Program and the MDA Assurance Representative Program have significantly increased the probability of BMDS mission success.

The QS Directorate has driven several quality and safety changes through the use of our rigorous audits on critical BMDS suppliers. Once Mission Assurance and Safety Audits are completed, all findings are tracked to ensure closure. Our audits have resulted in numerous process improvements, enhanced statistical controls, cultural changes and increased use of industry best practices throughout the BMDS supplier base.

The QS Directorate espouses and enforces a Quality, Safety and Mission Assurance - based culture that provides near and long term improvements and successes for MDA. Since the QS Directorate was established in 2002, proactive efforts have turned ideas and industry best practices into BMDS solutions. The MDA Assurance Provisions (MAP) and the MDA Parts, Materials and Processes Mission Assurance Plan (PMAP) standardize the way MDA now does business relative to quality, safety and mission assurance. Currently, all MDA Programs have installed, or plan to install, each of these standards within their business culture. All of the MDA Programs have placed the MAP on contract to ensure best practices are carried out. One company uses the MAP as a corporate standard, not only for MDA but for all of their Department of Defense programs.

The QS Directorate has facilitated several unique government and industry partnerships. The first salvaged the Eagle Picher Company, a critical sole source battery supplier for 5 major MDA Programs. Timely intervention with disciplined quality and safety guidance from a government/industry Team has been key toward restoring and maintaining Eagle Picher as a stable supplier. On-time deliveries and their supplier quality measurement rating continue to increase and Eagle Picher has recently obtained AS9100 3rd party certification. This successful supplier turnaround has led to a

second QS Directorate-led government/industry Team tackling similar problems within the Pacific Scientific company. This critical MDA supplier exhibited numerous quality problems over the past few years but has shown a strong and increasing spirit of cooperation and significant quality improvements under new management.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Quality, Safety and Mission Assurance	22,110	0	0
RDT&E Articles (Quantity)	0	0	0

FY07 Accomplishments

Mission Assurance and Safety Audits

Mission Assurance and Safety Audits are one of the primary BMDS risk reduction/mitigation activities. Audits examine mission assurance and safety practices and procedures, focusing on contractual requirements, internal policies and industry best practices for design, development, manufacturing, integration, test and operations. MDA/QS Audit teams are typically composed of 20 - 25 highly experienced personnel from MDA, the National Reconnaissance Office (NRO), National Aeronautics and Space Administration (NASA), United States Army Aviation and Missile Research, Development and Engineering Center (AMRDEC), several Federally Funded Research and Development Centers (FFRDCs) and the Naval Sea Systems Command (NAVSEA). Audit findings are recorded as deficiencies or observations. Deficiencies are based on contractual requirements while observations identify a possible shortcoming against current aerospace industry best practices.

During FY07, the QS Directorate conducted audits on five Programs in five separate locations (1 Government and 4 Contractor facilities).
There were 1,110 total deficiencies and observations produced from these audits.
Of these deficiencies and observations, 894 have been dispositioned as of August 2007.

The QS Directorate Mission Assurance and Safety Audit process has continued to ensure MDA Supplier compliance with contractual requirements and industry best practices. It has also provided increased confidence in the quality of delivered hardware and software.

BMDS Independent Mission Assurance and Safety Assessments

Independent Mission Assurance and Safety Assessments are another one of the primary BMDS risk reduction/mitigation actions being performed. The QS Directorate performs independent mission assurance and safety assessments and process verification reviews, establishing and assuring compliance with DOD and MDA Quality, Safety and Mission Assurance strategies, policies, and standards.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

During FY07, the QS Directorate accomplished numerous independent safety and mission assurance assessments for MDA flight and ground tests (FTT-07, FTT-08, FTG-02, FTG-03, FTG-03a, FTM-11, FTM-12, RDC-1c and d, FTX-02 and NFIRE);
Accomplished continuous safety and mission assurance assessments of all BMDS changes processed through the MDA Program Control Board.
Accomplished residual risk acceptance briefings for all MDA Programs and activities including capability Readiness Demonstrations, Warfighter Demonstrations, BMDS Configurations changes, Airborne Laser Tests, Aegis BMD tests, GMD tests, THAAD tests, Target tests and Mobile Launch Platform Transportable Telemetry System tests.
Provided target and range support for 5 MDA flight tests (THAAD, Aegis and GBI)

MDA Assurance Provisions Implementation
The MAP provides a measurable, standardized set of quality, safety and mission assurance requirements to be applied to suppliers for BMDS mission and safety critical items (where failure would directly affect system or personnel safety, mission success or operational readiness). The MAP provides 14 provisions in 144 sections with over 2000 requirements. It includes 50 aerospace industry standards that impact the design, development, manufacture, test or operation of BMDS safety and mission critical hardware and software.

