Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614
0812 Space Tracking and Surveillance System (STSS) Block 2006	262,786	255,839	231,230	208,204	64,467	11,122	7,704	7,070
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	45,200	29,319	24,092	14,066	13,762
0012 Space Tracking and Surveillance System (STSS) Block 2010	12,100	47,833	0	0	0	0	0	0
R112 Space Tracking and Surveillance System (STSS) Block 2012	0	0	535	167,045	440,000	579,000	737,000	773,000
0403 Russian-American Observation Satellite(s) Program (RAMOS)	27,562	0	0	0	0	0	0	0
0811 Ballistic Missile Defense Radars Block 2004/2006	110,018	260,519	272,243	263,367	60,400	0	0	0
0911 Ballistic Missile Defense Radars Block 2008	0	0	8,100	274,600	564,528	438,426	91,200	25,300
0011 Ballistic Missile Defense Radars Block 2010	0	0	9,400	15,700	19,000	101,000	193,342	174,065
0602 Program-Wide Support	5,348	13,106	8,321	21,595	36,294	32,494	25,896	25,417
Amount Included in PE 0904903D	0	0	0	0	-645,737	-729,253	-855,679	-887,800
Total PE Cost Reflected in R-1	417,814	577,297	529,829	995,711	568,271	456,881	213,529	130,814

Note:
The Space Tracking and Surveillance System (STSS) continues developing a common satellite ground segment and preparing two R&D satellites for launch (STSS Block 2006 -- Project 0812). Beginning in FY 2007 STSS will upgrade the ground segment and data processing algorithms to take advantage of on-orbit experience (STSS Block 2008 -- Project 0912). As an addition from last year, MDA is beginning to plan for a constellation of STSS satellites (STSS Block 2012 -- Project R112).

BMDS sensor improvements for delivery in Block 2008/Block 2010 timeframe will include the procurement of two X-Band Dish radars to augment the Forward Based X-Band Radar-Transportable (FBX-T) radar discrimination performance and the upgrade of an existing Large X-Band Dish radar to add sensor capabilities to the layered sensor concept.

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense System (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. The United States will soon field a limited capability to defeat a ballistic missile threat. Continuing through the Future Years Defense Plan (FYDP), the breadth and depth of this initial capability will be expanded by adding and networking forward-deployed sensors, interceptors at sea and on land, and layers of increasingly capable weapons and sensors. Today's MDA activities are focused on five objectives: 1) complete development, initial fielding, and verification of Block 2004; 2) provide BMDS sustainment and Warfighter (Combatant Commanders) support; 3) develop a totally integrated capability for Block 2006 and beyond based on a strong core research and development program and improving the BMDS incrementally over time to meet future challenges; 4) execute an increasingly complex test program; and 5) establish a robust international foundation for missile defense.

MDA identifies BMDS capabilities, architectures and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs). These ESGs describe a combination of weapons, sensors and C2BMC capabilities that must work together to detect, track and intercept an enemy missile - the complete kill chain from the time the threat missile is first detected through the intercept of the target. Through ESGs, the MDA Systems Engineer identifies the necessary interfaces required to deliver a usable configuration of the BMDS. The engagement sequence group approach enables the REO, working with the responsible test organization (RTO), to develop detailed test plans in collaboration with the developers. ESGs are also useful in helping the operator plan and train for operation of that capability, and they provide a means to track and test future improvements to the system.

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The Sensors Program Element (PE) funds the sensor-related element portions of Blocks 2006, 2008, and 2010 and other sensor-related mission area investment activities. Technologies and capabilities developed under the Sensors Program Element include: the Space Tracking and Surveillance System (STSS), Forward Based X-Band Radar-Transportable (FBX-T) Radar, and Electro-Optics/Infrared (EO/IR) Demonstration and additional RF assets for layered sensors. The BMDS spiral development approach allows sensor technologies and capabilities to be incorporated as they mature and evolve into a network of sensors at the BMDS level. Sensor elements in this PE have been developed in coordination with the responsible engineering organization (REO) led by MDA Systems Engineering to help ensure that the elements are focused as a single, integrated system. Sensor data is used to detect, track, and discriminate ballistic missile threats; to control interceptors; and to support kill assessment and re-targeting.

Based on Presidential direction, MDA is developing an initial defensive operational capability that is based on the BMDS Test Bed and augmented with additional development assets. MDA will continue to employ the Test Bed for testing beyond initial fielding to evolve an integrated, layered Ballistic Missile Defense capability. Each of the Sensor Program Elements will be integrated into the BMDS Test Bed to ensure the technology is mature and ready for inclusion in a BMDS Block upgrade.

The efforts in this Sensors Program Element have been structured to take advantage of opportunities previously prohibited by the ABM Treaty. The treaty's dissolution allows MDA to extend and network land, sea, air, and space based sensors for ballistic missile defense. Therefore, MDA is investing in an integrated, layered approach to sensors that includes diversity in spectra, basing modes and technologies, as well as flexibility in sensor locations, to form a sensor network that is integrated with the BMDS through the Command and Control, Battle Management, and Communication (C2BMC) system. This strategy will minimize gaps in sensor coverage to improve track continuity and situational awareness. Overlapping sensor coverage with a diversity of sensor types will improve track discrimination and kill assessments. The extended sensor coverage and accuracy provided by a network of layered sensors makes the BMDS more efficient, thereby reducing the number of target engagements needed to ensure a sufficient probability of success.

