Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
Total PE Cost	1,034,478	956,686	719.465
BX07 Terminal High Altitude Area Defense (THAAD) Block 2.0	859,659	731,393	555,160
EX07 Terminal High Altitude Area Defense (THAAD) Block 5.0	0	0	60,417
XX07 Terminal High Altitude Area Defense (THAAD) Sustainment	1,148	21,796	49,868
WX26 Israeli ARROW Program	115,774	95,960	0
WX34 Short Range Ballistic Missile Defense	36,001	73,020	0
WX06 PAC-3	1,263	10,080	22,299
ZX40 Program-Wide Support	20,633	24,437	31,721

A. Mission Description and Budget Item Justification

A.1 System Element Description

As part of the integrated Ballistic Missile Defense System (BMDS), the Terminal Defense Segment (TDS) Program Element (PE) funds the terminal-related element portions of Block 2.0 (formerly Block 2008), Block 5.0 (formerly Block 2010), Sustainment, and other Terminal-related mission area investment activities. The TDS elements and activities include Terminal High Altitude Area Defense (THAAD), the Israeli Cooperative Programs and the PATRIOT Advanced Capability-3 (PAC-3). The BMDS elements in terminal defense pursue development and selective upgrades of interceptor defense capabilities that engage short to medium-range ballistic missiles in the late mid-course and terminal phase of their trajectory. As part of the integrated, layered BMDS, the Terminal Defense Elements provide the final opportunity to engage short to medium-range ballistic missiles not engaged or destroyed in the boost or mid-course of trajectory. The THAAD element enhances the BMDS by providing rapidly deployable ground-based interceptor defense components that deepen, complement, and extend the BMDS battle space. The elements have the capability to engage and negate ballistic missiles and asymmetric threats in both the late mid-course (outside the atmosphere) and terminal phases (inside the atmosphere) of their trajectory, making countermeasures difficult and significantly mitigating Weapons of Mass Destruction (WMD). This adds significant capability to the BMDS as the threat missiles transition from the mid-course to terminal phase.

The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities--weapons, sensors, and command and control, battle management and communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile's location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack—all connected by a unifying

C2BMC system. As a result, an effort funded in a Program Element may be critical to success of efforts in other Program Elements -- we refer to these connections as "interdependencies." Throughout the budget justification material, we have attempted to highlight interdependencies in order to explain for fully the relationship between different parts of the proposed program.

BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of the THAAD element to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels.

MDA has a set of Unifying Missile Defense Functions (UMDFs), which increase the effectiveness of the BMD System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These UMDF efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). UMDFs are implemented across the BMDS elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. THAAD Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides THAAD participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of THAAD in BMD System testing in accordance with the BMDS Test Policy, MDA Directive 3202.03 (Jan 09). This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).

The THAAD element integrates five major components (Interceptors, Launchers, Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radars, THAAD Fire Control and Communication (TFCC), and THAAD-Peculiar Support Equipment) into the BMDS. The THAAD interceptor is a certified round that is propelled by a single-stage, solid-propellant rocket booster. Its kill vehicle possesses a divert and attitude

control system and an infrared seeker used in destroying its target through hit-to-kill technology. The THAAD Launcher consists of the U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated interceptor round pallet and supports and secures eight ready-to-launch interceptors. The AN/TPY-2 Radar is an X-Band, solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The AN/TPY-2 Radar uses fence, volume, and cued search modes and provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The AN/TPY-2 Radar hardware is a transportable system composed of the antenna equipment unit, electronics equipment unit, cooling equipment unit, and the prime power unit. The TFCC is composed of the Tactical Operations Station, the Launch Control Station, and the Station Support Group. These three components together are called the Tactical Station Group (TSG). A TFCC includes two TSGs. The TFCC provides the engagement planning, fire control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with C2BMC and external air and missile defense and intelligence systems and agencies that are integrated into the BMDS.

The Arrow system (developed jointly by the U.S. and Israel), another of the TDS' mission area investments, provides Israel an indigenous capability to defend against short and medium range ballistic missiles and helps ensure U.S. freedom of action in future contingencies. Arrow also provides protection against ballistic missile attacks to U.S. forces deployed to the region.

The Arrow program consists of the following major efforts: The Arrow System Improvement Program (ASIP) is a block upgrade of the Arrow Weapon System that enhances its capabilities against evolving regional threats. The program also includes the development of Arrow co-manufacturing capability, coproduction of the interceptor, and enhancement of Arrow's interoperability with U.S. Ballistic Missile Defense Systems (BMDS) via a Joint Tactical Information Data System (JTIDS)/Link-16 common communication architecture. The ASIP will develop upgrades to the existing Arrow Weapon System to allow Arrow to address more significant ballistic missile threats. Related Arrow activities include the Caravan Flight test campaign in the U.S., the Israeli Test Bed (ITB), and studies via the Israeli Systems Architecture and Integration (ISA&I) effort that assess Arrow's performance relative to existing and emerging threats. Finally, the next phase of development for the Arrow Weapon System is being studied to provide Israel with an indigenous upper-tier system.

A new joint cooperative program with Israel is the David's Sling Weapon System (DSWS) that is intended for Short Range Ballistic Missile Defense (SRBMD). This system is designed to counter short range rockets, cruise missiles and serve as a low-tier to the Arrow Weapon System. This system is being designed and developed as a Joint system to meet both Israeli and U.S. requirements.

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

- Research, Development, Test & Evaluation (RDT&E):

The THAAD element contributes to the BMDS by providing the Engagement Sequence Group (ESG) THAAD Interceptor Engage on Army Navy/Transportable Radar Surveillance-Type 2 (AN/TPY-2) (THAAD Mode). When integrated into the BMDS with the BMDS Command and Control/Battle Management and Communications (C2BMC), AEGIS BMD and PATRIOT Systems, the rapidly deployable THAAD element improves the BMDS overall effectiveness by engaging threat ballistic missiles in the late mid-course and terminal phases of their trajectory.

Blocks 2.0 and Sustainment: THAAD incremental development began with the design and development of a significant, fundamental capability against short to medium-range Ballistic Missiles (BMs) and asymmetric threats inside and outside the atmosphere. Development efforts laid a foundation for THAAD Interceptor Engage on AN/TPY-2 (THAAD Mode) Radar ESG capability. This initial phase also allows other BMDS Elements with Link 16 compatibility (AEGIS BMD, PATRIOT) the capability to conduct engagement coordination with THAAD. THAAD development will evolve to achieve a more robust radar discrimination, improved fire control and launcher capabilities that facilitate communications within BMDS, and forward based engagement coordination with other BMDS elements. THAAD development also provides additional capability for other BMDS elements such as the SM3 Launch on AN/TPY-2 (THAAD Mode) Radar. Block 2.0 flight tests began in FY06 and complete in FY11. The THAAD element has the flexibility to support the objective for putting the BMDS on alert. Block 2.0 development is the foundation for the acquisition and delivery of two Block 2.0 THAAD Batteries to support operational assessment and fielding of a BMDS capability useful to the combatant commanders. The delivery of Batteries #1 and #2 consists of a basic load of 48 Interceptors, 6 Launchers, two AN/TPY-2 (THAAD Mode) Radars (one funded in the Sensors Program) and two THAAD Fire Control and Communications (TFCCs), consisting of four Tactical Support Groups (TSGs).

Common threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense (BMD) System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also used to develop the BMD System Description Document and BMD System Specification.

Block 5.0 and Sustainment: Block 5.0 is the next incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This continues the concept of a rapidly deployable configuration to support the Terminal Defense Segment (TDS) mission as well as supporting the strategic surveillance missions. Block 5.0 development will include the capability to launch THAAD interceptors using data from

other BMDS sensor elements, an expansion of the THAAD element's capability to provide THAAD sensor data to the BMDS in support of the UMDF. Block 5.0 development will include incorporation of integration of the BMDS Command and Control/Battle Management and Communications (C2BMC) Extremely High Frequency (EHF) communications, improved track correlation and engagement coordination with the BMDS, and the ability to launch THAAD interceptors based on system track and data from C2BMC. This enhanced BMDS C2BMC interface enables the THAAD Interceptor Launch on BMDS System Track Engagement Sequence Group (ESG). Development also includes the added capability to conduct Combined Test, Training, and Operations and continued participation in BMDS Integrated System Ground and Flight tests. Sustainment continues the field support and contractor logistics support for fielded Battery hardware.

- Modeling and Simulation (BMD System & Program):

Modeling and Simulation (M&S) activities support all phases of THAAD development, including development of modifications to the Interceptor, Launcher, Fire Control & Communications and Radar components flight test missions, ground tests, wargames, exercises, and performance assessments. Models and Simulations are tailored to the specific need of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definition studies, to high-fidelity models used to support engineering development, or testing and are integrated into the BMD Digital Simulations Architecture. Digital simulations support Program Assessment events, which provide critical system level performance data relative to all elements, the system engineer, M&S developers, Operational Test Activity (OTA), and the Warfighter. Further, the M&S Digital tools are accredited for each application and for specific objectives; tools are put through a rigorous verification and validation process, reviewing coding and specifications, and comparing analyses against actual flight test results. Planning support is required to assist in the V&V plan development, test execution, analysis for V&V reports and program office M&S certification. The Digital End-to-End simulation of the BMDS requires a Performance Assessment (PA) Integrated V&V Plan and Report (at both element and system level), and a PA-system level Accreditation Plan and Report.

The THAAD element will support the BMDS HWIL Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs.

THAAD's Models and Simulations efforts are focused on Development, Verification, Validation and Accreditation (VV&A) Goals. In most cases, actions in support of these goals are conducted in parallel. Three major efforts are planned in support of Model and Simulation Development goals: (1) Continue efforts with the Integrated Simulation and Tactical Software (ISTS) model, ensuring that the Simulation is current and THAAD Flight Test Compliant and can serve as a tool for risk reduction and prediction of THAAD flight testing. The THAAD program will use ISTS as the primary

model in support of Performance Assessment 09 integration; (2) Maintains Hardware-in-the-Loop facility keeping pace with both hardware and software changes to support the THAAD participation in the MDA Flight Test Program, (3) Continue hardware and software development for the Simulation-Over-Live Driver (SOLD), a THAAD tool in the Missile Defense System Exercises that supports the MDA BMDS Ground Test Campaign.

THAAD's development work in support of its VV&A Goals are focused on data reduction and analysis from both the MDA BMDS Ground Test Campaign and Flight Testing to ensure that the models used remain anchored with actual system performance data. In particular, efforts with the Ground Test Campaign will be on the GTI-04 (formally GTI-09) and GTD-04 (formally GTD-09) Hardware-in-the-Loop (HWIL) testing. In support of the BMDS Performance Assessment 2009 (PA-09), both data reduction and analysis will be provided.

THAAD will support System Pre Flight predictions for each system level flight test using the test framework set up with the BMDS configuration for a particular flight test. This provides the confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to proof out the construct of the flight test to ensure if the required data and data management plan will support System Post Flight Reconstruction objectives. System Post Flight Reconstruction (SPFR) will use a HWIL and/or a Digital M&S Environment to replicate the day of flight for the BMDS configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the critical engagement conditions (CECs) and empirical measurement events (EMEs) back to the real world event. SPFR is used for validation (anchoring) of models and simulations.

A.3 Major System Element Goals THAAD goals are synchronized with the overall MDA goals to meet the BMDS objectives in Blocks 2.0, 5.0 and Sustainment in FY08-10.

- Develop, test, verify, field and manufacture THAAD capability
- Continue component development to enhance integrated BMDS capability and efficiency; support the UMDF for Engagement Coordination, Sensor Registration, System Track, Hit/Kill Assessment and Communications
- Test and verify enhanced integrated BMDS Component Capability in an increasingly complex BMDS test program
- In partnership with the Army, provide, field and sustain THAAD capability for Operational Testing and BMDS defense operations
- Integrate THAAD into the BMDS International Strategy
- Achieve world class business processes and battle rhythm using continuous improvement techniques

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- Provide Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability

A.4 Major Events Schedule and Description

Major Event	Project	Timeframe	Description
Flight Test			
Testing Milestones			
Conduct FTT-08	BX07	1Q FY 2008	• FTT-08 was successfully conducted on 27 Oct 07, demonstrated an exo-atmospheric intercept of a unitary target against a conditioned interceptor
Conduct FTT-09	BX07	3Q FY 2008	• FTT-09, was successfully conducted on 25 June 2008, demonstrated a mid endo-atmospheric intercept of a separating
Conduct FTT-10	BX07	4Q FY 2008	• FTT-10, a "no test" due to a target failure on 17 Sep 08, was a planned dual interceptor launch demonstrating an endo-atmospheric intercept of a separating target against conditioned interceptors (DT/OT mission)
Conduct FTT-10A	BX07	2Q FY 2009	• FTT-10A, an added test, was successfully conducted on 17 Mar 09, demonstrated a dual interceptor launch with a cold conditioned interceptor with a endo-atmospheric intercept of a separating target (DT/OT mission)
Conduct FTT-11	BX07	3Q FY 2009 - 4Q FY 2009	• Exo-atmospheric intercept of a lofted spin-stabilized reoriented separating target (slipped one quarter due to target availability)
Conduct FTT-12	BX07	1Q FY 2010 - 2Q FY 2010	• A dual interceptor launch demonstrating an endo-atmospheric intercept of concurrent separating targets (slipped three quarters due to target availability and to de-conflict with other BMDS flights). Data will be collected on Empirical Measurement Events (EMEs) as well as Critical Engagement Conditions (CECs).
Conduct FTT-13	BX07	3Q FY 2010 - 4Q FY 2010	• Exo-atmospheric intercept of long range separating high velocity MRBM target (slipped three quarters due to target availability). Data will be collected on EMEs as well as CECs.
Ground Test			
Testing Milestones			
GTI-03	BX07	3Q FY 2008	• Demonstrated BMDS functionality and interoperability utilizing THAAD Radar and TFCC software
GTD-03	BX07	4Q FY 2008 - 2Q FY 2009	• Demonstrated BMDS functionality and interoperability utilizing THAAD Radar and TFCC software
GTI-04 (formally GTI-09)	BX07	1Q FY 2010 - 2Q FY 2010	• Demonstrate and assess initial C2BMC Global Engagement Manager (GEM) capabilities utilizing THAAD Radar and TFCC software
GTD-04 (formally GTD-09)	BX07	3Q FY 2010	• Demonstrate and assess initial C2BMC Global Engagement Manger (GEM) capabilities utilizing THAAD Radar and TFCC software
Contract Activity			