Eight MDA Programs have put the MAP on contract (MIDOC, SN for the FBX-T and the CLS), TH, KI, BC, TC, and MK))

MDA Assurance Representatives (MARs)

QS Directorate MARs serve as the Missile Defense Agency Quality, Safety and Mission Assurance (QSMA) technical representative at key contractor and government facilities to provide liaison, guidance, and oversight to help ensure BMDS mission success. All MARs provide weekly reports to the MDA Director on facility and site activities relating to quality, safety and mission assurance for critical systems and products.

- Implemented A Web-based Quality Issues Tracking System for logging and tracking MAR and Program quality and safety issues for all MDA Programs and Organizations.
- Identified, reported on and resolved numerous technical issues critical to the success of the BMDS: provided broad, non-advocate insight and guidance at critical Prime and Sub-Tier Suppliers sites as well as Government Test Ranges, Interceptor Sites and Program Offices.
- With the Defense Contract Management Agency, performed mandatory Government inspections of BMDS products.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

BMDS Safety Officer Program

The BMDS Safety Officer (BSO) Program provides trained and qualified personnel to be the on-alert BMDS technical authority responsible for the continuous monitoring of the BMDS. These personnel advise appropriate Combatant Commander Operations Centers on BMDS operation, performance, and availability while ensuring continuous safety.

Principal BSO responsibilities include a focus on BMDS safety and availability based on safety, ensuring continuous safety, availability, and configuration control of the BMDS and monitoring and reporting on BMDS status, capability, and testing.

- Developed and provided to event owners system safety constraints for Capability/ Readiness Demonstrations for new capabilities added to the Ballistic Missile Defense System.
- Established procedures for visual verification of isolation of non-participating assets at remote locations for test (flight/ground) events.
- Established situational awareness tool requirements for Operational Support Center to provide independent verification status of the BMD system to ensure system safety.

MDA Parts, Materials and Processes Program

The Parts, Materials and Process Mission Assurance Plan (PMAP) serves as a contractual document for all MDA Programs. It outlines five major hardware categories: space (satellites), launch (missiles), aircraft systems (airborne laser), sea-based (Aegis BMD) and ground systems (THAAD/Patriot). Stringent parts selection, identification and testing in each of these five areas forms the backbone of the overall MDA Program. The PMAP provides requirements and management structure to offset emerging part and material issues facing MDA (e.g., counterfeit parts, service life issues, tin whisker failures, unreliable suppliers and corrosion). It applies to new or modified safety and mission critical systems throughout the complete product life cycle: design, development, fabrication, operation and obsolescence, and provides detailed PMP requirements for MDA Programs that can be tailored for each asset using the above categories.

- Completed 8 Road Shows with MDA Prime Contractors to discuss detailed requirements of MDA-QS-003 Parts, Materials, and Process Mission Assurance Plan.
- Completed draft Revision A of PMAP, incorporating over 100 Industry comments.
- Successfully partnered a PMAP compliant Boeing PMP Plan for 2-stage and European Site Contracts.
- Developed an MDA Standard Operating Procedure (SOP) for the Agency Parts Materials and Processes Board (PMPB).
- MDA PMP and Boeing jointly developed a Distributor Management Procedure to offset counterfeit part issues.
- Completed review and disposition of over 100 Prohibited Part and Material Exception Request for GM Program Office, developed an ACCESS database which contains information on 420 GMD Exception Requests.
- MDA PMP Materials Experts assisted Becthel in writing and publishing the Fort Greely Missile Field 1 & 3 Silo FOD Cleanliness Baseline Plan.
- MDA PMP performed independent PMP testing for Orbital Sciences to support GBI schedule.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Quality, Safety and Mission Assurance Forums

The QS Directorate uses established forums to enhance our sharing of supplier quality audit data, increase our capability to identify supplier risks and tailor quality assurance actions, reduce costs by combining auditing resources and sharing best practices and lessons learned.