The STSS project develops and fields a new sensor for the BMDS with the capability to globally track and discriminate ballistic missiles from the boost phase through the midcourse phase up until intercept or reentry. STSS enables new Engagement Sequences and provides coverage of a wider variety of threat trajectories than terrestrial radars can provide. STSS sensors will provide data to close the fire control loop with BMDS interceptors allowing earlier and, if necessary, additional shots. STSS's infrared sensors, when combined with radars, provide robustness against countermeasures.

The STSS project will develop Block 2006 R&D satellites and a common ground station to demonstrate the key functions of the STSS system. In Block 2008 STSS will incrementally upgrade the Block 2006 satellite ground station and software to optimize their use in the BMDS Test Bed. The STSS Block 2006 demonstrations will establish a foundation in actual testing for the design and fabrication of a constellation of satellites. Lessons learned from the Block 2006 and 2008 efforts will feed the early planning for an STSS constellation. Operational STSS satellites will be integrated into the BMDS in the Block 2012 timeframe, providing global 24-hour, 7-day-a-week capability to track all ballistic missiles, and allowing BMDS interceptors to launch and engage on STSS data. STSS tracking data will extend the kinematic range of the BMDS interceptor inventory, and allow shots against targets launched on trajectories without radar coverage.

The BMDS Radars Project will significantly enhance BMDS effectiveness by expanding the battlespace. The project includes the Forward Based X-Band Radar-Transportable (FBX-T) a land based component, but will have potential for a sea based configuration. The FBX-T Radar will provide early detection, tracking, and discrimination of threat missiles, providing data to the BMDS sensor network. The Forward Based Radar project will evaluate advanced algorithms and prototype the interfaces to the BMDS C2BMC using the TPS-X radar. In parallel, the Sensor Program will define improvements or modifications to both MDA and non-MDA owned sensors that have been identified for performance enhancement of the BMDS. The Airborne Infrared Surveillance (AIRS) program will be evaluating the utility of infrared (IR) surveillance capabilities with the specific intent to enhance BMDS engagement sequences.

Current plans call for the initial FBX-T Radar to be available in CY 2005. Contract options for two additional FBX-T radars will be exercised in FY 2005. These additional radars will be integrated into the BMDS as Block 2006 and Block 2008 assets. Evolving radar configurations will use additional algorithms and provide enhanced capabilities to support the BMDS. Beginning in FY 2006 the Forward Based Radar initiative will provide for continued sensor evolution to improve the capabilities for a BMDS configuration(s) for Block 2008 and beyond.

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Due to the lack of progress in the RAMOS Government-to-Government agreement with Russia, and the uncertainty this caused, MDA terminated the RAMOS program. RAMOS termination was accomplished using remaining FY04 funds. MDA received the Russian Government's draft MOU in July 2002. Despite 17 months of discussions, MDA was unable to complete a government-to-government agreement. Without this agreement, which includes the fundamental issue of taxes and liabilities, the RAMOS program could not be executed beyond the design stage. MDA will continue to discuss an overarching MOU to govern defense cooperation with Russia, and is actively exploring alternative, more beneficial missile defense cooperative projects with Russia, that enjoy the support of the Government of the Russian Federation. In accordance with Sec 8049 of the FY05 Department of Defense Appropriations Act, FY04 funds in the amount of $26.5M were rescinded from the RAMOS Program.

Program-Wide Support provides funding for common support functions across the entire program such as strategic planning, program integration, cost estimating, contracting, and financial management to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions as well as support contractors providing government staff augmentation in these areas. Applies to costs at the MDA HQ as well as its Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities. Other costs include physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses at the various MDA Executing Agent locations, which at the MDA HQ are generally funded from the Management Headquarters Program Element (0901598C). Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

B. Program Change Summary	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005 PB)	425,421	591,957	790,265	1,453,679
Current President's Budget (FY 2006 PB)	417,814	577,297	529,829	995,711
Total Adjustments	-7,607	-14,660	-260,436	-457,968
Congressional Specific Program Adjustments	0	13,850	0	0
Congressional Undistributed Adjustments	0	-28,510	0	0
Reprogrammings	-6,831	0	0	0
SBIR/STTR Transfer	-776	0	0	0
Adjustments to Budget Years	0	0	-260,436	-457,968

The FY 2004 Sensor program increase of $10,170,000 was made to accelerate deliver of FBX-T #1, a Block 2006 asset, to Block 2004 in support of the Missile Defense Agency priorities.

The FY 2005 Sensor program increase of $4,418,000 was made for deployment services for FBX-T #1 in preparation for fielding. A Congressional increase of $13,850,000 to the Sensor program was made for Airborne Infrared Surveillance (AIRS) System, Improve Material for Optical Memories, and Ground-Based Studies of Rocket Plume Signatures. The FY 2006 Sensor program increase of $29,629,000 was made for a full year of Operation and Sustainment for FBX-T #1 and delivery and fielding of FBX-T #2. The FY 2007 Sensor program decrease of $34,165,000 was based on the elimination of FBX-T #4.