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Major Event	Project	Timeframe	Description
Contractual Activities & Events			
Field Support and CLS FY08 Contract Award	XX07	4Q FY 2008	• Maintenance and support for Battery components that have been delivered to the field
Field Support and CLS FY09 Contract Award	XX07	3Q FY 2009	• Maintenance and support for Battery components that have been delivered to the field
Field Support and CLS FY10 Contract Award	XX07	1Q FY 2010	• Maintenance and support for Batteries that have been delivered to the field
Block 5.0 Development Contract Award	EX07	3Q FY 2010	• Incremental Development for Block 5.0 BMDS integration
Delivery			
Block 2.0 Deliveries			
Battery #1 Initial Hardware Delivery	BX07	3Q FY 2008	Delivery of Tactical Station Group #9
Battery #1 Ground Component Deliveries Complete	BX07	3Q FY 2009	Production contract delivery of all Battery #1 Ground Components
Battery #1 Interceptor Deliveries Complete	BX07	4Q FY 2010	Production contract delivery of (24) Interceptors for Battery #1
Battery #2 Initial Hardware Delivery	BX07	4Q FY 2009	Production contract delivery of initial Battery #2 hardware
Battery #2 Ground Component Deliveries Complete	BX07	4Q FY 2009	Production contract delivery of all Battery #2 Ground Components

B. Program Change Summary	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY2009 PB)	1,045,276	1,019,073	795,659
Current President's Budget (FY2010 PB)	1,034,478	956,686	719,465
Total Adjustments	-10,798	-62,387	-76,194
Congressional Program Reductions	0	-62,387	0
Congressional Rescissions	0	0	0
Total Congressional Increases	0	0	0
Total Reprogrammings	6,363	0	0
SBIR/STTR Transfer	-17,161	0	0
Adjustments to Budget Years	0	0	-76,194

FY08 decrease of $10.798 million includes SBIR/STTR transfer and MDA adjustments.
FY09 decrease of $62.387 million reflects Congressional transfer to procurement funding ands Congressional undistributed adjustments.
FY10 decrease of $76.194 million reflects transfer of funding to procurement and MDA adjustments for infrastructure reductions and efficiencies.

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COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
BX07 Terminal High Altitude Area Defense (THAAD) Block 2.0	859,659	731,393	555,160
RDT&E Articles Qty	5	21	26

Note: Beginning in FY09 the cost associated with the manufacture of AN/TPY-2 is represented under the Sensors Program.

A. Mission Description and Budget Item Justification

The Terminal High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). The THAAD element provides the THAAD Interceptor Engage on Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode) engagement sequence of the BMDS. THAAD enhances the TDS by deepening, complementing, and extending the BMDS battle-space and capability to engage ballistic targets in the late mid-course and terminal phases of their trajectory. THAAD will also perform a sensor surveillance mission, providing sensor data to cue other elements of the BMDS. THAAD, in conjunction with the fielded PATRIOT System, provides the TDS and supports the objective of enhancing the BMDS capability. Five major components (Interceptors, Launchers, AN/TPY-2 (THAAD Mode) Radar, THAAD Fire Control and Communication (TFCC), and Peculiar Support Equipment) will be integrated into the THAAD element and the BMDS.

THAAD incremental development began with the design and development of a significant, fundamental capability against short to medium-range Ballistic Missiles and asymmetric threats inside and outside the atmosphere. This encompasses the following: (1) Test interceptor with inside and outside the atmosphere algorithms; (2) AN/TPY-2 (THAAD Mode) Radar with Initial Discrimination Capability; and (3) TFCC with tactical digital information link and defense design planner. The initial phase of development laid the foundation for the capability of other BMDS Elements (AEGIS, GMD, PATRIOT) to interoperate and conduct engagements with THAAD data via Link-16.

THAAD development evolves to achieve a more robust AN/TPY-2 (THAAD Mode) Radar discrimination, salvo firing doctrine, and the ability to operate in a full spectrum of tactical interceptor environments and survivability. To facilitate tactical employment by soldiers, it also includes TFCC embedded training, automated defense planning, and extensive interoperability using Link-16 and United States Message Text Format (USMTF) message sets with the BMDS as well as forward base engagement coordination with other BMDS elements. THAAD development provides additional capability for other BMDS elements. Block 2.0 flight tests began in FY06 and complete in FY11. The THAAD element has the flexibility to support the objective of putting the BMDS on alert. The THAAD element will support coordinated engagements with the BMDS via the BMDS Command and Control/Battle Management and Communications (C2BMC). Block 2.0 development culminates in demonstrated THAAD capabilities both inside and outside the atmosphere against the full spectrum of adversarial capabilities. The Block 2.0 development is the foundation for the acquisition and delivery of Block 2.0 THAAD Batteries #1 and #2 to support operational assessment and fielding of a BMDS capability useful to the

combatant commanders. The delivery of Batteries #1 and #2 consists of a basic load of 48 Interceptors, six Launchers, two AN/TPY-2 (THAAD Mode) Radars (provided by the Sensors Directorate) and two TFCCs consisting of 4 Tactical Support Groups (TSGs) total.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Program Management	15,655	47,339	19,344
RDT&E Articles (Quantity)	0	0	0

Program Management provides support functions across the program such as strategic planning, program integration, cost estimating, contracting, and financial management which includes preparation of financial statements, reimbursement of financial services provided by Defense Finance Accounting Service (DFAS), internal review and audit, earned-value management, and program assessments.

FY08 Accomplishments:

- Provided management, leadership, and planning for all Block 2.0 activities
- Provided salaries, travel, training, and supplies
- Continued to provide project-wide programmatic support

FY09 Planned Program:

- Provide additional management, leadership, and planning for all Block 2.0 activities
- Provide additional salaries, travel, training, and supplies
- Continue to provide project-wide programmatic support

FY10 Planned Program:

- Provide management, leadership, and planning for all Block 2.0 activities
- Provide salaries, travel, training, and supplies
- Continue to provide project-wide programmatic support

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	FY 2008	FY 2009	FY 2010
Integrated Logistics Support (ILS)	39,177	48,154	22,108
RDT&E Articles (Quantity)	0	0	0

Provides each THAAD component with all aspects of logistics support for all blocks of the program. Responsible for transportability of all THAAD system equipment and ensuring the required Government Furnished Equipment (GFE) is available as required by contract. Additionally, works with the user in developing all aspects of training for the components and has a key role in the fielding of the THAAD System to the Army.

FY08 Accomplishments:

- Conducted systems logistics demonstrations for the RADAR and TFCC components to validate maintenance procedures; re-affirm manpower and personnel requirements; and assess adequacy and completeness of Enhanced Operator/Maintainer training
- Initiated support of Government Block Qualification Test (BQT)
- Continued to update Performance Based Logistics (PBL) strategy
- Continued design and development of Tactical Active Leak Sensor System (TALSS) in support of missile transportation
- Continued design and development (CDR Complete) of Single Missile Round Transport Container (SMRTC) in support of IM/FHC testing
- Initiated New Equipment Training/Tactical Ops Course for Battery #1
- Coordinated and conducted transportation operations for THAAD Flight Test Interceptors and Ground Components
- Supported Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing to support tactical missile transport
- Finalized and secured Department of the Army approval of Basis of Issue Plans and Table of Organization and Equipment (TOE)
- Developed and staffed the Draft Materiel Fielding Plan
- Finalized military construction authorization (MCA) project in support of missile round storage at Anniston Munitions Center (ANMC)

FY09 Planned Program:

- Initiate the THAAD Depot Maintenance Study to identify reparable items and facilities/tools required for Depot Maintenance
- Complete Logistics and Supply Support Demonstrations for the Launcher component; demonstrate fault isolation/fault detection capabilities
- Continue support of Government Ground Test
- Continue update of PBL strategy and supportability concept in conjunction with the Army
- Integrate Tactical Active Leak Sensor System (TALSS) 8 channel missile monitoring capability to support loaded MRP highway and air transport capability for OCONUS deployment

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- Conduct THAAD Battery Support Center (BSC) Government Ground Test Program, Roadability/Mobility, E3, and Environmental testing.
- Complete Single Missile Round Transportation Container (SMRTC) and TALSS prototypes
- Complete THAAD BSCs for New Equipment Training (NET) and Battery #1 Collective Training
- Complete THAAD Interim Contractor Support System (ICSS) for Battery #1
- Perform THAAD missile round Stockpile to Target pathfinder mission
- Coordinate and conduct transportation operations for THAAD Flight Test Interceptors, Ground Components, and Simulation-Over-Live-Driver (SOLD) hardware
- Complete New Equipment Training/Tactical Operations Courses for Battery #1
- Publish Demilitarization/Disposal Plan
- Coordinate/provide Logistics documentation for Type Classification (TC)/Materiel Release Review Board (MRRB)
- Provide Training Base Subject Matter Expert (SME) and Unit-assigned SME
- Select Product Support Integrator; identify Product Support Providers; develop and publish Performance Based Agreements (PBAs)
- Update the Unique Identification (UID) Plan; commence Unique Item Identifier marking; update the UID Registry
- Publish Technical Manual 60 in support of Explosive Ordnance Disposal requirements
- Prepare and publish the Final Draft Materiel Fielding Plan with Draft Materiel Fielding Agreement

FY10 Planned Program:

- Implement PBL strategy working in conjunction with the Army
- Coordinate/provide Logistics documentation for Type Classification (TC) and MRRB to Army
- Update Logistics products (Logistics Management Information (LMI), Spares, etc.) required for Sustainment Strategy
- Procure Missile Handling Equipment (Side Lift Forklift) to support ingress and egress operations for bunker storage at Anniston Munitions Center (ANMC)
- Update/maintain training materials and courseware
- Perform THAAD Logistics Automated Information System tool selection trade study
- Establish THAAD ILS 24 hour maintenance and supply operations center
- Finalize and distribute the Final Materiel Fielding Plan, Materiel Fielding Agreement and Materiel Requirements List
- Update the Supportability Strategy and Manpower Estimate Report
- Finalize the Depot Maintenance Study to identify reparable items and facilities/tools required for Depot Maintenance
- Perform a Level of Repair Analysis (LORA)

- Continue to coordinate and conduct transportation operations for THAAD Flight Test Interceptors, Ground Components, and Simulation-Over-Live-Driver (SOLD) hardware
- Provide logistical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in Juniper Cobra (JC10)

	FY 2008	FY 2009	FY 2010
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)	25,886	23,952	24,570
RDT&E Articles (Quantity)	2	1	0

The THAAD Fire Control and Communication (TFCC) is composed of two Tactical Station Groups (TSGs). Each TSG consists of a Tactical Operations Station, a Launch Control Station, and a Station Support Group. The TFCC supports the BMDS Unifying Missile Defense Functions (UMDFs) and planning, control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with external air and interceptor defense and intelligence systems and agencies integrated into the BMDS.

FY08 Accomplishments:

- Delivered one TFCC TSG to Ft. Bliss for New Equipment Training.
- Delivered one TFCC TSG for Block Qualification Testing (BQT).
- Delivered Formal Release of Software Build 5.1.3 with requirements qualified.
- Completed prototype re-hosting of Software Build 5.1.3 on upgraded processors as the first software step to Fire Unit Fielding
- Identified and completed Link 16C Communication Enhancements for Software Build 5.1.3 with the latest Mil-Std-6016 as required for Joint Interoperability Test Command (JITC) certification to operate worldwide with our deployed forces.
- Prototyped and initiated upgrade from Solaris 8 to Solaris 10 Operating System for Build 5.2. Solaris providing throughput improvements and additional Information Assurance capabilities.
- Initiated implementation of Information Assurance security requirements for Build 5.2.
- Initiated Government Block Qualification Testing (BQT), to include conducting/completing Mobility/Roadability testing, and beginning Acceleration, Shock and Vibe Testing
- Conducted Army Service Level Certification Testing
- Initiated TEMPEST Testing efforts

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY09 Planned Program:

- Deliver 1 THAAD Fire Control and Communications (TFCC) Tactical Station Group (TSG) for Collective Training
- Conduct Service Level (Army) Certification Test, and Joint Interoperability Certification Testing for BMDS Link 16 and obtain initial joint certification
- Conduct Intra-Army Interoperability Certification Testing
- Conduct Voice/Data JITC on tactical test beds
- Define Requirements for TFCC Command Post to support fielding
- Complete Development Verification Testing (natural environmental testing) to verify that the design meets fielding requirements
- Develop, deliver, and maintain Software Build 5.1.5 for flight tests and Collective Training
- Complete development, deliver, and maintain Formal Release of Software Build 5.2, featuring Solaris 10 and Information Assurance for Juniper Cobra (JC10) and Fielding
- Conduct TEMPEST testing in support of fielding
- Define Link 16 requirements for Mil-Std-6016D to maintain JITC certification, approved ICPs and new BMDS requirements
- Continue Government Block Qualification Test (BQT) including conducting/completing Acceleration, Shock and Vibe Testing, and E3 Testing; and initiating Natural Environments Testing

FY10 Planned Program:

- Complete BQT including completion of Natural Environments Testing and E3 Testing
- Coordinate and verify implementation of software updates in preparation for BMDS tests, exercises and fielding
- Ensure Compliance with Information Assurance requirements, and conduct Joint Interoperability Certification Testing
- Prototype design and begin implementation of the Link 16 requirements for 6016D to maintain JITC Certification and approved ICPs
- Conduct Fire Control Obsolescence Assessment to determine sustainability requirements for TFCC fielded TSGs
- Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in Juniper Cobra (JC10)

	FY 2008	FY 2009	FY 2010
Interceptor	89,868	53,014	56,513
RDT&E Articles (Quantity)	3	4	1

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

The THAAD Interceptor is a certified round that is propelled by a single-stage, solid-propellant rocket booster. Its kill vehicle (KV) possesses a Divert and Attitude Control System (DACS) and an infrared Seeker used to destroy its target through hit-to-kill technology.