- The QS Director has established a Mission Assurance Group, a group of industry and government mission assurance executives that meets twice a year and tackles complex assurance issues such as sole source suppliers, industry standards and specifications, and counterfeit parts.
- QS Directorate personnel participate in the NASA Quality Leadership Forum (QLF). The Quality Leadership Forum (QLF) is an aerospace forum that meets semiannually for the advancement of quality assurance practices. The principal objectives of the QLF are to: integrate quality approaches, standardize quality practices, resolve current problems, improve use of quality resources, define and analyze quality risks, communicate lessons learned, share best practices, and improve quality processes.
- QS Directorate personnel participate in the NASA Joint Audit Planning Committee (JAPC). The Joint Audit Planning Committee (JAPC) is a joint Government - Industry forum initiated for the planning, coordination and integration of NASA supplier quality audits, and management of resultant data. JAPC objectives are: (1) Sharing of supplier quality audit data; (2) Enhancing capability to identify supplier risks and tailor quality assurance actions; (3) Reducing costs by combining auditing resources; (4) Reporting Agency-wide quality metrics and trends; (5) Standardizing supplier auditing practices; (6) Sharing best practices and lessons learned; (7) Identifying and facilitating resolution of common supplier quality issues, problems and risks; and (8) Eliminating duplicative audits and reducing supplier costs/work interruptions related to ongoing customer audits.
- QS Directorate personnel participate in the Aerospace Industry Space Quality Improvement Council (SQIC) Group provides a non-attributive forum for sharing and exploiting best practices, lessons learned, technical experience and policy perspectives in the quality area.
- QS Directorate personnel participate in the American Society for Quality's Conference on Quality in Space and Defense Industries (CQSDI).

BMDS Program Support

- The QS Directorate developed and maintains the MDA Directors safety policy and safety directives and ensures both personnel and facility safety within MDA Programs.
- Performed numerous independent safety assessments of MDA activities/programs.
- QS Directorate personnel, with coordination from GM personnel, assessed risks of with Missile Field 3 silo refurbishment activities and STO Ph 1A/1B. We assessed safety risks and advised both MDA Management and the Warfighter of residual safety risk associated with these activities.
- QS Directorate personnel developed the initial safety requirements for the new MDA Concurrent Test, Training and Operations (CTTO) Directorate and communicated them to various CTTO stakeholders. We refined the initial safety requirements and provided additional CTTO safety guidance in the CTTO Concept Document.

- QS Directorate personnel chair the BMDS System Safety Working Group that identifies and recommends mitigation actions for BMDS-level hazards that cross element boundaries.
- Provided Safety and Mission Assurance engineering support to the Kinetic Energy Interceptor Program (KI), the Sensors Program (SN) and the Multiple Kill Vehicle Program (MK).
- Developed the 2007/2008 MDA Insensitive Munitions Strategic Plan. The QS Directorate has partnered with the US Army, US Navy, US Air Force and OSD to develop Insensitive Munitions Small Business Innovative Research topics and choose promising proposals related to areas of benefit to MDA and the DOD. Over the past year, MDA has awarded 10 Phase I and 5 Phase 2 contracts.
- QS Directorate personnel created and are maintaining the MDA Supplier Roadmap database categorizing over 1000 MDA suppliers by Program, location and product. Numerous Programs and organizations have used these Roadmaps to identify critical suppliers, sole source suppliers, potential bottleneck suppliers (ones that provide the same product to multiple Programs) as well as suppliers that may have Organizational Conflict of Interest problems.
- Four MDA Advisories describing potential failure mechanisms in specific parts have been developed and distributed to MDA Programs and Suppliers.
- Developed an MDA Metrics database to provide management visibility into Program Health and to enable statistical control.
- Developed Colorado State and National Malcolm Baldrige Quality Award applications for the MIDOC.
- Developed Alabama State Malcolm Baldrige Quality Award application for THAAD Program.

Safety and Occupational Health

- Established MDA safety policies and requirements as required by law and DoD regulations.
- Provided mishap/accident investigation coverage designed to identify causes and to prevent recurrence of similar mishaps involving MDA personnel and property.
- Maintained and updated SOH inspection and mishap reporting hazard logs for tracking unsafe conditions.
- Partnered with MDA human resources to provide 951 (612 in the NCR and 339 in Huntsville, AL) new MDA employees (Government and contractor) federally mandated employee safety training.
- Accomplished 2 audits of SOH processes in Government facilities.
- Accomplished 1 audit of SOH processes in supplier facilities.
- Conducted 5 Federally-mandated safety and occupational health inspections to ensure safety of MDA work environment.
- Oversaw development and ongoing online production efforts of MDA Safety Investigations and Reporting Training.

- Maintained MDA Collateral Duty Safety Representative (CDSR) program and its computer-based training program, to track training of the appointed MDA employees enhancing safety awareness across the BMDS.
- Maintained MDA SOH web community, providing a regularly updated safety resource on various on-job and off-job safety topics through the MDA portal site.
- Promoted and maintained the MDA Quality and Safety Concerns Reporting Line, which provides an around the clock tool for employees/contractors/suppliers to report quality and/or safety issues directly to MDA/QS and subsequently to MDA/D.
- Drafted and ensured release of MDA/QS holiday safety messages to the entire MDA populace.
- Conducted emergency response awareness/general hazard awareness staff certification course.
- Represented MDA OSD ATL Safety and Occupational Health Committee (SOHC) meetings and other related Federal safety meeting.
- Completed tasks as requested and assigned from DoD and OSD SOH oversight (accident/injury, lost work time statistics, yearly SOH and SHARE statistical reports and OSHA related tasks).