STSS Block 2010 funds in FY 2006 and 2007 moved to Special Programs Program Element (0603891C).

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COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0812 Space Tracking and Surveillance System (STSS) Block 2006	262,786	255,839	231,230	208,204	64,467	11,122	7,704	7,070
RDT&E Articles Qty	0	0	1	4	0	0	0	0

A. Mission Description and Budget Item Justification

STSS is the space based sensor element of the BMDS.

Block 2006 STSS is a low risk space based demonstration of key capabilities, adding two space based sensors and associated ground station processing capability to the Block 2006 BMDS Test Bed. The Block 2006 activity provides key knowledge on which to base the design of a future constellation. Block 2006 STSS delivers a ground segment in FY06 and launches two satellites with visible and infrared sensors into low earth orbit in FY07 for testing with other BMDS elements. These two satellites will provide valuable risk reduction for acquisition, tracking, and discrimination functionality including stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. Key demonstrations will be performed showing the ability to close the BMDS interceptor fire control loop with data from the Block 2006 satellites.

To provide STSS with early, appropriate test opportunity, STSS is procuring four dedicated ballistic missile targets for on-orbit testing, two in FY07 and two in FY08. The STSS-centric tests with these targets will also include opportunities for secondary participation from other BMDS Elements. STSS is contracting through NASA for launch services for the two Block 2006 satellites using a single Delta II launch vehicle.

The Block 2006 program will develop and contribute to the testing of Engagement Sequence Groups (ESG) allowing BMDS interceptors to launch and/or engage on STSS sensor data. Testing will include configurations of the BMDS to include surrogate sensors such as the AF Maui Optical Station (AMOS) telescopes and High Altitude Observatory (HALO) II aircraft.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Space	98,048	143,313	123,609	83,277
RDT&E Articles (Quantity)	0	0	0	4

FY 2004 Accomplishments:

- Conducted Delta Critical Design Review (CDR)
- Completed Payload Software Build 2
- Completed Closed Loop Testing of Sensor Payload Software

FY 2005 Planned Accomplishments:

- Initial payment to NASA toward Launch Services for the 2 Block 2006 Satellites
- Complete Payload Software Build 3

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- Conduct System Compatibility Tests (Payload and Satellite Bus)
- Deliver Payload 1 to system integration
- Conduct Payload and Satellite Bus integration for Satellite 1

FY 2006 Planned Program:

- Deliver payload 2 to system integration
- Conduct Payload and Satellite Bus integration for satellite 2
- Begin integration of the two Satellites with NASA booster and Orbital Insertion Stage (OIS)

FY 2007 Planned Program:

RDT&E Articles: Two satellites and two ballistic missile targets

- Complete integration of the two satellites with the booster and Orbital Insertion Stage (OIS)
- Launch two STSS satellites into Low Earth Orbit (LEO)
- Conduct Post Launch Analysis
- Conduct initial on-orbit check out
- Procure two ballistic missile targets
- Conduct tests with Resident Space Objects, Ground based and Airborne targets
- Conduct first dedicated flight tests with ballistic missile targets

	FY 2004	FY 2005	FY 2006	FY 2007
Ground	43,068	21,372	10,534	1,118
RDT&E Articles (Quantity)	0	0	1	0

FY 2004 Accomplishments

- Matured Ground System Design
- Initiated Satellite Operation Training Plan

FY 2005 Planned Accomplishments:

- Continue Ground Hardware Integration
- Conduct Initial Crew Training
- Conduct Ground Acceptance Test 1 (tasking, health and status software sufficient to operate a single satellite)

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FY 2006 Planned Program:

RDT&E Article: One STSS Ground Station

- Continue Ground Segment Integration
- Conduct Ground Acceptance Test 2 (satellite to satellite communication functions, ground to satellite data feeds)
- Perform Test Rehearsals

FY 2007 Planned Program:

- Support preparation for satellite launch
- Support the initial satellite check out and testing with Resident Space Objects, Airborne and Ground Based targets, and dedicated ballistic missile targets

	FY 2004	FY 2005	FY 2006	FY 2007
Government	20,604	23,620	27,045	26,648
RDT&E Articles (Quantity)	0	0	0	0

FY04 Accomplishments:

- FFRDC Requirements include Aerospace and Mitre Personnel Support
- Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies

FY05 Planned Accomplishments:

- FFRDC Requirements include Aerospace and Mitre Personnel Support
- Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies
- Conduct BMDS system trades leveraging Block 2006 program office, MDA system engineers and Block 2006 contractor
- Initiate development of a capability based/spiral development acquisition strategy

FY06 Planned Program:

- FFRDC Requirements include Aerospace and Mitre Personnel Support
- Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies

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- Complete development of a capability based/spiral development acquisition strategy
- Complete BMDS system trades

FY07 Planned Program:

- FFRDC Requirements include Aerospace and Mitre Personnel Support
- Program Office Support includes Security Support, TDY, Cost Estimating Support, Management Services, Hardware and Software purchases and maintenance, Computer Network Support, and Supplies

	FY 2004	FY 2005	FY 2006	FY 2007
SE/PM	76,149	61,848	63,567	90,572
RDT&E Articles (Quantity)	0	0	0	0