FY08 Accomplishments:

- Continued interceptor ground test program to verify missile requirements and support Materiel Release Review Board (MRRB) data requirements. Testing included combined contractor/Government Electromagnetic Environmental Effects (E3) testing at White Sands Missile Range (WSMR) and Redstone Technical Test Center (RTTC).
- Developed and implemented a tactical missile configuration that maintains the test missile mass properties by replacing Range Safety, Instrumentation, and Telemetry specific hardware with ballast and developed applicable test software to checkout the functionality of the tactical configuration
- Delivered three flight test vehicles
- Initiated Interceptor Government Block Qualification Test (BQT) program planning.
- Initiated production of 2 BQT test articles
- Maintained formal release of interceptor Avionics Flight Software (AFS)
- Implemented several AFS modifications and requalification activities including KV Voltage changes, exception handling in Discrimination (DIS), Plant Estimates (PTE) fuel remaining calculation, and improved Designation Data Downlink (DDL) coherency
- Supported Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing, including successful completion of 40 foot drop test, which demonstrated the Missile Round Pallet (MRP) can withstand exposure to inadvertent shocks due to an accidental 40 foot drop.
- Began production of energetic rounds to support the Thermal Stability and 7-foot Flat Drop Tests.
- Completed redesign of assemblies with obsolescence for pure tin hardware to enhance reliability of fielded missiles
- Performed interceptor assembly redesign and delta qualification activities for components, to include the Laser Initiated Ordnance System (LIOS), Two-Axis Angular Rate Sensor (TARS), Shroud, Canister; and, completed Boost Motor (BM) qualification, completed Thrust Vector Actuation (TVA) qualification, and Inertial Measurement Unit (IMU) qualification at the Seeker level

FY09 Planned Program:

- Inspect and refurbish Flight Test STS Vehicle and install Range Safety Instrumentation System (RSIS) components for flight tests
- Perform 8 month ground test activity to determine suitability of fielded or storage materiels for use, evaluate the effects of environments, measure deterioration, identify failure modes, and establish / predict service and storage life

- Deliver two flight test vehicles and support simulation and HWIL testing
- Continue to support flight test program at the Pacific Missile Range Facility.
- Complete interceptor delta qualification on the LIOS, TARS, Shroud, Separation System, KV Battery and Canister.
- Perform Insensitive Munitions/Final Hazard Classification (IM/FHC) bullet impact, fast cook-off, fragment impact, thermal stability, missile round 7 foot flat drop and SMRTC 40 foot drop test activities
- Deliver two Block Qualification Test (BQT) interceptors and complete government BQT, by subjecting these interceptors to natural and induced environments, one at high temperature (Missile Safety Testing (MST)#1) and the other at low temperature (MST#2).
- Continue maintaining formal release of interceptor Avionics Flight Software (AFS)

FY10 Planned Program:

- Deliver one flight test vehicle and support simulation and HWIL testing
- Continue to support flight test program at the Pacific Missile Range Facility.
- Support transition of flight test program to Reagan Test Site (RTS), to include migrating data analysis capability from PMRF to RTS
- Perform Insensitive Munitions/Final Hazard Classification (IM/FHC) 62 inch side drop in Single Missile Round Transportation Container (SMRTC) with Thermally Initiated Venting System (TIVS), fast cook-off in SMRTC with TIVS, slow cook-off in SMRTC with TIVS, 2 fast cook-offs in MRP with TIVS (live rounds), and 2 fast cook-offs in MRP with TIVS (inert rounds) test activities
- Continue maintaining formal release of interceptor Avionics Flight Software (AFS)

	FY 2008	FY 2009	FY 2010
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar	148,551	78,202	50,397
RDT&E Articles (Quantity)	0	0	0

The AN/TPY-2 (THAAD Mode) Radar is a solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The radar uses fence, volume, and cued search modes, and provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The radar hardware is a transportable system composed of the Antenna Equipment Unit, Electronics Equipment Unit, Cooling Equipment Unit, and the Prime Power Unit (PPU).

Beginning in FY09, the manufacturing cost associated with the AN/TPY-2 (THAAD Mode) Radars for THAAD Batteries are provided for under the Sensors Program Element.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY08 Accomplishments:

- Continued to support the flight test program at the Pacific Missile Range Facility (PMRF)
- Delivered formal release of Software Build 4.2.3
- Integrated Engineering Release of Software Build 4.2.4 in the System Integration Laboratory (SIL)
- Continued development of the Prime Power Unit (PPU)
- Initiated support to Government Block Qualification Testing (BQT)
- Continued to maintain Engineering Release of Software Build 4.2.4
- Initiated development of Radio Frequency Scene Generation capability to test advanced algorithms

FY09 Planned Program:

- Continue to support the flight test program at PMRF
- Completed development of Radio Frequency Scene Generation capability to test advanced algorithms
- Complete Formal Release of tactical software Build 4.2.4
- Complete two Prime Power Units (PPUs)
- Continue to support Government Block Qualification Test (BQT)
- Support planning, integration, and analysis of Juniper Cobra (JC10)

FY10 Planned Program:

- Continue to support the flight test program at PMRF.
- Support transition of flight test program to Reagan Test Site (RTS)
- Continued to maintain Formal Release of Software Build 4.2.4
- Complete Government BQT
- Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in Juniper Cobra (JC10)

	FY 2008	FY 2009	FY 2010
Launcher	4,547	18,069	7,715
RDT&E Articles (Quantity)	0	2	0

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

The THAAD Launcher consists of a U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated missile round pallet and supports and secures eight ready-to-launch interceptors.

FY08 Accomplishments:

- Initiated Combined Missile/Launcher E3 Block Qualification Testing (BQT)
- Completed Formal Release of Software Build 4.01.01 and delivered to the System Integration Laboratory (SIL) for flight test
- Supported flight testing at Pacific Missile Range Facility (PMRF)
- Continued SIL Hardware-in-the-loop (HWIL) integration activities of hardware and software in preparation for flight test
- Initiated planning for Juniper Cobra (JC10)

FY09 Planned Program:

- Deliver one Launcher for Collective Training
- Deliver one Launcher for Battery 1
- Continue SIL HWIL integration activities of hardware and software and deliver Launcher to collective training in preparation for flight test
- Continue Support flight testing at PMRF
- Complete Carrier Electronics Module (CEM) Qualification Testing
- Complete Formal Release of Software Build 4.02
- Complete Combined Missile/Launcher E3 Block Qualification Testing (BQT)
- Initiate Launcher Mobility/Environmental BQT
- Continue to support planning of Juniper Cobra (JC10)

FY10 Planned Program:

- Continue to support the flight test program at PMRF
- Support transition of flight test program to Reagan Test Site (RTS)
- Continue SIL HWIL integration activities of hardware and software in preparation of flight test
- Complete all Launcher Government BQT
- Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT)

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

	FY 2008	FY 2009	FY 2010
System Test	179,335	154,602	94,345
RDT&E Articles (Quantity)	0	0	0

THAAD System Test is responsible for developing and executing all aspects of the THAAD program flight test objectives, ballistic interceptor target solutions, Live Fire Test and Evaluation (LFT&E) program, system flight test execution, Government Ground Test (GGT), range facility preparations, documentation requirements, data analysis and reporting.

FY08 Accomplishments:

- Conducted flight test planning and analysis, range interface, coordination with Operational Test Agencies (OTAs), flight test operations, post-flight test analysis and reporting, data distribution and data storage at Pacific Missile Range Facility (PMRF)
- Continued support of Target Launch Platform in support of flight testing
- Assessed proposed target solutions for flight test program
- Monitored targets design, development, delivery, and execution to support flight test program
- Initiated TFCC (THAAD Fire Control/Communication) and Radar Government Block Qualification Test (BQT) with Mobility Performance and Automotive Safety testing
- Initiated post-mission BQT data distribution and storage
- Continued E3 Interceptor and Launcher Design Verification Test (DVT)/BQT
- Continued Live Fire Test & Evaluation (LFT&E) Program
- Initiated detailed operational test planning for Force Development Experiment (FDE) and Limited User Test (LUT)
- Initiated planning for Juniper Cobra (JC10)
- Implemented Insensitive Munitions/Final Hazard Classification (IM/FHC) design and began testing
- Initiated Government Ground Test (GGT) data management, distribution, and archival/storage
- Supported Aegis JFTM-1 and FTM-14 as part of the BMDS flight test program at PMRF
- Provided data management, facilities operations, and post test analysis and reporting support in support of BMDS System Test

FY09 Planned Program:

- Continue detailed operational test planning for FDE and LUT

- Continue flight test planning and analysis, range interface, coordination with OTAs, flight test operations, post-flight test analysis and reporting, data distribution and data storage at PMRF
- Initiate flight test planning and analysis, range interface, coordination with OTAs, flight test operations, post-flight test analysis and reporting, data distribution and data storage at Reagan Test Site (RTS)
- Continue Government BQT with missile drop testing and Environmental Safety testing, Launcher Mobility Performance and Automotive Safety testing, TFCC Electromagnetic testing, and Radar, TFCC, Launcher Natural Environments testing
- Continue post-mission BQT data distribution and storage
- Initiate Battery Support Center (BSC) Government BQT with Mobility Performance and Automotive Safety testing, Electromagnetic testing, and Natural Environments testing
- Continue to assess proposed target solutions for flight test program
- Monitor targets design, development, delivery, and execution to support flight tests
- Continue Live Fire Test & Evaluation (LFT&E) Program and initiate Light Gas Gun tests
- Continue to support planning for Juniper Cobra (JC10)
- Continue IM/FHC design and testing
- Initiate planning and design of next generation Launch & Test Support Equipment
- Government Ground Test (GGT) data management, distribution, and archival/storage
- Provide data management, facilities operations, and post test analysis and reporting support in support of BMDS System Test

FY10 Planned Program:

- Complete flight test planning and analysis, range interface, coordination with Operational Test Agencies (OTAs), flight test operations, post-flight test analysis and reporting, data distribution and data storage at PMRF
- Collect and support analysis of Empirical Measurements of Effectiveness (EME) and Critical Engagement Conditions (CEC) data during flight testing
- Continue design and development of next generation Launch & Test Support Equipment
- Complete transition to Reagan Test Site
- Complete execution of Government BQT with the completion of Radar, TFCC, Launcher Natural Environments testing, Radar Electromagnetic testing, Power Unit Mobility Performance and Automotive Safety testing
- Support THAAD participation in Juniper Cobra (JC10)
- Conduct Force Development Experimentation (FDE) and Limited User Test (LUT) to support development of an operation support report
- Support development of Operation Support Report

- GGT data management, distribution, and archival/storage
- Provide data management, facilities operations, and post test analysis and reporting support in support of BMDS System Test

	FY 2008	FY 2009	FY 2010
Weapon Sys Engr & Integ Team (WSEIT)	58,213	64,837	56,965
RDT&E Articles (Quantity)	0	0	0

WSEIT is responsible for all engineering efforts required to translate approved BMDS capabilities and requirements into operationally suitable THAAD capability blocks; coordinating and conducting implementation of the UMDF, requirements analysis, system integration and verification, software engineering to include independent verification and validation, configuration management, and BMDS integration for each THAAD component by working through the Integrated Product Team (IPT) process on a balanced contractor-government team. Additionally, THAAD WSEIT is responsible for all aspects of risk management, system security and information assurance for the THAAD program.