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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 initiates will be executed by MDA directorates and industry contractors.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Support Costs								

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost								

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Safety, Quality, and Mission Assurance																												
BMDS Indepedent Mission Assurance & Safety Assmnts	▲																											
MDA Assurance Provisions Implementation	▲	—	—	▲																								
Government and Supplier On-site Support	▲	—	—	▲																								
MDA Parts, Materials, and Process Program	▲	—	—	▲																								
Government MDA Assurance Provisions	▲	—	—	▲																								
Program Element Support	▲	—	—	▲																								
Intra-Agency and Industry Activities	▲	—	—	▲																								
Safety and Occupational Health	▲	—	—	▲																								
Quality, Safety and Mission Assurance Audits	▲	▲	▲	▲																								

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Safety, Quality, and Mission Assurance							
BMDS Indepedent Mission Assurance & Safety Assmnts	1Q						
MDA Assurance Provisions Implementation	1Q-4Q						
Government and Supplier On-site Support	1Q-4Q						
MDA Parts, Materials, and Process Program	1Q-4Q						
Government MDA Assurance Provisions	1Q-4Q						
Program Element Support	1Q-4Q						
Intra-Agency and Industry Activities	1Q-4Q						
Safety and Occupational Health	1Q-4Q						
Quality, Safety and Mission Assurance Audits	1Q,2Q,3Q,4Q						
Support Baldrige Application Process	1Q-4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
YX32 Safety, Quality and Mission Assurance	0	26,248	28,860	35,114	42,920	40,346	40,999
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: The content in YX32 is a continuation of the efforts reported in project 0107 and was explained in that project in PB08.

A. Mission Description and Budget Item Justification

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Over the past few years, the QS Directorate has driven dramatic improvements that significantly impacted, and continues to impact, BMDS development, testing and operations. Through the MDA Assurance Provisions (QSMA requirements to BMDS suppliers), establishing a Parts, Materials and Processes Program, continuing the established Mission Assurance and Safety Audit Program, and the MDA Assurance Representative Program have directly increased the probability of BMDS mission success.

The QS Directorate has driven several quality and safety changes through the use of our rigorous audits on critical BMDS suppliers. Once Mission Assurance and Safety Audits are completed, all findings are tracked to ensure closure. Our audits have resulted in numerous process improvements, enhanced statistical controls, cultural changes and increased use of industry best practices throughout the BMDS supplier base.

The QS Directorate espouses and enforces a Quality, Safety and Mission Assurance - based culture that provides near and long term improvements and successes for MDA. Since the QS Directorate was established in 2002, proactive efforts have turned ideas and industry best practices into BMDS solutions. The MDA Assurance Provisions (MAP) and the MDA Parts, Materials and Processes Mission Assurance Plan (PMAP) standardize the way MDA now does business relative to quality, safety and mission assurance. Currently, all MDA Programs have installed, or plan to install, each of these standards within their business culture. One company uses the MAP as a corporate standard, not only for MDA but for all of their Department of Defense programs. Regarding MDA operations, the MAP requirements have also had a dramatic affect on BMDS operations through concise quality practices applicable to all large Aerospace entities. The PMAP now leads the Industry in Parts, Materials and Process standards for complex system impacting Space, Ground, Air and Ship board systems. The Defense Standardization and Program Office recognizes this and has adopted it to address Parts, Materials and Processes for high reliability systems.
The QS Directorate has facilitated several unique government and industry partnerships. The first partnership salvaged a critical sole source battery supplier for 5 major MDA Programs. Timely intervention with disciplined quality and safety guidance from a government/industry Team has been

key toward restoring and maintaining a stable supplier. On-time deliveries and supplier quality measurement rating continue to increase. This successful supplier turnaround has led to a second QS Directorate-led government/industry Team tackling similar problems within a second company. This critical MDA supplier exhibited numerous quality problems over the past few years but has shown a strong and increasing spirit of cooperation and significant quality improvements under new management.

B. Accomplishments/Planned Program

	FY 2007	FY 2008	FY 2009
Quality, Safety and Mission Assurance	0	26,248	28,860
RDT&E Articles (Quantity)	0	0	0

FY 08 Planned Program

The FY08 Planned Program improves the ability of the QS Directorate to identify and resolve issues impacting both test and operational BMDS assets. The QS Directorate requires dedicated and highly experienced personnel for key mission critical activities and sites to enable our cradle to grave participation. To date, such participation by QS personnel has resulted in a safe and effective set of BMDS tests and operations, as well as significantly facilitating process improvements and minimizing overall costs.