FY 2004 Accomplishments

- Analyzed Ground Test Data
- Conducted initial System Compatibility Tests

FY 2005 Planned Accomplishments:

- Conduct System Compatibility Tests (Payload, Satellite Bus and Ground System)
- Advanced Algorithm Development

FY 2006 Planned Program:

- Continue System Compatibility Tests (Ground to Satellite and Satellite to Satellite communication)
- Advanced Algorithm Development
- BMDS Integration
- Begin Launch & On-orbit Flight Test Preparations

FY 2007 Planned Program:

- Complete Launch & On-orbit Flight Test Preparations
- Conduct Launch
- Staff and operate the STSS Ground Segment
- Conduct initial satellite check out and testing with Resident Space Objects, Airborne and Ground based targets and dedicated ballistic missile targets

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	FY 2004	FY 2005	FY 2006	FY 2007
IR Engagement Sequence	11,287	5,686	6,475	6,589
RDT&E Articles (Quantity)	0	0	0	0

(Note: the FY04 budget contained funding for AIRS in this task. Beginning in FY05, AIRS will be funded and managed in project 0811. STSS will continue to participate as a user of AIRS data, and to leverage lessons learned from IR sensor contributions to the BMDS.)

FY 2004 Accomplishments:

- Performed modification to the HALO II aircraft and AIRS sensors
- Collected and Analyzed AIRS data for use in evaluation of relevance BMDS engagement sequences
- Continued to refine data processing algorithms and connectivity to the BMDS

FY 2005 Planned Accomplishments:

- Continue testing and evaluation of IR/Vis sensors' utility in BMDS Engagement sequences using surrogate sensor measurements
- Continue developing connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS

FY 2006 Planned Program:

- Continue testing and evaluation of IR/Vis sensors' utility in BMDS Engagement sequences using surrogate sensor measurements
- Continue developing connectivity and algorithms toward providing near real time IR and IR-RADAR fused data to the BMDS

FY 2007 Planned Program:

- Continue work with the BMDS to develop and test engagement sequences that include the STSS satellites.

	FY 2004	FY 2005	FY 2006	FY 2007
C2BMC	13,630	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

These funds were executed by the C2BMC Element to further the BMDS command control, battle management and communication infrastructure. This includes the offline prototyping environment known as the X-Lab into which the STSS Block 2006 ground segment will connect. This connection will enable true end to end BMDS testing with Block 2006 satellite data.

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C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

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D. Acquisition Strategy

STSS follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), formerly TRW, with subcontractors playing key roles in systems engineering and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the first R&D spiral, the Block 2006 satellites was awarded in fourth quarter FY 2002. This contract implements MDA's capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
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I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Space										
Capability Based R&D Contract	SS/CPAF	NGST/ CA	94,176	104,644	1/4Q	76,184	1/4Q	22,535	1/4Q	297,539
Launch Vehicle Integration	Various	Various/ Various	3,872	38,469	1/4Q	32,086	1/4Q	26,244	1/4Q	100,671
Target Acquisition	Various	Various/ Various	0	200	1/4Q	15,339	1/4Q	34,498	1/4Q	50,037
Ground										
Capability Based R&D Contract	SS/CPAF	NGST/ CA	43,068	21,372	1/4Q	9,274	1/4Q	578	1/4Q	74,292
Government Furnished Equipment	Various	Various/ Various	0	0	N/A	1,260	1/4Q	540	1/3Q	1,800
SE/PM										
Capability Based R&D Contract	SS/CPAF	NGST/ CA	72,372	56,202	1/4Q	56,750	1/4Q	83,636	1/4Q	268,960
Advanced Algorithm Development	Various	Various/ Various	3,767	5,646	1/4Q	6,817	1/4Q	6,936	1/4Q	23,166
IR Engagement Sequence										
Airborne Infrared Surveillance (AIRS)	Various	Various/ Various	7,002	0	N/A	0	N/A	0	N/A	7,002
Data Collection and Analysis	Various	Various/ Various	4,295	5,686	1/3Q	6,475	1/3Q	6,589	1/3Q	23,045
C2BMC										
Subtotal Product Development			228,552	232,219		204,185		181,556		846,512

Remarks

- The Capability Based R&D contract was awarded in FY 2002. Prior year and FY 2003 costs were included in Project 5041.
- Funds obligation is incremental throughout the year.

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APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Government										
System Program Office Support	Various	Various/ CA	9,177	9,500	1/4Q	12,400	1/4Q	12,200	1/4Q	43,277
Subtotal Support Costs			9,177	9,500		12,400		12,200		43,277

Remarks

- All system program office support costs have been allocated to Block 2006, through the launch in FY07.
- Prior year and FY 2003 costs were included in Project 5041.