FY 08 Accomplishments:

- Continued support of flight test program at Pacific Missile Range Facility (PMRF)
- Conducted pre-flight testing in the System Integration Laboratory (SIL) Hardware-in-the Loop (HWIL) facility
- Continued System Analysis in support of flight testing
- Completed validation of the end-to-end digital simulation using flight test data
- Continued planning the integration and implementation of THAAD and its components in the BMDS through participation in the MDA Ground Test Campaign and COCOM exercises/war games
- Continued development of Simulation-Over-Live Driver (SOLD)
- Performed SIL HWIL integration of Formal Release of Interceptor Software Build 7.0-7.2, Launcher Software Build 4.0-4.1, Fire Control Software Build 5.0-5.1 and THAAD Radar Software Build 4.0-4.2.3
- Continued to support the development of BMDS Interface Control Documents (ICDs)
- Collaborated in the System Requirements Review for the BMDS Integrated Build D Requirements and conducted THAAD's Element Requirement Review to support the upcoming System/Subsystem Review
- Converted System Integration Laboratory (SIL) to the Battery configuration

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY 09 Planned Program:

- Continue support of flight test program at Pacific Missile Range Facility (PMRF)
- Continue supporting pre-flight testing in the SIL HWIL facility
- Provide System Analysis in support of flight testing
- Initiate Element Verification in support of Block 2 Completion
- Continue integration and implementation of THAAD and its components in the BMDS through participation in MDA Ground Test Campaign and COCOM war games, and exercises, as well as Performance Assessments
- Continued development of Simulation-Over-Live Driver (SOLD)
- Support planning, integration, analysis and execution of Juniper Cobra (JC10)
- Support Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing
- Initiate support for transition from PMRF to Reagan Test Site (RTS)
- Integrate Simulation-Over-Live Driver (SOLD) into flight test program
- Continue the development of THAAD BMDS Unifying Missile Defense Functions (UMDF) through demonstrations of the THAAD Prototype Planner, initial demonstration of use of Extremely High Frequency (EHF) communications and interoperability opportunities at both flight and ground exercises
- Participate in the BMDS System/Subsystem Requirements Review in support of the Build D Integrated System Specification and associated System Interface Documents
- Complete ISP, Link 16, and United States Message Text Format (USMTF) Interoperability Milestones, begin Interoperability Certification testing, draft Networthiness Certification documentation, complete COMSEC supportability statement, conduct Maintainability Demo, and complete Software Suitability procedure/checklist

FY10 Planned Program:

- Continue support of flight test program at Pacific Missile Range Facility (PMRF)
- Analyze Empirical Measurements of Effectiveness (EME) and Critical Engagement Conditions (CEC) data during flight testing
- Complete transition to Reagan Test Site
- Continue supporting pre-flight testing in the SIL HWIL facility
- Continue integration and implementation of THAAD and its components in the BMDS through participation in MDA Ground Test Campaign and COCOM war games, and exercises, as well as Performance Assessments

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

- Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in Juniper Cobra (JC10)
- Complete Block 2.0 Element Verification
- Conduct engineering, integration, and coordination activities in support of development of suitability statements for THAAD Materiel Release
- Information Assurance Vulnerability Management
- Complete Interoperability certification and Net-worthiness certification
- Continue the development of THAAD BMDS Unifying Missile Defense Functions (UMDF) through demonstrations and interoperability opportunities at both flight and ground exercises

	FY 2008	FY 2009	FY 2010
Batteries #1 and #2	246,945	193,594	187,873
RDT&E Articles (Quantity)	0	14	25

Batteries #1 and #2 will include a basic load of 48 Interceptors, six Launchers (1 provided by the development contract), two Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode) Radars (provided by Sensors Directorate), 4 THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) (2 provided by the development contract), the required Peculiar and Common Support Equipment, and two Interceptors for flight test (provided to development contract). Delivery of Battery hardware will begin in FY09 and FY10, respectively. Following operational testing, the Batteries will be fielded to the Army in FY10 and FY11.

FY08 Accomplishments:

- Continued the fabrication and assembly of Interceptor components
- Continued the fabrication and assembly of Launcher and TFCC TSG components
- Initiated the fabrication and assembly of Missile Round Trainer (MRT)
- Continued the procurement of Government Furnished Equipment (GFE) to support Batteries #1 and #2
- Initiated the procurement of Common Support Equipment (CSE)
- Completed the procurement of Initial Spares
- Initiated planning for Ground Test Element Integration and Checkout (EICO)

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY09 Planned Program:

- Deliver two TFCC TSGs, five Launchers, six Interceptors and 1 flight test vehicle
- Complete the final assembly of Launchers
- Continue the fabrication and assembly of initial spares
- Complete the fabrication and assembly of MRT
- Continue the procurement and assembly of GFE
- Continue the procurement of CSE
- Initiate the fabrication and assembly of Battery Support Center (BSC)
- Initiate the fabrication and assembly of Interim Contractor Support System (ICSS)
- Conduct Ground Test EICO for Battery 1

FY10 Planned Program:

- Deliver 25 Interceptors
- Complete Battery 2 ground component hardware integration

	FY 2008	FY 2009	FY 2010
Common Threat	0	2,467	1,185
RDT&E Articles (Quantity)	0	0	0

Common threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense (BMD) System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also is used to develop the BMD System Description Document and BMD System Specification.

FY09 Planned Program:

- Publish Adversary Data Package Addendum 3
- Produce for GT-10 and PA-09 Scenario data.
- Produce and update Scenario data to support BMDS Build D Specification development and verification.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY10 Planned Program:

- Publish Adversary Data Package Addendum 3
- Produce for GT-11 and PA-10 Scenario data
- Produce and update Scenario data to support BMDS Build D Specification development and verification

	FY 2008	FY 2009	FY 2010
Models and Simulations - TH Block 2.0 Development-Hardware-in-the-loop(HWIL)	0	0	34,145
RDT&E Articles (Quantity)	0	0	0

The THAAD element will support the BMDS HWIL Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single 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 Hardware-in-the-Loop (HWIL) also provides the core Lethality and Phenomenology models for use in analysis and BMDS and Element mission requirements. BMDS HWIL additionally maintains the Advanced Research Center and Simulation Center High Performance Computing Capabilities to support test and Modeling and Simulation (M&S) requirements across MDA.

FY10 Planned Program:

- Continue to develop, integrate, and test a common BMDS HWIL stimulation framework with the Elements for the GTI-04, GTD-04 ground tests
- Conduct BMDS HWIL stimulation framework Verification and Validation (V&V) for BMDS GTI-04 and GTD-04 ground tests
- Define and plan for enhancement to the Single Stimulation Framework (SSF) required for execution of the GT-05 campaign to include identification of interdependencies required for execution
- Provide development, Operations and Maintenance, and Independent V&V of standardized phenomenology and lethality tools and models for the common environmental toolset
- Integrate common Radar Digital Signal Injection System (RDSIS) for X-Band radars.
- Initiate integration of the BMDS stimulation framework with the ARROW HWIL facility in Israel
- Evolve and enhance the SSF to provide increased Warfighter support, specifically Training and Exercises
- Integrate the SSF with additional Allied/Coalition elements to expand Distributed Ground Test and Exercise venues
- Initiate integration of the SSF with the Digital Stimulation Architecture
- Product Line development, sustainment, maintenance and product support for HWIL products

- Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for the GTX, GTI, GTD ground tests, ALTBMD exercises, Assured Response (AR) exercises, Juniper Cobra exercises, Near-Term Discrimination (NTD) excursions tests, and Concurrent Test, Training, and Operations (CTTO) demos
- Conduct BMDS HWIL stimulation framework V&V for BMDS GTX, GTI, GTD ground tests, ALTBMD exercises, AR exercises, Juniper Cobra exercises, and CTTO demos
- Provide systems engineering support to upgrade the BMDS stimulation framework to support wideband debris for BMDS sensors
- Initiate integration of the BMDS stimulation framework with the additional MDA/SN sensors
- Provide common threat representations and scenarios to meet specific event and customer requirements for BMDS HWIL Framework

	FY 2008	FY 2009	FY 2010
MDA Infrastructure	634	47,163	0
RDT&E Articles (Quantity)	0	0	0

FY 08 Planned Program:

- Provided dedicated Information Technology services for mission specific research and test efforts to included classified and unclassified networks

FY 09 Planned Program:

- Provide Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability
- Continue to provide dedicated Information Technology service for mission specific research and test efforts to include classified and unclassified networks

	FY 2008	FY 2009	FY 2010
Targets	50,848	0	0
RDT&E Articles (Quantity)	0	0	0

THAAD provides funds for integrated ballistic missile target hardware (boosters, launch vehicles, reentry vehicles, and associated objects), launch services to include mission planning, range and element data deliverables, communications security equipment and management, target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays), logistics support, GFE and services,

transportation, mission assurance and mission coordination with element and range to support flight tests which support the continued development and verification of the BMDS.

Terminal High Altitude Area Defense (THAAD) provides funds for integrated ballistic missile target hardware (boosters, launch vehicles, reentry vehicles, and associated objects), launch services to include mission planning, range and element data deliverables, communications security equipment and management, target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays), logistics support, GFE and services, transportation, mission assurance and mission coordination with element and range to support flight tests which support the continued development and verification of the BMDS.

FY08 Accomplishments:

- Conducted mission planning and mission assurance, coordinated range activities, completed target build, executed target missions, collected and analyzed target system data for BMDS flight tests with THAAD

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters - MDA	83,907	81,174	57,403						

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

D. Acquisition Strategy

THAAD implements the Missile Defense Agency (MDA) capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition in accordance with the MDA approved block structure. The acquisition strategy consists of the following: (1) The THAAD Block 2.0 development program is already on contract. This Cost Plus Award Fee (CPAF) was awarded August 4, 2000; (2) The Batteries #1 and #2 contract was awarded on December 22, 2006, and consists of a Sole Source, CPAF/Cost Plus Incentive Fee (CPIF) contract to procure Interceptors, Launchers, THAAD Fire Control and Communication and Peculiar Support Equipment hardware; (3) The Sole Source contract was awarded on February 12, 2007, to procure the Army Navy/Transportable Radar Surveillance, - Model 2 Radar (managed by the Sensors Program).

The MDA and THAAD Block 2.0 HWIL development program utilizes competitively awarded CPAF/CPIF service and product development contracts. The Army's Research, Development, and Engineering Center (RDEC) Echelon 3 Engineering Activity provides direct Systems Engineering support and contractor oversight.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Program Management								
Prime Contract	SS/CPAF	LMSSC/ Sunnyvale, CA & Huntsville, AL	12,32.78	35,029	1/2Q	10,079	1/2Q	57,435
Integrated Logistics Support (ILS)								
Prime Contract	SS/CPAF	LMSSC/ Huntsville, AL	30,664	29,391	1/2Q	6,340	1/2Q	66,395
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)								
Prime Contract	SS/CPAF	LMSSC and Raytheon/ Huntsville, AL	24,753	19,705	1/2Q	13,006	1/2Q	57,464
Interceptor								
Prime Contract	SS/CPAF	LMSSC/ CA, TX, AL, MA, NH, IL, FL & MD	79,455	37,048	1/2Q	47,308	1/2Q	163,811
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar								
Prime Contract	SS/CPAF	Raytheon// Bedford, MA	143,166	78,202	1/2Q	50,397	1/2Q	271,765
Launcher								
Prime Contract	SS/CPAF	LMSSC/ Huntsville, AL, Camden, AK, Dallas & Lufkin, TX	3,666	13,543	1/2Q	4,064	1/2Q	21,273
System Test								

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Prime Contract	SS/CPAF	LMSSC/ Sunnyvale, CA; Huntsville, AL; NM & HI	88,047	67,273	1/2Q	17,395	1/2Q	172,715
Weapon Sys Engr & Integ Team (WSEIT)								
Prime Contract	SS/CPAF	LMSSC/ Sunnyvale, CA & Huntsville, AL	30,609	24,423	1/2Q	13,981	1/2Q	69,012
Batteries #1 and #2								
Prime Contract	SS/CPIF	LMSSC/ Sunnyvale, CA & Huntsville, AL; NM & HI	189,000	193,594	1/2Q	187,873	1/2Q	570,467
Prime Contract	SS/CPIF	Raytheon/ Wolburn, MA; Huntsville, AL	56,000	0	N/A	0	N/A	56,000
			0	0	N/A	0	N/A	
Common Threat								
			0	2,467	N/A	1,185	N/A	3,652
Models and Simulations - TH Block 2.0 Development-Hardware-in-the-loop(HWIL)								
			0	0	N/A	34,145	N/A	34,145
MDA Infrastructure (QS, DEP, DEE, DOB)								
			0	47,163	N/A	0	N/A	47,163
Targets								
Subtotal Product Development			657,687	547,838		385,772		1,591,297

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Program Management								
SETA	C	Multiple to include Dynetics, BAE, & L3/ Huntsville, AL Rockville, MD & Salt Lake City, UT	3,206	6,428	1/2Q	5,607	1/2Q	15,241
MDA Program Support	C	MDA/ Arlington, VA	122	5,136	1/2Q	2,616	1/2Q	7,874
OGA	MIPR	Multiple to include IMMC & USAADASCH/ Huntsville,	0	746	1/2Q	1,042	1/2Q	1,788
Integrated Logistics Support (ILS)								
SETA	C	Multiple to include Dynetics, TSA & BAE/ Huntsville, AL & Rockville, MD	2,568	8,963	1/2Q	8,534	1/2Q	20,065
OGA	MIPR	Multiple to include IMMC & USAADASCH/ Huntsville, AL & Ft. Bliss	3,794	5,534	1/2Q	7,234	1/2Q	16,562
MDA Program Support	C	MDA/ Arlington, VA	304	4,266	1/2Q	0	N/A	4,570

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
GFE	MIPR	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC/ Ft Monmouth, NJ, Warren, MI, & Huntsville, AL	1,847	0	N/A	0	N/A	1,847
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)								
SETA	C	Multiple to include Dynetics, DCD, & Davidson Tech/ Silver Spring, MD & Huntsville, AL	303	1,647	1/2Q	1,442	1/2Q	3,392
OGA	MIPR	Multiple to include NRDEC, RDEC & SMDC/ Natick MA & Huntsville, AL	584	233	1/2Q	143	1/2Q	960
MDA Program Support	C	MDA/ Arlington, VA	246	2,367	1/4Q	9,979	1/2Q	12,592
			0	0	N/A	0	N/A	
Interceptor								
SETA	C	Multiple to include BAE, TSI & L3/ Huntsville, AL & Salt Lake City, UT	5,147	6,480	1/2Q	5,959	1/2Q	17,586
OGA	MIPR	Multiple to include RDEC & SMDC/ Huntsville, AL	4,478	3,011	1/2Q	3,246	1/2Q	10,735

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
MDA Program Support	C	MDA/ Arlington, VA	788	6,475	1/2Q	0	1/2Q	7,263
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar								
SETA	C	Multiple to include Dynetics & GA Tech/ Huntsville, AL and GA	2,367	0	N/A	0	N/A	2,367
OGA	MIPR	Multiple to include CECOM, RDEC & SMDC/ Ft Monmouth NJ and Huntsville, AL	1,598	0	N/A	0	N/A	1,598
MDA Program Support	C	MDA/ Arlington, VA	1,420	0	N/A	0	N/A	1,420
Launcher								
SETA	C	Teledyne Solutions/ Huntsville, AL	748	684	1/2Q	482	1/2Q	1,914
OGA	MIPR	RDEC & SMDC/ Huntsville, AL	97	398	1/2Q	340	N/A	835
MDA Program Support	C	MDA/ Arlington, VA	36	3,444	1/2Q	2,829	N/A	6,309
			0	0	N/A	0	N/A	
System Test								
SETA	C	Multiple to include Dynetics, L3 & TSI/ Huntsville, AL	13,065	21,022	1/2Q	18,854	N/A	52,941