Mission Assurance and Safety Audits

- Conduct up to 4 unannounced large scale Mission Assurance audits to improvement of quality in BMDS products.
- Conduct up to 2 unannounced Safety audits to continue enhancement of BMDS safety.
- Perform post audit corrective actions assessments as required for each Mission Assurance and Safety audit.

BMDS Independent Mission Assurance and Safety Assessments

- Continue to perform independent mission assurance assessments on BMDS and Program flight and ground tests.
- Maintain and enhance the MDA Metrics database to provide for additional areas of statistical control and Program Health assessments
- Continue to provide Independent Readiness Review Team support by senior Subject Matter Experts.
- Conduct independent Safety assessments and reviews of MDA Program and products to enhance BMDS safety.
- Support 400+ requests for MDA and BMDS document reviews and evaluations.
- Refine Capability Verification and Assessment addendum detailing the capability of the BMDS to operate safely in Blocks.
- Continue the existing Supplier Initiative

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
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MDA Assurance Provisions Implementation

- Continue working with MDA Programs to place the MAP on contract to standardize BMDS product design, development, production, testing, fielding and operation.

MDA Assurance Representatives (MARs)

- Maintain engineering on-site support at problematic mission critical suppliers to address design, manufacturing, test and deficiencies; ensuring mission assurance occurs early in product life cycle.
- Continue to implement the web-based Quality Issues Tracking System used to log and track MAR and Program Element quality and safety issues and ensure proper root cause assessment and resolution.
- Increase on-site performance through the continued development of cognizant engineer data books aimed at improving MAR systems engineering awareness.
- Continue inter-agency outreach to address supply chain issues and involvement in initiatives for common supplier insight, leverage and cooperation.

BMDS Safety Officer Program

Manage the BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes.
Maintain and consolidate the Safety Career training program

MDA Parts, Materials and Processes Program no increase staffing to support programs due to budget reduction

- Work with each Program to adjudicate parts and materials issues arising from PMAP requirements.
- Maintain the MDA Parts, Materials and Processes Board (PMPB) and lower level Program Element Part Material and Processes Control Boards.
- Perform Parts, Materials and Processes cost/impact assessment on additional programs characterizing the costs associated with implementing the PMAP on key BMDS assets.
- Develop capability to procure parts or materials as required to perform required failure analyses and cause and effect evaluations.

Manage MDA Advisory database to rapidly share throughout MDA part issues impacting system reliability.

- Continue to perform PMAP roadshows to educate industry, discuss requirements and address issues associated with PMAP contract implementation.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

Quality, Safety and Mission Assurance Forums

- Continue to chair and support the Mission Assurance Group to tackle complex assurance issues such as sole source suppliers, industry standards and specifications, and counterfeit parts.
- Participate in the NASA Quality Leadership Forum (QLF) to allow MDA to integrate quality approaches and standardize quality practices with other Government and Industry organizations.
- Participate in the NASA Joint Audit Planning Committee (JAPC). For sharing of supplier quality audit data and enhancing MDA's capability to identify supplier risks and tailor quality assurance actions.
- Participate in the Aerospace Industry Space Quality Improvement Council (SQIC) for sharing and exploiting best practices, lessons learned, technical experience and policy perspectives in the quality area.
- Participate in the American Society for Quality's Conference on Quality in Space and Defense Industries (CQSDI).

BMDS Program Support

- Provide Quality, Safety and Mission Assurance support to all MDA. Programs through reallocation of QSMA personnel and positions.
- Limit Involvement due to budget constraint: Continue QSMA support for BMDS issues, operations and working groups.
- Conduct additional non-advocate safety assessments.
- Limit to One Application due to budget constraint: Continue the existing Malcolm Baldrige Quality Award work and expand the application to cover the Aegis BMD Program.
- Maintain Existing Staff due to budget reduction: Continue to provide Independent Readiness Review Team support by senior Subject Matter Experts.
- Continue to manage the MDA Metrics Program to provide periodic Program Health updates and to allow for statistical control.
- Limit Assessments: Continue to conduct independent Safety Assessments of MDA Programs and Organizations to enhance BMDS safety.