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Government										
FFRDC	FFRDC	AEROSPACE/ CA	11,427	14,120	1/2Q	14,645	1/2Q	14,448	1/2Q	54,640
Subtotal Management Services			11,427	14,120		14,645		14,448		54,640

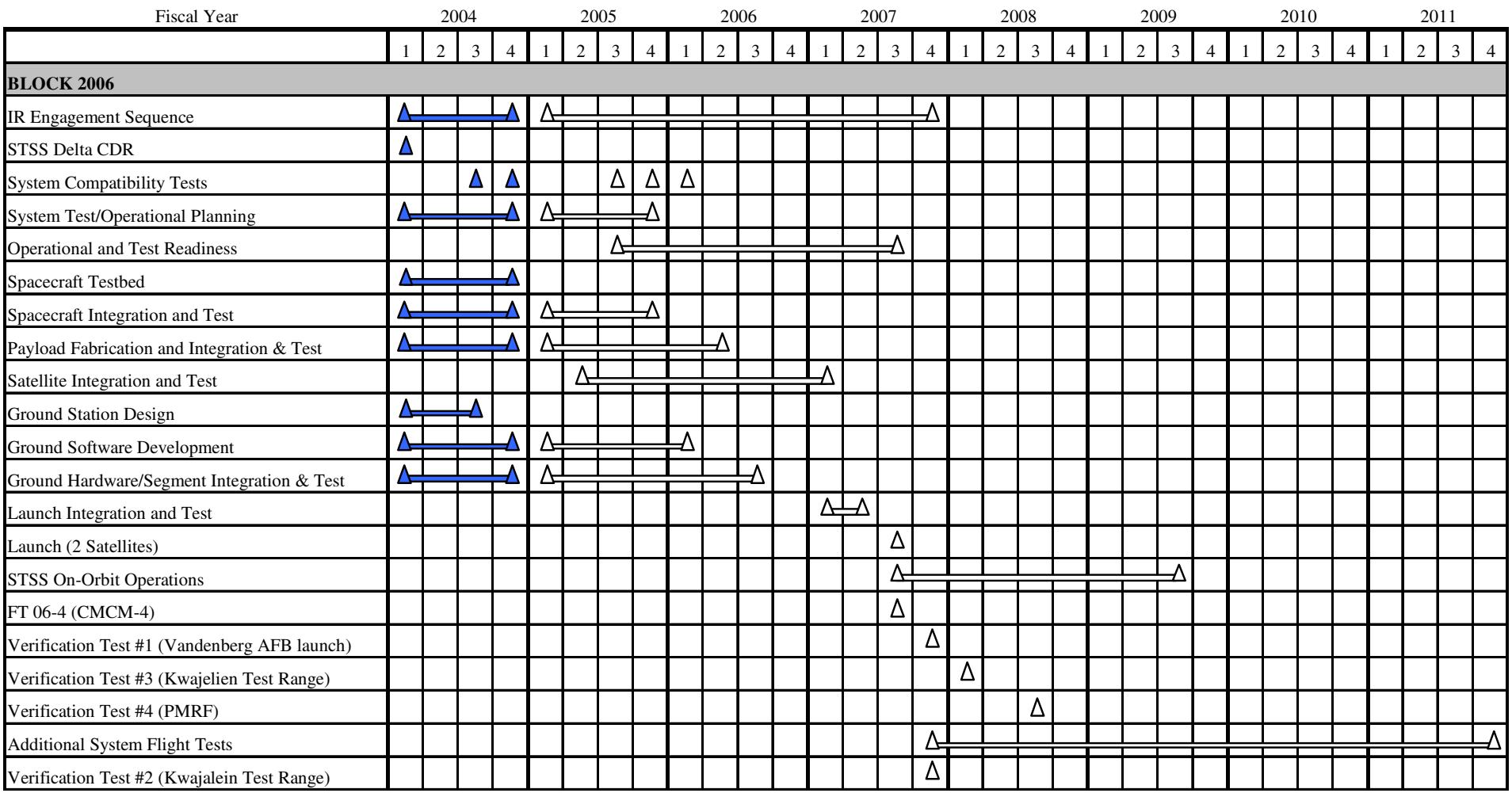
Remarks

- All FFRDC costs have been allocated to Block 2006, through the launch in FY07.
- Prior year and FY 2003 costs were included in Project 5041.

Project Total Cost			249,156	255,839		231,230		208,204		944,429

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2006								
IR Engagement Sequence	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
STSS Delta CDR	1Q							
System Compatibility Tests	3Q,4Q	3Q,4Q	1Q					
System Test/Operational Planning	1Q-4Q	1Q-4Q						
Operational and Test Readiness		3Q-4Q	1Q-4Q	1Q-3Q				
Spacecraft Testbed	1Q-4Q							
Spacecraft Integration and Test	1Q-4Q	1Q-4Q						
Payload Fabrication and Integration & Test	1Q-4Q	1Q-4Q	1Q-2Q					
Satellite Integration and Test		2Q-4Q	1Q-4Q	1Q				
Ground Station Design	1Q-3Q							
Ground Software Development	1Q-4Q	1Q-4Q	1Q					
Ground Hardware/Segment Integration & Test	1Q-4Q	1Q-4Q	1Q-3Q					
Launch Integration and Test				1Q-2Q				
Launch (2 Satellites)				3Q				
STSS On-Orbit Operations				3Q-4Q	1Q-4Q	1Q-3Q		
FT 06-4 (CMCM-4)				3Q				
GT-196				4Q				
Verification Test #1 (Vandenberg AFB launch)				4Q				
Verification Test #3 (Kwajelien Test Range)					1Q			
Verification Test #4 (PMRF)					3Q			
Additional System Flight Tests				4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Verification Test #2 (Kwajalein Test Range)				4Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	45,200	29,319	24,092	14,066	13,762
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

STSS is the space based sensor element of the BMDS.