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
OGA	MIPR	Multiple to include WSMR, PMRF, ATEC, RDEC & SMDC/ NM, HI, VA, & Huntsville, AL	64,074	54,846	1/2Q	57,040	1/2Q	175,960
MDA Program Support	C	MDA/ Arlington, VA	14,149	11,461	1/2Q	1,056	1/2Q	26,666
Weapon Sys Engr & Integ Team (WSEIT)								
SETA	C	Multiple to include Dynetics, TSA and L3/ Huntsville, AL & Salt Lake City, UT	12,582	11,004	1/2Q	7,454	1/2Q	31,040
OGA	MIPR	Multiple to include RDEC & SMDC/ Huntsville, AL	14,718	9,621	1/2Q	14,642	1/2Q	38,981
MDA Program Support	C	MDA/ Arlington, VA	304	19,789	1/2Q	20,889	1/2Q	40,982
Batteries #1 and #2								
GFE	MIPR	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC/ Ft Monmouth, NJ, Warren, MI, & Huntsville, AL	1,945	0	N/A	0	N/A	1,945

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
CSE	MIPR	Multiple to include CECOM, TACOM, & GSA/ Ft Monmouth, NJ, Warren, MI, & Huntsville, AL	3,700	0	N/A	0	N/A	3,700
Subtotal Support Costs			150,490	183,555		169,387		503,433

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
System Test								
Targets			50,848	0	4Q	0	N/A	50,848
Subtotal Test and Evaluation			50,848	0		0		50,848

Remarks

IV. Management Services Cost ($ in Thousands)

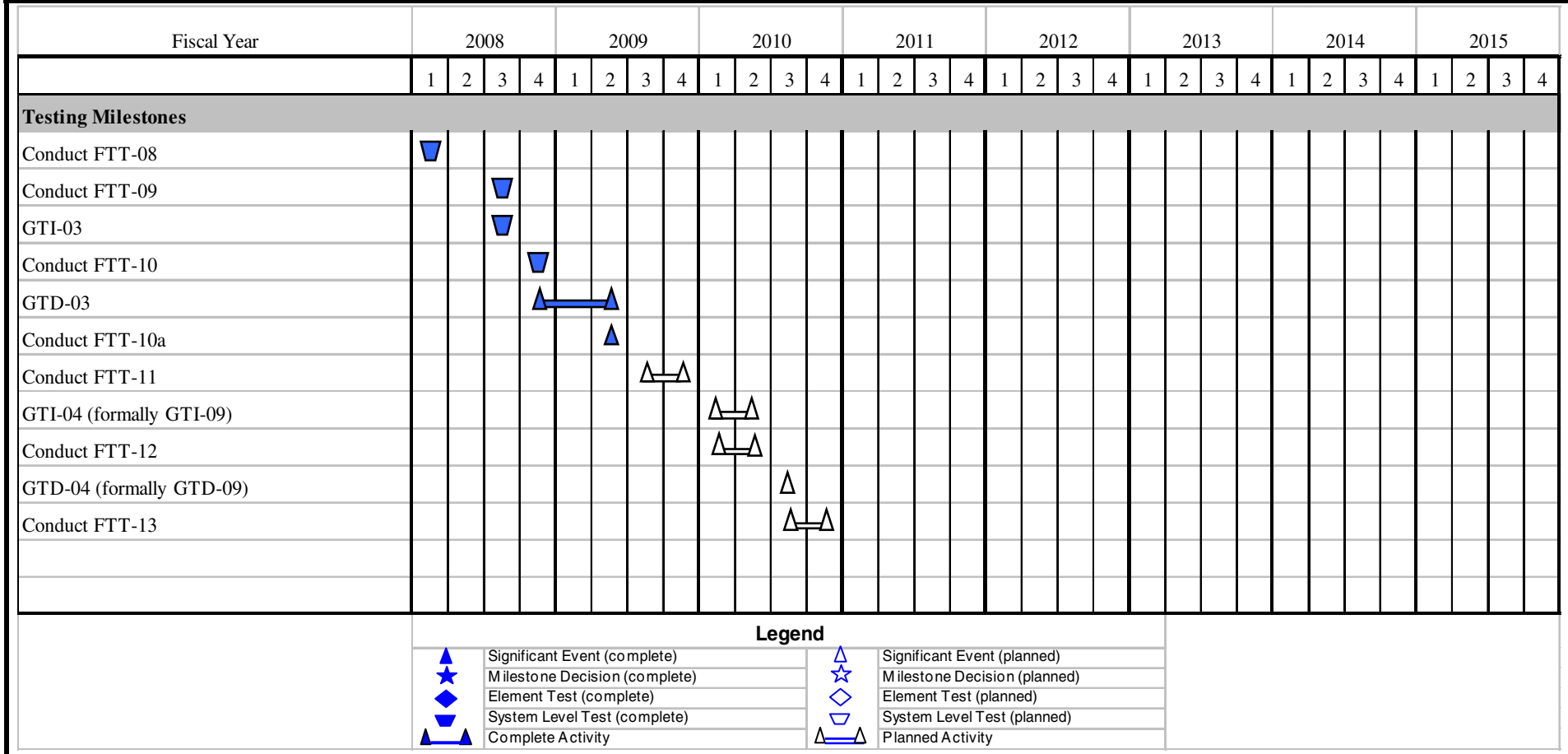
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Subtotal Management Services			634					634

Remarks

Project Total Cost			859,659	731,393		555,610		2,146,212

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



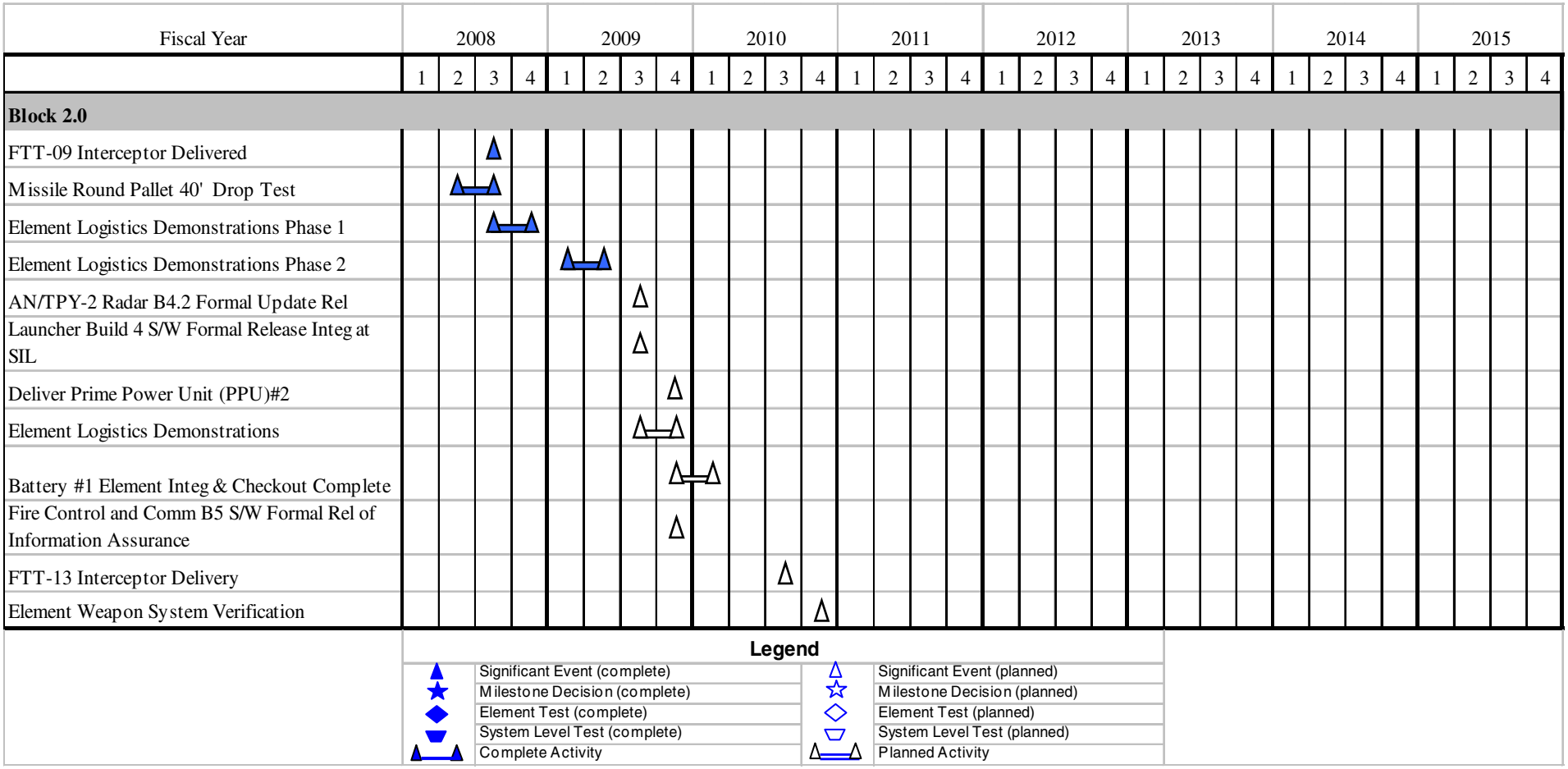
Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block 2.0																																
AN/TPY-2 Radar B4.2 S/W Formal Rel Integ at SIL	◆																															
AN/TPY-2 Radar #2 E3 Testing Complete	◆																															
Fire Control and Comm B5 S/W Formal Rel at SIL		▲																														
AN/TPY-2 Radar #2 Avail for Block Qual Test			▲																													
Fire Control & Comm B5 S/W Formal Rel of Link 16C				▲																												
FTT-10 Interceptors (2) Delivered				▲																												
Deliver Prime Power Unit (PPU) #1						▲																										
Integrated Baseline Review Complete						▲																										
FTT-11 Interceptor Delivery							△																									
FTT-12 Interceptor (1 of 2) Deliver									△																							
FTT-12 Interceptor (2 of 2) Deliver									△																							

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: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Deliveries																																
Block 2.0 Deliveries																																
Battery #1 Initial Hardware Delivery			▲																													
Battery #1 Ground Component Deliveries Complete							△																									
Battery #1 8th Interceptor Delivery									△																							
Battery #1 Interceptor Deliveries Complete												△																				
Battery #2 Initial Hardware Delivery								△																								
Battery #2 Ground Component Deliveries Complete								△																								

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: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Testing Milestones								
Conduct FTT-08	1Q							
Conduct FTT-09	3Q							
GTI-03	3Q							
Conduct FTT-10	4Q							
GTD-03	4Q	1Q-2Q						
Conduct FTT-10a		2Q						
Conduct FTT-11		3Q-4Q						
GTI-04 (formerly GTI-09)			1Q-2Q					
GTD-04 (formerly GTD-09)			3Q					
Conduct FTT-12			1Q-2Q					
Conduct FTT-13			3Q-4Q					
Block 2.0								
AN/TPY-2 Radar B4.2 S/W Formal Rel Integ at SIL	1Q							
AN/TPY-2 Radar #2 E3 Testing Complete	1Q							
Interceptor Block Qualification Test		3Q-4Q	1Q-2Q					
FTT-12 Interceptor (2 of 2) Deliver			1Q					
Fire Control and Comm B5 S/W Formal Rel at SIL	2Q							
Integrated Baseline Review Complete		2Q						
AN/TPY-2 Radar #2 Avail for Block Qual Test	3Q							
AN/TPY-2 Block Qualification Test (BQT)	2Q-4Q	1Q-4Q	1Q-3Q					
Fire Control and Comm Block Qual Test (BQT)	2Q-4Q	1Q-4Q	1Q-3Q					
Fire Control & Comm B5 S/W Formal Rel of Link 16C	4Q							
Deliver Prime Power Unit (PPU) #1		2Q						
Launcher Block Qualification Test (BQT)	3Q-4Q	1Q-4Q	1Q-3Q					
FTT-12 Interceptor (1 of 2) Deliver			1Q					
FTT-11 Interceptor Delivery		3Q						
FTT-10 Interceptors (2) Delivered	4Q							
Element Logistics Demonstrations		3Q-4Q						
FTT-13 Interceptor Delivery			3Q					

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Element Weapon System Verification			4Q					
FTT-09 Interceptor Delivered	3Q							
Fire Control and Comm B5 S/W Formal Rel of Information Assurance		4Q						
Missile Round Pallet 40' Drop Test	2Q-3Q							
Element Logistics Demonstrations Phase 1	3Q-4Q							
Element Logistics Demonstrations Phase 2		1Q-2Q						
Insensitive Munitions/ Hazards Testing Phase 1		1Q-2Q						
AN/TPY-2 Radar B4.2 Formal Update Rel		3Q						
Deliver Prime Power Unit (PPU)#2		3Q						
Insensitive Munitions/Hazards Testing Phase 2		3Q						
Launcher Build 4 S/W Formal Release Integ at SIL		3Q						
Battery #1 Element Integ & Checkout Complete		4Q	1Q					
Insensitive Munitions/Hazards Testing Phase 3			1Q-4Q					
Block 2.0 Deliveries								
Battery #1 Initial Hardware Delivery	3Q							
Battery #1 Ground Component Deliveries Complete		3Q						
8th Battery Interceptor Delivery			1Q					
Battery #1 Interceptor Deliveries Complete			4Q					
Battery #2 Initial Hardware Delivery		4Q						
Battery #2 Ground Component Deliveries Complete		4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
EX07 Terminal High Altitude Area Defense (THAAD) Block 5.0	0	0	60,417
RDT&E Articles Qty	0	0	0

A. Mission Description and Budget Item Justification

Block 5.0 is the next incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This continues the concept of a rapidly deployable configuration to support the Terminal Defense Segment (TDS) mission as well as supporting the strategic surveillance missions. Block 5.0 development will include the capability to launch THAAD interceptors using data from other BMDS sensor elements, an expansion of the THAAD element's capability to provide THAAD sensor data to the BMDS in support of the UMDF. Block 5.0 development will include incorporation of integration of Extremely High Frequency (EHF) communications, improved track correlation and engagement coordination with the BMDS, and the ability to launch THAAD interceptors based on system track data from the BMDS Command and Control/Battle Management and Communications (C2BMC). This enhanced BMDS C2BMC interface enables the THAAD Interceptor Launch on BMDS System Track Engagement Sequence Group (ESG). Development also includes exploration of risk reduction activities associated with extended range booster capability, and the added capability to conduct Combined Test, Training, and Operations and continued participation in BMDS Integrated System Ground and Flight tests. Sustainment continues the field support and contractor logistics support for fielded Battery hardware. Block 5.0 AN/TPY-2 Radar development will be performed under the Sensors Program Element and integrated into the THAAD weapon system.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Weapon Sys Engr & Integ Team	0	0	29,685
RDT&E Articles (Quantity)	0	0	0

Responsible for all engineering efforts required to translate approved Ballistic Missile Defense System (BMDS) capabilities and requirements into operationally suitable THAAD capability blocks. Coordinate and conduct requirements analysis, system integration and verification, software engineering to include independent verification and validation, configuration management, and BMDS integration for each THAAD component by working through the Integrated Product Team (IPT) process on a balanced contractor-government team. Additionally, THAAD WSEIT is responsible for all aspects of risk management, system security, and information assurance for the THAAD program.