Safety and Occupational Health

- Manage the MDA Safety and Occupational Health Mishap Investigation Program as required by Public Law and DOD Directives.
- Limit Inspections: Perform, or ensure, all required SOH inspections and assessments of MDA occupied workspaces/facilities.
- Conduct and record required safety and occupational health mishap investigations.
- Follow-up and track all hazards/unsafe conditions identified during safety and occupational health inspection and mishap investigations.
- Maintain MDA ‘s Safety and Quality Concerns Hotline.
- Manage the MDA SOH publicity and safety awareness programs including holiday safety messages and the SOH Web page.

- Conduct required Federal and DOD Safety training.
- Minimize due to budget reduction: Represent MDA at all OSD level safety and occupational health meetings and task forces.
- Ensure SOH involvement in MDA facilities planning. Review construction plans and renovation projects as necessary.
- Represent the QS Director at MDA Facilities Board meetings as tasked.
- Prepare and deliver all required MDA, DOD and other Federal SOH reports.
- Support Mission Assurance and Safety audits as required.
- Proactively ensure a safe working environment for all MDA employees and operations through compliance and enforcement of all OSHA and DOD directives.

FY 09 Planned Program

The FY09 Planned Program builds upon previous years development of required expertise and provides QSMA coverage of key BMDS processes such as risk management, non-conformance reporting and Reliability, Availability and Maintainability assessments. This will further ensure that the BMDS matches requirements and that any anomalous behavior is detected, documents, tracked and resolved. The QS Directorate requires dedicated and highly experienced personnel for key mission critical activities and sites to enable our cradle to grave participation. To date, such participation by QS personnel has resulted in a safe and effective set of BMDS tests and operations, as well as significantly facilitating process improvements and minimizing overall costs.

Mission Assurance and Safety Audits

- Conduct up to 6 unannounced large scale Mission Assurance audits to improvement of quality in BMDS products.
- Conduct up to 4 unannounced Safety audits to continue enhancement of BMDS safety.
- Perform post audit corrective actions assessments as required for each Mission Assurance and Safety audit.

BMDS Independent Mission Assurance and Safety Assessments

- Maintain a BMDS Material and Failure Review Board to resolve significant non-conformance issues with BMDS products.
- Continue to perform independent mission assurance assessments on BMDS and Program flight and ground tests, such as pedigree review and design certifications.
- Maintain and enhance the MDA Metrics database to provide for additional areas of statistical control and Program Health assessments.
- Conduct independent Safety assessments and reviews of MDA Program and products to enhance BMDS safety.
- Continue to provide senior Subject Matter Experts for the Independent Readiness Review Team.

- Maintain the MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS activities are conducted safely.
- Support 400+ requests for MDA and BMDS document reviews and evaluations.
- Increase QS Directorate expertise in the technical fields such as radar engineering, guidance and navigation and control, parts and materials, range safety, ordinance systems and optics to maintain a core center of excellence to support MDA Program with quality, safety and mission assurance.
- Start another major Supplier Initiative to resolve disruptive deficiencies at an MDA critical supplier.

MDA Assurance Provisions Implementation
- Update MAP to incorporate lessons learned and Industry Specification Working Group inputs.
- Continue working with MDA Programs to place the MAP on contract to standardize BMDS product design, development, production, testing, fielding and operation.

MDA Assurance Representatives (MARs)
- Increase engineering on-site support at problematic mission critical suppliers to address design, manufacturing, test and deficiencies; ensuring mission assurance occurs early in product life cycle
- Continue to implement the web-based Quality Issues Tracking System used to log and track MAR and Program Element quality and safety issues and ensure proper root cause assessment and resolution.
- Increase on-site performance through the continued development of cognizant engineer data books aimed at improving MAR systems engineering awareness.
- Expand inter-agency outreach to address supply chain issues and involvement in initiatives for common supplier insight, leverage and cooperation.

BMDS Safety Officer Program
- Manage the BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes.
- Maintain and consolidate the Safety Career training program .

MDA Parts, Materials and Processes Program
- Work with each Program to adjudicate parts and materials issues ensuring part reliability aligns with system requirements.

- Maintain the MDA Parts, Materials and Processes Board (PMPB) and lower level Program Element Part Material and Processes Control Boards .
- Maintain the Agency Preferred Parts and Materials List database that facilitates new system design and the resolution of part obsolescence issues.
- Manage MDA Advisory database to rapidly share throughout MDA part issues impacting system reliability.
- Perform Parts, Materials and Processes cost/impact assessment on additional programs characterizing the costs associated with implementing the PMAP on key BMDS assets.
- Maintain capability to procure parts or materials as required to perform required failure analyses and cause and effect evaluations.