The STSS Block 2008 project for upgrades to the Block 2006 ground station and software. The Block 2008 upgrade effort will incorporate lessons learned from on-orbit experiments to improve the performance of the system and its utility to the BMDS. These improvements will provide additional data on which to base design and algorithms choices for the Block 2012 Constellation.

STSS will conduct integrated operations with other BMD Elements in concert with the MDA Responsible Test Organization (RTO). Testing will be conducted to verify BMD System level goals and performance.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Ground and Software Upgrades	0	0	0	45,200
RDT&E Articles (Quantity)	0	0	0	0

FY 2007 Planned Program:

- Modify Block 2006 contract to include Ground Segment and software upgrades
- Based on performance of Block 2006 satellites on-orbit, refine acquisition, tracking and data processing software to increase utility of the satellites
- Refine Ground Segment to increase utility of Block 2006 satellites to the BMDS

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

D. Acquisition Strategy

STSS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development and evolutionary acquisition. The Block 2008 Ground Segment and Software Upgrade effort will be pursued through the Block 2006 prime contractor, Northrop Grumman Space Technology (NGST), with subcontractors playing key roles as needed. A contract for the Block 06 activity was awarded in fourth quarter FY 2002. Options on this contract will be awarded to accomplish the Block 2008 Ground Segment and Software Upgrade activity. Contract modification is expected to take place in the FY 2007 timeframe.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Ground and Software Upgrades										
Capability Based R&D Contract	SS/CPAF	NGST/CA	0	0	N/A	0	N/A	45,200	1Q	45,200
Subtotal Product Development			0	0		0		45,200		45,200

Remarks

As the Ground and Software upgrades activity is a refinement of the Block 06 ground segment, no funding or activity is planned until FY07.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 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 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

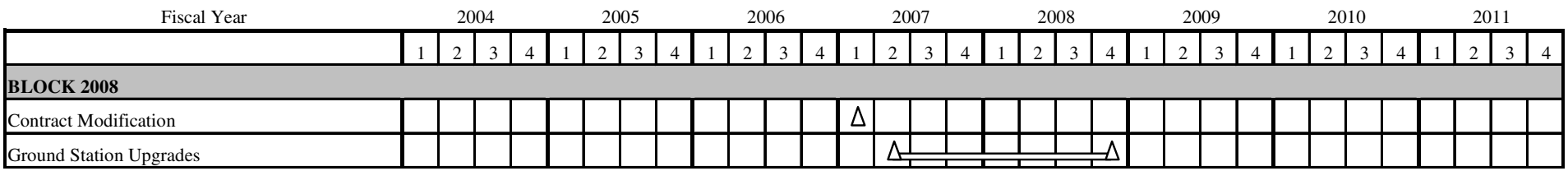
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		0		45,200		45,200

Remarks

As the Ground and Software upgrades activity is a refinement of the Block 06 ground segment, no funding or activity is planned until FY07.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date **February 2005**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
BLOCK 2008								
Contract Modification				1Q				
Ground Station Upgrades				2Q-4Q	1Q-4Q			

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0012 Space Tracking and Surveillance System (STSS) Block 2010	12,100	47,833	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

Note:
Activity for this funding is described elsewhere due to classification.

A. Mission Description and Budget Item Justification

Activity is described elsewhere due to classification.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Future Block Development	12,100	47,833	0	0
RDT&E Articles (Quantity)	0	0	0	0

Activity is described elsewhere due to classification.

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
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PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

Activity is described elsewhere due to classification.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Future Block Development										
			0	47,833		0		0		47,833
Subtotal Product Development			0	47,833		0		0		47,833

Remarks

Activity is described elsewhere due to classification.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 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 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

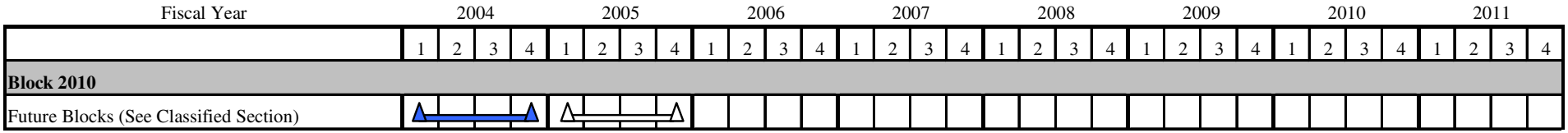
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			0	47,833		0		0		47,833

Remarks

Activity is described elsewhere due to classification.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date **February 2005**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE **0603884C Ballistic Missile Defense Sensors**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Block 2010								
Future Blocks (See Classified Section)	1Q-4Q	1Q-4Q						