FY10 Planned Program:

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

- Support C2BMC in the integration of EHF communication capabilities into the THAAD weapon system
- Continue the development of THAAD BMDS UMDFs to include resolution process for correlation issues involving Link-16 Tracks and enhanced engagement coordination
- Extend THAAD planning interoperability with joint and coalition planning systems
- Define engagement coordination designs for THAAD BMDS integration
- Adapt System Track processing into THAAD battle management design
- Develop designs for Launch on TADIL/Forwarded Track
- Modify system to external and component to component interface specifications and interface control documents for UMDF changes
- Conduct requirements analysis focused on risk reduction for development of a 21-inch booster to extend range and increase defended area
- Initiate support planning for Block 5.0 BMDS Flight Test events for THAAD interoperability with other BMDS Elements
- Continue to evaluate incremental HW/SW build capabilities for Block 5.0 BMDS Test Events
- Develop top level objectives and associated evaluation criteria to support overall mission success assessments
- Initiate participation in Scenario Certification, Mission Planning, and Mission Readiness Review activities
- Initiate the planning to consolidate Engineering Teams, Tools (databases for Requirements and Trouble Reports) to include integration and test facilities
- Initiate the planning and development of automated test tools for future PDSS activities

	FY 2008	FY 2009	FY 2010
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)	0	0	14,181
RDT&E Articles (Quantity)	0	0	0

The THAAD Fire Control and Communication (TFCC) is composed of two Tactical Station Groups (TSGs). Each TSG consists of a Tactical Operations Station, a Launch Control Station, and a Station Support Group. The TFCC provides the BMDS UMDFs and planning, control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with external air and interceptor defense and intelligence systems and agencies integrated into the BMDS and is the principal support to the BMDS UMDF. Block 5.0 TFCC software changes, to include, improvement to Link 16 track correlation and engagement coordination with other BMDS elements; and, external interface changes for integration of C2BMC Extremely High Frequency (EHF) Communications are being incorporated.

FY10 Planned Program:

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

- Support C2BMC in the integration of EHF communications capabilities into the TFCC component
- Provide engineering analysis in support of the Block 5.0 System Requirements Review (SRR)
- Prototype design and begin implementation new BMDS requirements including Link 16 update requirements to support BMDS UMDFs to include correlation, engagement coordination and planning
- Support Concurrent Test, Training and Operations (CTTO) software development and integration
- Support concept development for Launch on BMD System Track in support of the BMDS UMDFs. This enhanced capability will extend THAAD coverage by earlier missile launch using external BMDS sensor data. This capability will enable launch of THAAD interceptor prior to threat acquisition and discrimination by TFCC and Radar
- Support THAAD Laptop Planner development and integration via THAAD Defense Planner Prototype (TDP2) enhancement to support THAAD integration into Army and theater-level ballistic missile defense planning
- Initiate development of Netted Embedded Training (Netted ET) to enable THAAD Battery participation in common training scenarios, near real time with other THAAD Batteries, lower tier units, other elements of the Ballistic Missile Defense System (BMDS) (through Distributed Multi-Echelon Training System)

	FY 2008	FY 2009	FY 2010
Launcher	0	0	1,500
RDT&E Articles (Quantity)	0	0	0

The Terminal High Altitude Area Defense (THAAD) Launcher consists of a U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated missile round pallet and supports and secures eight ready-to-launch interceptors.

FY10 Planned Program:

- Develop and analyze component interface specification and interface control drawing changes
- Provide engineering analysis in support of the Block 5.0 System Requirements Review (SRR)

	FY 2008	FY 2009	FY 2010
System Test	0	0	4,020
RDT&E Articles (Quantity)	0	0	0

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

THAAD System Test is responsible for developing and executing all aspects of the THAAD program flight test objectives, ballistic interceptor target solutions, system flight test execution, range facility preparations, documentation requirements, data analysis and reporting.

FY10 Planned Program:

- Initiate support planning for Block 5.0 BMDS Ground and Flight Test events for THAAD interoperability with other BMDS Elements
- Initiate requirements definition for modification to flight test infrastructure to support UMDF changes and Block 5.0 BMDS Ground and Flight testing
- Provide engineering analysis in support of the Block 5.0 System Requirements Review (SRR)

	FY 2008	FY 2009	FY 2010
Program Management	0	0	3,717
RDT&E Articles (Quantity)	0	0	0

Program Management provides procurement support function across the program such as strategic planning, program integration, cost estimating, contracting, and financial management which includes preparation of financial statements, reimbursement of financial services provided by Defense Finance Accounting Service (DFAS), internal review and audit, earned-value management, and program assessment.

FY10 Program:

- Provide management, leadership, and planning for all Block 5.0 activities
- Provide support to the Block 5.0 System Requirements Review (SRR)
- Provide salaries, travel, training, and supplies
- Continue to provide project-wide programmatic support

	FY 2008	FY 2009	FY 2010
MDA Infrastructure (QS, DEP, DEE, DOB)	0	0	7,314
RDT&E Articles (Quantity)	0	0	0

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY 10 Planned Program:

- Provide Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability
- Provide dedicated Information Technology service for mission specific research and test efforts to include classified and unclassified networks

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters – MDA	83,907	81,174	57,403						

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

D. Acquisition Strategy

THAAD implements the Missile Defense Agency (MDA) capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition in accordance with the approved MDA block structure. The planned acquisition strategy for Block 5.0 Development activities is for a Indefinite Delivery/Indefinite Quantity (IDIQ) contract, targeted for award in FY10. This contract type offers the flexibility of awarding separate Task Orders for the various statement of work requirements, each with its own duration and fee type.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Integrated Logistics Support (ILS)								
Prime Contract	SS/CPAF	LMSSC/ Huntsville, AL	0	0	N/A	0	1/2Q	0
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)								
Prime Contract	SS/CPAF	LMSSC and Raytheon/ Huntsville, AL	0	0	N/A	14,181	1/2Q	14,181
Weapon Sys Engr & Integ Team								
Prime Contract	SS/CPAF	LMSSC/ Sunnyvale, CA & Huntsville, AL	0	0	N/A	29,685	1/2Q	29,685
Interceptor								
Prime Contract	SS/CPAF	LMSSC/ CA, TX, AL, MA, NH, IL, FL & MD	0	0	N/A	0	1/2Q	0
Launcher								
Prime Contract	SS/CPAF	LMSSC/ Huntsville, AL, Camden, AK, Dallas & Lufkin, TX	0	0	N/A	1,500	1/2Q	1,500
System Test								
Prime Contract	SS/CPAF	LMSSC/ Sunnyvale, CA; Huntsville, AL; NM & HI	0	0	N/A	4,020	1/2Q	4,020
Program Management								
			0	0	4Q	3,717	N/A	3,717

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar								
Subtotal Product Development			0	0		53,103		53,103

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Integrated Logistics Support (ILS)								
Assessment			0	0	N/A	0	N/A	0
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)								
SETA			0	0	N/A	0	N/A	0
Civilian (OGA/Matrix/Core)			0	0	N/A	0	N/A	0
Assessments			0	0	N/A	0	N/A	0
Weapon Sys Engr & Integ Team								
SETA			0	0	N/A	0	N/A	0
Civilian (OGA/Matrix/Core)			0	0	N/A	0	N/A	0
Assessments			0	0	N/A	0	N/A	0
Interceptor								
SETA			0	0	N/A	0	N/A	0
Civilian (OGA/Matrix/Core)			0	0	N/A	0	N/A	0

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Assessments			0	0	N/A	0	N/A	0
Launcher								
SETA			0	0	N/A	0	N/A	0
Civilian (OGA/Matrix/Core)			0	0	N/A	0	N/A	0
Assessments			0	0	N/A	0	N/A	0
Program Management								
SETA			0	0	N/A	0	4Q	0
OGA			0	0	N/A	0	4Q	0
MDA Program Support			0	0	N/A	0	N/A	0
GFE			0	0	N/A	0	N/A	
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar								
Subtotal Support Costs			0	0		0		0

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
System Test								
Prime Contract	SS/CPAF	LMSSC/Summyvale, CA: Huntsville, AL; NM, & HI	0	0	N/A	0	4Q	
SETA			0	0	N/A	0	N/A	0

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Civilian (OGA/Matrix/Core)			0	0	N/A	0	N/A	0
MDA Program Support			0	0	N/A	0	N/A	0
			0	0	N/A	0	N/A	
Subtotal Test and Evaluation			0	0		0		0

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost			0	0		60,417		60,417

Remarks

Missile Defense Agency (MDA) Exhibit R-4A Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block 5.0																																
Block 5.0 Development Contract Award											△																					
Block 5.0 SRR												△																				

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: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Block 5.0								
Block 5.0 Development Contract Award			3Q					
Block 5.0 SRR			4Q					

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
XX07 Terminal High Altitude Area Defense (THAAD) Sustainment	1,148	21,796	49,868
RDT&E Articles Qty	0	0	0

A. Mission Description and Budget Item Justification

Operations & Sustainment Support of THAAD Batteries provides for logistical support to field, operate, maintain, repair and replenish the THAAD weapon system as it fielded to the Army. Contractor Logistics Support technicians are responsible for field and sustainment maintenance including the repair and supply chain management of the required spares and repair parts. Also, the contractor will provide engineering support services and software maintenance support. The Operations & Sustainment Support associated with the Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radars allocated to THAAD Batteries are provided for under the Sensors Program Element.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Field Support and Contract Logistics Support (CLS)	1,148	21,796	49,868
RDT&E Articles (Quantity)	0	0	0

Contractor Logistics Support technicians are responsible for field and sustainment maintenance including the repair and supply chain management of the required spares and repair parts. Also, the contractor will provide engineering support services and software maintenance support. Contractor will provide replacement training; Subject Matter Expert for Sustainment Training and will maintain training assets.

FY08 Accomplishments:

- Awarded FY08 Field Support contract modification
- Initiated acquisition of Replenishment Spares for Battery #1
- Provided field support /CLS for Battery #1 hardware for soldier training

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY09 Planned Program:

- Award FY09 Field Support contract modification
- Continue THAAD Field Support/CLS for Battery #1 and #2 hardware
- Initiate development of Software Maintenance Plan required for PDSS
- Development of hardware/software utilization tracking system to ensure accountability/compatibility of THAAD end items
- Continue acquisition of replenishment spares for Battery #1 and #2
- Support Collective Training for Battery #1

FY10 Planned Program:

- Continue THAAD field support/CLS for Battery #1 and #2 hardware
- Complete software maintenance plan required for PDSS
- Provide maintenance support for components tactical software
- Continue acquisition of replenishment spares
- Support Force Development Experimentation (FDE) and Limited User Test (LUT) for Battery #1
- Initiate New Equipment Training/Tactical Ops Course for Battery #2

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
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PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters – MDA	83,907	81,174	57,403						

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

D. Acquisition Strategy

THAAD implements the Missile Defense Agency (MDA) capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition in accordance with the approved MDA block structure. The acquisition strategy implemented for FY08 and FY09 modified the existing Development contract to add the Field Support and Contractor Logistics Support. The approved acquisition strategy, beginning in FY10, is to award a Sole Source, Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order Contract for Field Support and Contractor Logistics Support.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Field Support and Contract Logistics Support (CLS)								
Prime Contract	SS/Various	LMSSC & Raytheon/ CA, TX, AL, MA, NH, IL, FL & MD	1,148	21,372	1/2Q	49,868	N/A	72,388
Subtotal Product Development			1,148	21,372		49,868		72,388

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Field Support and Contract Logistics Support (CLS)								
GFE	MIPR	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC	0	424	1Q	0	N/A	424
			0	0	N/A	0	N/A	
			0	0	N/A	0	N/A	
Subtotal Support Costs			0	424		0		424

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 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 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost			1,148	21,796		49,868		72,812

Remarks

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

Date: **May 2009**

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

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

Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contractual Activities & Events																																
Field Support and CLS FY08 Contract Award				▲																												
Field Support and CLS FY09 Contract Award							▲																									
Field Support and CLS FY10 Contract Award									△																							

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: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Contractual Activities & Events								
Field Support and CLS FY08 Contract Award	4Q							
Field Support and CLS FY09 Contract Award		3Q						
Field Support and CLS FY10 Contract Award			1Q					

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
WX26 Israeli ARROW Program	115,774	95,960	0
RDT&E Articles Qty	0	0	0

Note:
A new Program Element encompassing all of MDA's U.S. Israeli cooperative programs has been created under 0603913C Israeli Cooperative.