Quality, Safety and Mission Assurance Forums

- Continue to chair and support the Mission Assurance Group to tackle complex assurance issues such as sole source suppliers, industry standards and specifications, and counterfeit parts.
- Participate in the NASA Quality Leadership Forum (QLF) to allow MDA to integrate quality approaches and standardize quality practices with other Government and Industry organizations.
- Participate in the NASA Joint Audit Planning Committee (JAPC) for sharing of supplier quality audit data and enhancing MDA's capability to identify supplier risks and tailor quality assurance actions.
- Participate in the Aerospace Industry Space Quality Improvement Council (SQIC) for sharing and exploiting best practices, lessons learned, technical experience and policy perspectives in the quality area.
- Participate in the American Society for Quality's Conference on Quality in Space and Defense Industries (CQSDI).

BMDS Program Support

- Provide Quality, Safety and Mission Assurance support to all MDA Programs through reallocation of QSMA personnel and positions.
- Continue QSMA support for BMDS issues through Core capabilities.
- Conduct additional non-advocate safety assessments.
- Continue the existing Malcolm Baldrige Quality Award work and expand the application to cover the Aegis BMD Program.
- Continue to provide Independent Readiness Review Team support by senior Subject Matter Experts.
- Continue to manage the MDA Metrics Program to provide periodic Program Health updates and to allow for statistical control.
- Continue to conduct independent Safety Assessments of MDA Programs and Organizations to enhance BMDS safety.

Safety and Occupational Health

- Manage the MDA Safety and Occupational Health Mishap Investigation Program as required by Public Law and DOD Directives.

- Perform, or ensure, all required SOH inspections and assessments of MDA occupied workspaces/facilities.
- Conduct and record required safety and occupational health mishap investigations.
- Follow-up and track all hazards/unsafe conditions identified during safety and occupational health inspection and mishap investigations.
- Maintain MDA's Safety and Quality Concerns Hotline.
- Manage the MDA SOH publicity and safety awareness programs including holiday safety messages and the SOH Web page.
- Conduct required Federal and DOD Safety training.
- Represent MDA at all OSD level safety and occupational health meetings and task forces.
- Ensure SOH involvement in MDA facilities planning. Review construction plans and renovation projects as necessary.
- Represent the QS Director at MDA Facilities Board meetings as tasked.
- Prepare and deliver all required MDA, DOD and other Federal SOH reports.
- Support Mission Assurance and Safety audits as required.
- Proactively ensure a safe working environment for all MDA employees and operations through compliance and enforcement of all OSHA and DOD directives.

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

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 initiates will be executed by MDA directorates and industry contractors

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

I. Product Development Cost ($ in Thousands)

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

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Quality, Safety and Mission Assurance								
OGA Sept/Audits	SS/MIPR	NSWC Corona/CA, VA	0	2,341	1Q	3,700	N/A	6,041
Safety & Quality/Audits	C/FFP	SRS Tech/VA, MD	0	8,000	1Q	4,800	N/A	12,800
Mission Assurance/Audits	C/FFP	SRS Tech/VA,MD	0	3,648	1Q	1,500	N/A	5,148
OGA Sept	SS/MIPR	NSWC Crane/IN,VA	0	1,200	1Q	2,350	N/A	3,550
Govt Sept	SS/MIPR	NSWC VA Beach/VA	0	150	1Q	300	N/A	450
S/W Acquisition	C/FFRDC	SEI/ PA, VA	0	250	1Q	400	N/A	650
Energy Review Board	C/FFRDC	Aerospace, SEI/PA,CA, VA	0	450	1/2Q	500	N/A	950
Parts Material Pro	SS/MIPR	NSWC Crane,IN,VA	0	0	4Q	2,378	N/A	2,378
Parts Material Pro	SS/MIPR	AMRDEC/AL	0	0	4Q	400	N/A	400
Metris SW/AC	C/FFP	BAE/SMDC/AL,VA,MD	0	0	N/A	0	N/A	
Subtotal Support Costs			0	16,039		16,328		32367

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 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 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Quality, Safety and Mission Assurance								
QS Civilian Salaries	TM	MDA/VA,MD,AL, CA,AZ,HI,AK,MA ,NJ,FL,AR,UT,MH	0	9,323	1Q	11,300	N/A	20,623
Travel	TM	MDA/VA,MD,A., CA,AZ,HI,AK,MA ,NJ,FL,AR,UT,MH	0	886	1Q	1,232	N/A	2,118
Subtotal Management Services			0	10,209		12,532		22741

Remarks

Project Total Cost			0	26,248		28,860		55,108

Remarks

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

Date: **February 2008**

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	2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Safety, Quality, and Mission Assurance																												
BMDS Independent Mission Assurance & Safety Assessment					▲	△	△	△	△	△	△	△	△	△	△	△												
Program Element Support					▲	△	△	△	△	△	△	△	△	△	△	△												
Safety and Occupational Health					▲	△	△	△	△	△	△	△	△	△	△	△												
Government MDA Assurance Provisions						△	△	△	△	△	△	△	△	△	△	△												