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
R112 Space Tracking and Surveillance System (STSS) Block 2012	0	0	535	167,045	440,000	579,000	737,000	773,000
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The Block 2012 STSS constellation builds upon the Block 2006 STSS hardware and software integration. Key decision points in developing the constellation are tied to the STSS Block 2006 effort. Most importantly, authority to proceed with the constellation contract will be granted after delivery of the Block 2006 Flight Payloads. Constellation CDR will occur after significant on-orbit demonstrations with the Block 2006 system have been performed and data analyzed. The launch of the first satellite in the constellation is expected to be in early Block 2012. Exact launch schedule will depend on satellite configuration as determined by BMDS system trades to be conducted in FY05, and acquisition strategy to be developed in FY05 and FY06.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Block 2012 Constellation	0	0	535	167,045
RDT&E Articles (Quantity)	0	0	0	0

FY 2006 Planned Program:

- Award Contract

FY 2007 Planned Program:

- Begin Contractor Constellation and Satellite Design Efforts
- Implement a capability based acquisition strategy
- Conduct analysis of Block 2006 performance for application to Block 2012 design effort
- Conduct Satellite System Design Review (SDR)

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

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PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

D. Acquisition Strategy

A capability based acquisition strategy for the STSS Constellation activity will be developed in FY05 and early FY06.

The strategy will be consistent with MDA's spiral development and evolutionary acquisition philosophy. Contract award is anticipated in late FY06. Progress on Block 2006 satellites will be key to the development of the STSS Constellation. Block 2006 Flight Payloads will be delivered prior to Block 2012 contract award. Significant Block 2006 on-orbit experience will be in hand before Block 2012 constellation CDR.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Block 2012 Constellation										
STSS Constellation		TBD	0	0	N/A	535	4Q	167,045	1/4Q	167,580
Subtotal Product Development			0	0		535		167,045		167,580

Remarks

Acquisition Strategy is under development -- contract details are TBD.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 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 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

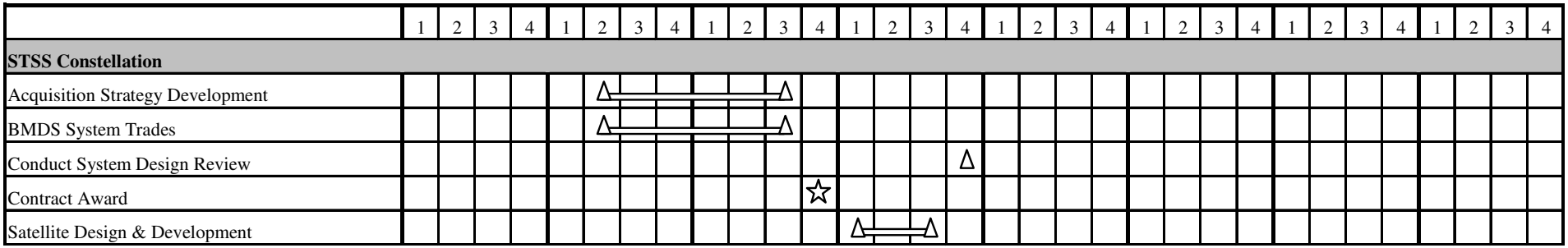
IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		535		167,045		167,580

Remarks

Acquisition Strategy for the Constellation is under development -- contract details are TBD.

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
STSS Constellation								
Acquisition Strategy Development		2Q-4Q	1Q-3Q					
BMDS System Trades		2Q-4Q	1Q-3Q					
Conduct System Design Review				4Q				
Contract Award			4Q					
Satellite Design & Development				1Q-3Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0403 Russian-American Observation Satellite(s) Program (RAMOS)	27,562	0	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Due to the lack of progress on the RAMOS Government-to-Government agreement with Russia, and the uncertainty this caused, MDA terminated the RAMOS program. RAMOS termination was accomplished using remaining FY04 funds. MDA received the Russian Government's draft MOU in July 2002 and despite 17 months of discussions, MDA was unable to complete a government-to-government agreement. Without this agreement, which includes the fundamental issue of taxes and liabilities, the RAMOS program could not be executed beyond the design stage. MDA will continue to discuss an overarching MOU to govern defense cooperation with Russia, and is actively exploring alternative more beneficial missile defense cooperative projects with Russia, that enjoy the support of the Government of the Russian Federation. In accordance with Sec 8049 of the FY05 Department of Defense Appropriations Act the FY04 funds in the amount of $26.5M was rescinded from the Ramos Program. However, at the time of the rescission, most of the FY04 funding was already expended. Only $8.472M was available for the rescission.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Design and Development	27,154	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

FY 2004 activities:

- Continued detailed design of the satellite sensors, payload support equipment, ground support equipment, and all associated projects to accomplish the space experiments (until termination decision)
- Continued preliminary design of ground facilities (until termination decision)
- Designed and begin fabricating sensor prototypes to be used during interface testing (until termination decision)
- Began writing sensor software (until termination decision)
- Continued development of models and simulations to test the design and concepts(until termination decision)
- Executed a partial termination and began orderly closure of all activities (until FY04 rescission)
- Terminated all activities when most of the FY04 funding was rescinded

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

	FY 2004	FY 2005	FY 2006	FY 2007
RAMOS Solar Arrays	408	0	0	0
RDT&E Articles (Quantity)	0	0	0	0

Activities are aimed at demonstrating improved efficiencies associated with amorphous silicon substrate based solar cell technology, space-qualification of prototype units, and successful integration of a "blanket" of solar cells for test and evaluation of future space vehicle applications. The goal is to increase the specific power of a Si solar cell from 400 W/kg to greater than 500 W/kg.