A. Mission Description and Budget Item Justification

This project provides funding for Arrow Weapon System (AWS) development, to include the Arrow System Improvement Program (ASIP), the Arrow Missile Production Program (AMPP) for the co-production of Arrow Interceptors, the Israeli Test Bed (ITB) experiments to evaluate Human-In-The-Loop (HWIL) battle management, and the Israeli Systems Architecture and Integration (ISA&I) studies to assess Israel's future 2020 Missile Defense Architecture. The Arrow Weapon System provides Israel an indigenous capability to defend against short and medium range ballistic missiles. Further, Arrow also acts as a cornerstone of the Architecture Enhancement Plan which is a joint U.S.-Israeli effort to create a combined U.S.-Israeli multitier Missile Defense Architecture. In addition to the geo-strategic goals of the Arrow cooperative effort, the United States derives technical benefit from its participation in these projects and gains knowledge and experience of the Israeli Defense Forces operation of a multi-layered defense architecture. U.S. participation in the Arrow development effort also ensures interoperability of the Arrow and the Israeli Missile Defense System with deployed U.S. missile defense assets. The ASIP effort will enhance the performance of the AWS to defeat longer-range and more robust ballistic missile threats expected to be introduced in the Middle East in the near future. Testing of the enhanced AWS in the U.S. against longer range threats is planned for FY09 to verify Arrow's improved performance and capability. Co-production will continue to increase the industrial production capacity of the Arrow II interceptor. The ITB and ISA&I efforts will continue to support AWS development as well as to define future missile defense architectures and growth paths. Finally, a new Upper Tier initiative has been started to provide Israel with additional capability against emerging regional threats.

Funding for these activities is directed by annual Congressional action.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Arrow System Improvement Program	55,000	50,760	0
RDT&E Articles (Quantity)	0	0	0

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

The Arrow System Improvement Program (ASIP) is the fourth phase of the cooperative effort which began in 1988 to provide Israel with an indigenous missile defense and ensure the Arrow Weapon System retains system effectiveness against evolving longer-range, more robust regional Theater Ballistic Missile threats. This initiative commenced on March 13, 2001 under the ASIP International Agreement between the United States and the State of Israel and runs through 2016. While the current program concludes with a 2009 capstone event (Caravan II) of 2 flight tests on an U.S. test range, additional capability has been proposed as part of the new Upper Tier initiative. Thus a follow-on spiral development block 4.5 that will increase the Arrow 2's effective battlespace and provide additional sensor capability to the Arrow Weapon System is being formulated.

Interdependency: The BMDS Tests and Targets PE 0603888C has $8.1 Million of ASIP FY09 funding to provide targets for Caravan II. Additionally, BMDS elements (THAAD, AEGIS, C2BMC, AN/TPY-2, PATRIOT) participate in ground test and exercise with the Arrow Weapon System.

FY08 Accomplishments:

- Conducted Blue Sparrow Target Flyout flight test in Israel
- Completed Arrow's Block 4.0 Critical Design Review
- Performed Arrow ground testing with U.S. BMDS Assets (Joint Defense of Israel Evaluation 2008 #1 (JDIE08))

FY09 Planned Program:

- Achieved Initial Operational Capability of the AWS Block 3.5
- Conducted AST-13 (Arrow Block 4.0 intercept of Blue Sparrow Target) flight test in Israel
- Perform Arrow ground testing with U.S. BMDS Assets (JDIE 2008 #2)
- Conduct Caravan II flight tests at U.S. test range including one flight test intercepting a Long Range Air Launched Target and a second flight test of two Arrow II Interceptors simultaneously intercepting a Short Range Air Launched target and a Liquid Fuel Target System

	FY 2008	FY 2009	FY 2010
Israeli Upper Tier	19,460	28,800	0
RDT&E Articles (Quantity)	0	0	0

With emerging weapons of mass destruction threats from regional enemies, the Government of Israel has determined a need for an upper-tier BMD system to complement the current Arrow Weapon System.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Beginning in FY08, the U.S. and Israel began jointly assessing solutions for an upper-tier component for Israel's Missile Defense Architecture. By adding an upper-tier capability to their current BMD architecture, Israel will increase the system's capability against advanced threats. The 2008 Joint Analysis of Alternatives study showed that Israel's proposed Upper Tier Component Interceptor (Arrow-3) could provide better performance at a lower cost than the land-based Standard Missile-3 (SM-3) interceptor if development and cost objectives are met. However, technology and schedule for Arrow-3 have been assessed by MDA as high risk. Therefore, MDA has developed detailed Knowledge Points to assess Israel's development progress for Arrow-3. Additionally, a risk mitigation strategy to utilize land-based SM-3 as an interim Upper Tier solution has been established by MDA. A portion of the Israeli Upper Tier funding will be used to integrate the land-based SM-3 solution into Arrow Weapon System's command and control.

FY08 Accomplishments:

- Completed Joint Study on preferred upper-tier solution for Israel defense requirements
- Conducted System Requirements Review and Preliminary Design Review for the risk reduction flyout version of the Arrow-3 interceptor

FY09 Planned Program:

- Negotiate new International Program Agreement for the development of Upper Tier Component Interceptor
- Conduct System Requirements Review for the Arrow-3 interceptor
- Prototype seeker's gimbal stabilization system tested in Rotation and Vibration platforms (Knowledge Point)

	FY 2008	FY 2009	FY 2010
Arrow Missile Production Program (AMPP)	34,967	10,137	0
RDT&E Articles (Quantity)	0	0	0

The co-manufacturing project further enhances the Arrow Weapon System by establishing a capability in the United States and the State of Israel to co-produce Arrow components and interceptors. The goal of the co-production effort is to accelerate production of Arrow interceptors to meet Israel’s defense requirements. The prime contractor, and Israeli company, has sub-contracted ~30% of the work-share to a U.S. partner company. The current production plan will be completed in 2011 and meet Israel's Defense Forces (IDF) current inventory requirement. However, discussions are ongoing to possibly increase these requirements and thus extend the co-production program.

FY08 Accomplishments: Completed Option II production quantities and initiated Option III for final interceptor quantities production.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY09 Planned Program: Conduct follow-on analysis to ensure adequacy of end-state inventory levels.

	FY 2008	FY 2009	FY 2010
Israeli Test Bed (ITB)	3,535	3,535	0
RDT&E Articles (Quantity)	0	0	0

The Israeli Test Bed (ITB) is a cooperative effort conducted under the 30 March 1989 Theater Ballistic Missile Defense Test Bed Memorandum of Agreement between the U.S. and Israel. The ITB is a large scale human-in-the-loop (HWIL) modeling and simulation facility for the purpose of developing, analyzing, and evaluating candidate architectures, battle management concepts, and engagement algorithms. Many of the exercises accomplished on the ITB include participation of U.S. and Israel warfighters. The principal ITB facility resides at Holon, Israel. A second ITB capability is operational at the Missile Defense Agency's Advanced Research Center in Huntsville, Alabama.

FY08 Accomplishments: Completed 4 experiments that developed tools and interfaces for SRBMD battle management; evaluated regional defense concepts; studied impacts on interoperability; and tested the CONOPS between the U.S. and Israeli forces in response to the increasing complexity of the combined missile defense architecture.

FY09 Planned Program: Accomplish 3 experiments refining HWIL tools for Command and Control, developing regional defense architectures, and impacts to tactics, techniques and procedures of the combined U.S.-Israeli Multi-tier Missile Defense Architecture.

	FY 2008	FY 2009	FY 2010
Israeli Systems Architecture and Integration (ISA&I)	2,098	2,286	0
RDT&E Articles (Quantity)	0	0	0

The Israeli Systems Architecture and Integration (ISA&I) Study provides analyses of the future 2020 Israeli Missile Defense Architecture, growth paths for future development and interoperability with U.S. BMDS assets. Program objectives are to assess the ballistic missile threats, provide analyses and architecture options, assess missile defense system robustness and issues, and assess Israeli and U.S. missile defense interoperability issues. The ISA&I effort is contracted by MDA to an Israeli consulting firm.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

FY08 Accomplishments: Completed 2 year study cycle on the future recommended Israeli Missile Defense Architecture that refined growth path options necessary for the Arrow missile defense system to remain an effective ballistic missile defense for the State of Israel and evaluated contributions of near-term U.S. missile defense systems on current and future Israeli missile defense architectures.

FY09 Planned Program: Continue studies on emerging regional ballistic missile threats, growth path options for the Israeli Missile Defense Architecture and evaluate Israeli and U.S. missile defense systems interoperability.

	FY 2008	FY 2009	FY 2010
Program Support	714	442	0
RDT&E Articles (Quantity)	0	0	0

The program support task encompasses activities that support, but are not part of, the U.S./Israeli cooperative programs. These activities include the documentation of foreground and background data rights for ASIP, ITB, ADP, and legacy programs; security support to include development and maintenance of security plans and classification guides; and analysis and engineering support of the ISA&I and ITB programs. It also provides for contractor support and expertise in support of the Program Element Monitor.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters – MDA	83,907	81,174	57,403						

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

D. Acquisition Strategy

As a bi-lateral cooperative program with the State of Israel, the Arrow Program does not follow normal DoD Acquisition Practices. The program is managed by an Israeli Co-Program Manager and, equal in responsibility, an U.S. Co-Program Manager. Program funding is equitable between the U.S. and Israel with Israel providing matching funds. However, a portion of the Israeli cost share is from non-financial contributions such as background information and facilities. With ASIP, Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to IAI and other ASIP contractors. MDA Targets Office contracts for production and instrumentation of targets for U.S. flight testing. Additionally with Arrow Missile Production, IMoD contracts on behalf of U.S. government to IAI. IAI then subcontracts to Boeing for manufacture of U.S. components. IAI manufactures Israeli components and performs final assembly. For the Israeli Test Bed, MDA contracts directly with Tadiran while IMoD provides their share of the funding to U.S. Finally, MDA contracts directly with WALES, Ltd for the Israeli System Architecture and Integration.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Arrow System Improvement Program										
ASIP	CPFF	IAI/ Israel	55,000	50,760	N/A	0	N/A	0	N/A	105,760
Israeli Upper Tier										
Arrow Upper Tier	CPFF	IAI/ Israel	19,460	28,800	4Q	0	N/A	0	N/A	48,260
Arrow Missile Production Program (AMPP)										
Arrow Missile Production	FFP	IAI & Boeing/ Israel&AL	34,967	10,137	N/A	0	N/A	0	N/A	45,104
Israeli Test Bed (ITB)										
Israeli Test Bed	FFP	Tadiran/ Israel	3,535	3,535	N/A	0	N/A	0	N/A	7,070
Israeli Systems Architecture and Integration (ISA&I)										
ISA&I	FFP	Wales, LTD/ Israel	2,098	2,286	N/A	0	N/A	0	N/A	4,384
Program Support										
Program Support	FFP	Various/ Various	714	442	N/A	0	N/A	0	N/A	1,156
Subtotal Product Development			115,774	95,960		0		0		211,734

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 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 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

IV. Management Services Cost ($ in Thousands)

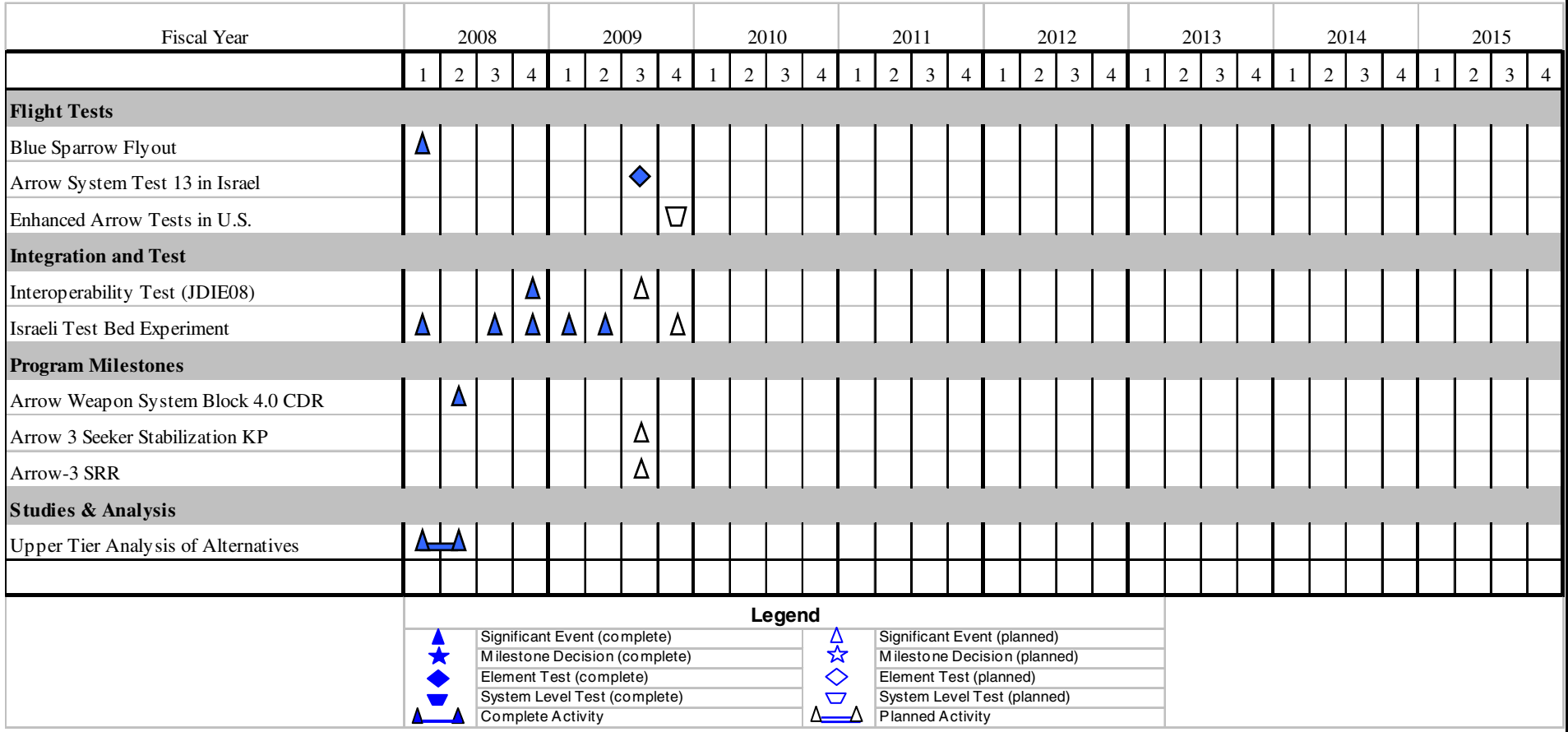
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			115,774	95,960		0		0		211,734