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

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2008
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 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Safety, Quality, and Mission Assurance							
BMDS Independent Mission Assurance & Safety Assessment		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Government MDA Assurance Provisions		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Government and Supplier On-site Support		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Intra-Agency and Industry Activities		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
MDA Assurance Provisions Implementation		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
MDA Parts, Materials, and Process Program		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Program Element Support		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Quality, Safety and Mission Assurance audits		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
Safety and Occupational Health		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0602 Program-Wide Support	36,873	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: Efforts within this project continue in FY 2008 under project ZX40

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 2007	FY 2008	FY 2009
Civilian Salaries and Support	36,873	0	0
RDT&E Articles (Quantity)	0	0	0

See Section A: Mission Description and Budget Item Justification

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
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PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
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PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
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PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603890C Ballistic Missile Defense System Core**

COST ($ in Thousands)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
ZX40 Program-Wide Support	0	14,460	12,519	18,590	15,880	16,332	17,046
RDT&E Articles Qty	0	0	0	0	0	0	0

Note: In accordance with the Missile Defense Agency revised block structure, the content previously planned in Project 0602 for FY08-FY13 is now captured in Project ZX40.

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 2007	FY 2008	FY 2009
Civilian Salaries and Support	0	14,460	12,519
RDT&E Articles (Quantity)	0	0	0

See Section A: Mission Description and Budget Item Justification

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603890C Ballistic Missile Defense System Core

C. Other Program Funding Summary

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0207998C BRAC	0	103,219	159,938	61,931	8,724	0	0	333,812
PE 0603175C Ballistic Missile Defense Technology	183,849	108,423	118,718	115,234	120,152	127,012	130,358	903,746
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,082,454	1,045,276	1,019,073	795,659	719,847	548,283	439,752	5,650,344
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,985,140	2,243,213	2,209,262	2,276,848	1,385,258	946,437	1,103,532	13,149,690
PE 0603883C Ballistic Missile Defense Boost Defense Segment	622,218	510,241	421,229	423,927	652,642	799,792	991,839	4,421,888
PE 0603884C Ballistic Missile Defense Sensors	514,989	586,121	1,221,143	1,184,280	1,099,649	1,077,632	823,583	6,507,397
PE 0603886C Ballistic Missile Defense System Interceptors	341,358	340,107	386,817	500,966	708,803	815,433	553,136	3,646,620
PE 0603888C Ballistic Missile Defense Test and Targets	584,615	621,861	673,691	672,976	690,938	708,991	719,209	4,672,281
PE 0603891C Special Programs - MDA	347,377	196,892	288,315	304,234	538,050	818,136	786,349	3,279,353
PE 0603892C Ballistic Missile Defense Aegis	1,125,426	1,126,337	1,157,783	1,234,220	1,078,539	1,066,712	1,102,542	7,891,559
PE 0603893C Space Tracking & Surveillance System	311,402	231,528	242,441	266,509	560,130	735,727	938,191	3,285,928
PE 0603894C Multiple Kill Vehicle	133,615	229,943	354,455	488,294	649,632	708,582	879,385	3,443,906
PE 0603895C BMD System Space Program	0	16,552	29,771	41,638	56,199	133,915	157,548	435,623
PE 0603896C BMD C2BMC	249,179	447,616	289,277	287,194	270,762	256,767	259,159	2,059,954
PE 0603897C BMD Hercules	46,268	52,462	55,955	55,289	56,400	51,902	52,784	371,060
PE 0603898C BMD Joint Warfighter Support	49,833	49,394	69,982	73,997	77,205	80,168	81,948	482,527
PE 0603904C Missile Defense Integration & Operations Center	104,389	78,557	96,404	100,437	100,366	101,512	102,840	684,505
PE 0603905C BMD Concurrent Test and Operations	21,870	0	0	0	0	0	0	21,870
PE 0603906C Regarding Trench	0	1,986	2,978	4,964	4,963	8,933	8,933	32,757
PE 0603907C Sea Based X-Band Radar (SBX)	0	165,243	0	0	0	0	0	165,243
PE 0605502C Small Business Innovative Research - MDA	142,510	0	0	0	0	0	0	142,510
PE 0901585C Pentagon Reservation	15,527	6,019	19,734	5,040	5,284	5,370	5,456	62,430
PE 0901598C Management Headquarters - MDA	93,350	80,392	86,453	70,355	69,855	69,855	69,855	540,115