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Flight Tests								
Blue Sparrow Flyout	1Q							
Arrow System Test 13 in Israel		3Q						
Enhanced Arrow Tests in U.S.		4Q						
Integration and Test								
Interoperability Test (JDIE08)	4Q	3Q						
Israeli Test Bed Experiment	1Q,3Q,4Q	1Q,2Q,4Q						
Program Milestones								
Arrow Weapon System Block 4.0 CDR	2Q							
Arrow 3 Seeker Stabilization KP		3Q						
Arrow-3 SRR		3Q						
Studies & Analysis								
Upper Tier Analysis of Alternatives	1Q-2Q							

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
WX34 Short Range Ballistic Missile Defense	36,001	73,020	0
RDT&E Articles Qty	0	0	0

Note:
A new Program Element encompassing all of MDA's U.S. Israeli cooperative programs has been created under 0603913C Israeli Cooperative.

A. Mission Description and Budget Item Justification

The 2006 summer conflict between Israel and Hezbollah underscored the strategic effect of short-range, inexpensive ballistic missiles attacks on civilian populations. The current Israeli Missile Defense Architecture (comprised of PATRIOT and Arrow) has capability against some of these short-range missile threats, but does not provide a cost-effective defense. The goal of the Israeli SRBMD program is to provide a low-cost ($350K per missile) defense capability. In March 2005, the U.S. and Israel initiated a joint 18-month feasibility study of a low-cost SRBMD capability as a compliment to the Arrow Weapon System. This was followed in May 2006 by Israeli's down selection to the David's Sling Weapon System (DSWS) for their SRBMD solution. While currently there is no U.S. requirement for a SRBMD system MDA plans to provide input regarding specifications and development decisions to ensure the system could be suitable for potential future U.S. needs and interoperable with the U.S. Ballistic Missile Defense System (BMDS). The system is to be developed in development blocks with the initial block providing a baseline capability against long range rockets and short range ballistic missiles.

Under the U.S.-Israeli Project Agreement signed in September 2008, the project is jointly managed by the U.S. Missile Defense Agency and the Israeli Missile Defense Organization. The agreement documents the U.S.-Israeli cost share, in which the development costs are equitable between the U.S. and Israel with Israel providing matching funds. However a portion of the Israeli cost share is from non-financial contributions such as background information and facilities.

Funding for these activities is directed by annual Congressional action.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
David`s Sling Weapon System	36,001	73,020	0
RDT&E Articles (Quantity)	0	0	0

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

FY08 Accomplishments:

- Finalized international Project Agreement between the U.S. and Israel
- Initiated DSWS Block 1 System and Sub-System Preliminary Design Reviews
- Established Joint Program Office

FY09 Planned Program:

- Completed DSWS Block 1 System and Sub-System Preliminary Design Reviews
- Completed controlled navigation fly-out test of the booster

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters - MDA	83,907	81,174	57,403						

Note:
The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

D. Acquisition Strategy

As a bi-lateral cooperative program with the State of Israel, the SRBMD program does not follow normal DoD Acquisition Practices. The program is managed through a joint program office led by an Israeli Co-Program Manager and, equal in responsibility, an U.S. Co-Program Manager. Program funding is equitable between the U.S. and Israel with Israel providing matching funds. However, a portion of the Israeli cost share is from non-financial contributions such as background information and facilities. With the David Sling Weapon System, Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to Rafael and other David's Sling Weapon System contractors. A Short Range Ballistic Missile Defense Project Agreement under the RDT&E Framework agreement between U.S. and Israel was signed Sept 2008.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
David`s Sling Weapon System										
SRBMD Program	CPFF	Rafael/ Israel	36,001	73,020	3Q	0	N/A	0	N/A	109,021
Subtotal Product Development			36,001	73,020		0		0		109,021

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 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 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

IV. Management Services Cost ($ in Thousands)

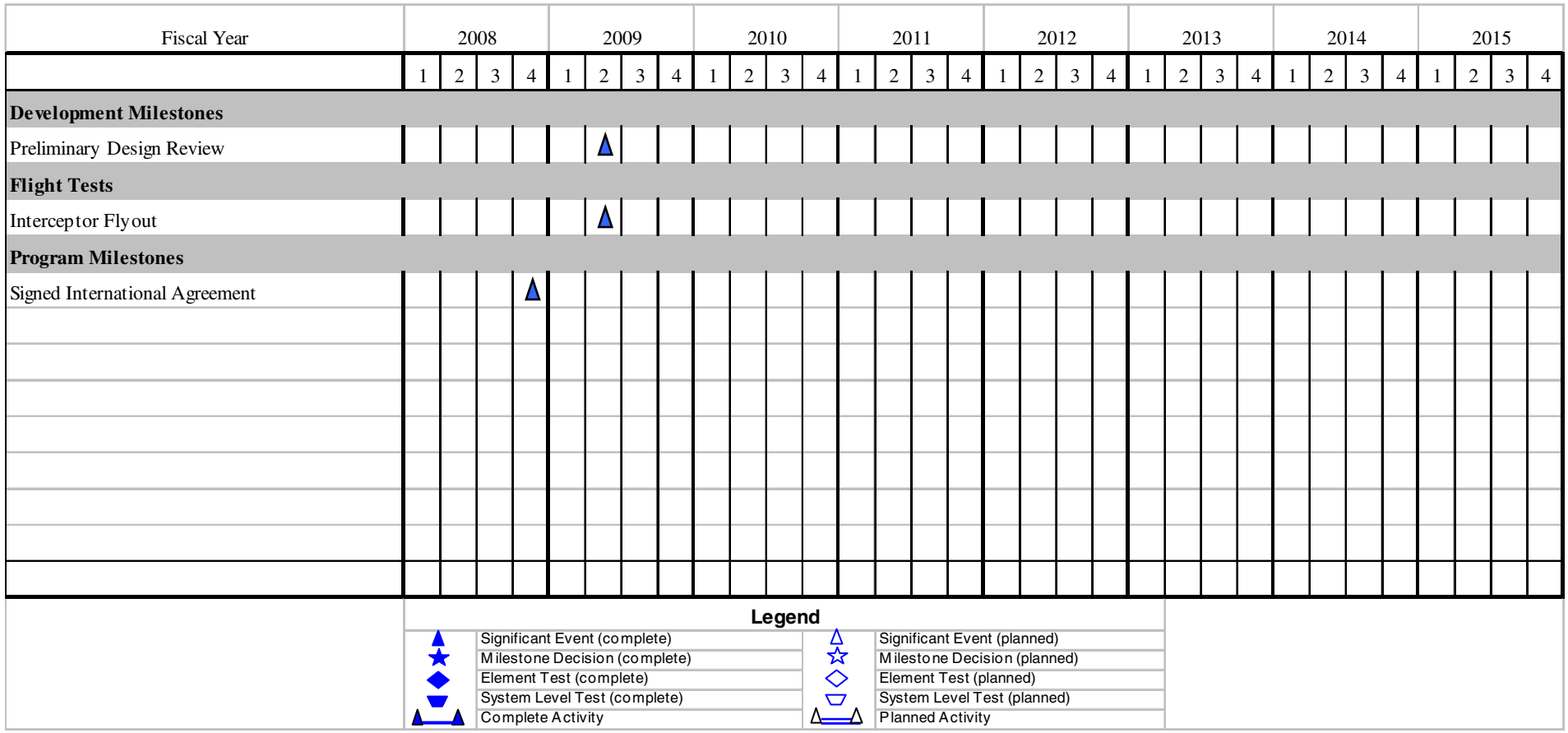
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			36,001	73,020		0		0		109,021

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Development Milestones								
Preliminary Design Review		2Q						
Flight Tests								
Interceptor Flyout		2Q						
Program Milestones								
Signed International Agreement	4Q							

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603881C Ballistic Missile Defense Terminal Defense Segment**

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
WX06 PAC-3	1,263	10,080	22,299
RDT&E Articles Qty	0	0	0

A. Mission Description and Budget Item Justification

PATRIOT Advanced Capability-3 (PAC-3) is one of the most mature elements of the Ballistic Missile Defense System and is now operational with the U.S. Army. It is a land-based element built upon the proven PATRIOT air and missile defense infrastructure.

The PATRIOT Advanced Capability-3 System was deployed to the Middle East as part of Operation Iraqi Freedom where it successfully engaged several ballistic missiles.

The Army is responsible for production and further development of Advanced Capability-3 System; the Missile Defense Agency remains responsible for the Ballistic Missile Defense System interoperability and integration efforts.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Evolutionary Development Program (EDP) Task 2	1,263	10,080	21,139
RDT&E Articles (Quantity)	0	0	0

FY08 Accomplishments:

- FY08 WX06 PAC-3 funding was the last year of ECP-24 funding.

- Final ECP-24 concepts coded and ready for test (FTT-10,a,b; Caravan2)

- Funding was added to this line to cover PA09/PSEM

- Follow on Task 2 efforts were funded under different funding line.

FY09 Planned Program:

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- FY09 WX06 PAC-3 funding is the first year of funding using this PE

- Evolutionary Development Program (EDP) Task 2 Develops a Capability Against Stressing TBM Targets Capability to be Fielded in PDB-7

- Increased BMDS Effectiveness & Lower Tier Element Performance against Evolving Aerodynamic Threats

- Concept & Detailed Requirements Development Underway

- Implement Program Plan

- Continue development of Task 2 concepts

- Integration of code on the Modern Adjunct Processor (MAP) into the PATRIOT ECS

FY10 Planned Program:

- SW Coding, Performance Testing, Flight Testing, & Integration scheduled as part of PDB-7.0 Test & Fielding Program

	FY 2008	FY 2009	FY 2010
General Support	0	0	1,160
RDT&E Articles (Quantity)	0	0	0

FY10 Planned Program:

- Support the day to day tasking on the Lower Tier Project Office (LTPO) by MDA based on the Transfer and Transition Plan Annex L.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						
PE 0603895C BMD System Space Program	16,237	24,686	12,549						
PE 0603896C BMD C2BMC	439,997	288,287	340,014						
PE 0603897C BMD Hercules	51,387	55,764	48,186						
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						
PE 0603906C Regarding Trench	1,945	2,968	6,164						
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						
PE 0603908C BMD Europ Intercep Site	0	362,007	0						
PE 0603909C BMD Europ Midcourse Radar	0	76,537	0						
PE 0603911C BMD European Capability	0	0	50,504						
PE 0603912C BMD European Comm Support	0	27,008	0						
PE 0603913C Israeli Cooperative	0	0	119,634						
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						
PE 0901598C Management Headquarters - MDA	83,907	81,174	57,403						

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
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D. Acquisition Strategy

The design objective of the Patriot system is to provide an element of the Ballistic Missile Defense System capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Evolutionary Development Program (EDP) Task 2								
Evolutionary Development Program	Various	Multiple	1,263	10,080	1Q	21,139	N/A	32,482
Subtotal Product Development			1,263	10,080		21,139		32,482

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
General Support								
General Support	Various	Multiple	0	0	N/A	1,160	1Q	1,160
Subtotal Support Costs			0	0		1,160		1,160

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation								

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	Total Cost
Subtotal Management Services								

Remarks

Project Total Cost			1,263	10,080		22,299		33,642

Remarks

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

Date: **May 2009**

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

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

Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EDP Task 2 Development																																
Task 2 Follow-On PDR									△																							
Task 2 Follow-On CDR												△																				
PDB 7 CVT																																
EDP Task 2 Flight Test																																
PDB Government Testing																																

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: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
EDP Task 2 Development								
Task 2 Follow-On PDR			1Q					
Task 2 Follow-On CDR			4Q					
PDB 7 CVT								
EDP Task 2 Flight Test								
PDB Government Testing								

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: May 2009
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603881C Ballistic Missile Defense Terminal Defense Segment

COST ($ in Thousands)	FY 2008	FY 2009	FY 2010
ZX40 Program-Wide Support	20,633	24,437	31,721
RDT&E Articles Qty	0	0	0

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common non-headquarters support functions across the entire program. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Other costs included 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 fluctuations on a limited number of foreign contracts.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010
Civilian Salaries and Support	20,633	24,437	31,721
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: May 2009
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PE 0603913C Israeli Cooperative	0	0	119,634						
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