FY 2004 activities:

- Optimize interconnect technology, minimizing both electrical and area losses
- Develop stowing/deployment mechanism for flexible thin-film photovoltaic blankets
- Develop new area design to optimize total area cell efficiency and minimize area losses
- Optimize substrate thinning process

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

This program has been terminated.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Design and Development										
U.S. Hardware Development	SS/CPFF	Utah State Univ/SDL/ Logan, UT	41,267	0	N/A	0	N/A	0	N/A	41,267
R.F. Hardware Development	SS	Rosoboronexport , RF	33,828	0	N/A	0	N/A	0	N/A	33,828
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/ Broomfield, CO	21,561	0	N/A	0	N/A	0	N/A	21,561
RAMOS Solar Arrays										
Design and Development	MIPR	AFRL/Kirtland AFB, NM	6,292	0	N/A	0	N/A	0	N/A	6,292
Subtotal Product Development			102,948	0		0		0		102,948

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Design and Development										
Development Support	MIPR	AFRL/ Hansom AFB, MA	1,946	0	N/A	0	N/A	0	N/A	1,946
Subtotal Support Costs			1,946	0		0		0		1,946

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

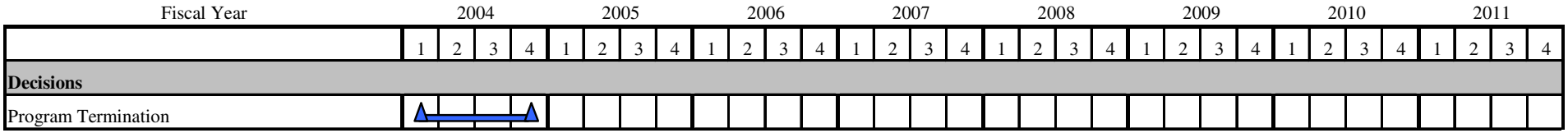
Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Design and Development										
Security Monitoring Supt	MIPR	DTSA	230	0	N/A	0	N/A	0	N/A	230
Interpreter Support	MIPR	DOS	480	0	N/A	0	N/A	0	N/A	480
Subtotal Management Services			710	0		0		0		710
Remarks										
Project Total Cost			105,604	0		0		0		105,604

Remarks

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**



Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Decisions								
Program Termination	1Q-4Q							

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0811 Ballistic Missile Defense Radars Block 2004/2006	110,018	260,519	272,243	263,367	60,437	92,953	0	0
RDT&E Articles Qty	0	1	0	1	0	0	0	0

Note:
In FY 2004 the Airborne Infrared Surveillance (AIRS) program was funded in STSS project 0812, Space Tracking and Surveillance System Block 2006.

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense Systems (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. The MDA Sensors Directorate mission is to develop, acquire, field and operate BMDS sensors utilizing the Block approach to deliver increasing capabilities. The Sensors Directorate provides a BMDS vs. Element-Centric focus to enhance BMDS sensor synergy. The BMDS sensor architecture objective is to continue to close sensor coverage gaps by implementing a layered sensor approach. Expanding the layered sensor architecture will improve BMDS ability to detect, track and engage ballistic missiles in all phases of their flight.

MDA identifies BMDS capabilities, architectures and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs). These ESGs describe a combination of weapons, sensors and C2BMC capabilities that must work together to detect, track and intercept an enemy missile - the complete kill chain from the time the threat missile is first detected through the intercept of the target. Through ESGs, the responsible engineering organization (REO) identifies the necessary interfaces required to deliver a usable configuration of the BMDS. ESGs are also useful in helping the operator plan and train for operation of that capability, and they provide a means to track and test future improvements to the system. The increased sensor coverage will give BMDS more ways (expands Engagement Sequence Groups) and opportunities to engage ballistic missile threats which improves the probability of successfully destroying the target.

FBX-T #1 is a Block 2006 sensor that has been accelerated to a Block 2004 operational asset.

Block 2006 efforts include:

- Deployment of Forward Based X-Band Radar-Transportable (FBX-T) radars;
- CLS contract to support deployed FBX-T Radars; and
- Working with the MDA Battle Management/Command and Control Directorate (BC) and other MDA Elements to implement sensor netting.

The BMDS is deploying forward based radars that support a layered sensor architecture. The Forward Based X-Band Radar-Transportable (FBX-T) will provide a capability to detect ballistic missiles early in their flight and provide precise tracking information for use by the BMDS. This approach provides overlapping sensor coverage and the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. This will enhance the capability of the BMDS to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight.

The FBX-T radar will pass target data to the command and control system for use by midcourse and terminal sensors and weapons for tracking and subsequent intercept. Earlier detection with forward based radars, coupled with layered sensors, gives the BMDS a tracking and discrimination capability with more shot opportunities to engage the target, resulting in an increased probability of successful engagement. The radar broadens the BMDS capability in the near future, adding robustness against a wide range of threats and may be used to provide support for increased protection of

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

forward based military assets, allies, and friends. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the FBX-T is planned to be ground based and re-locatable with the potential for sea-basing. The radar capability now under development will extend the BMDS battlespace; allow for rapid reconfiguration of the BMDS; and complicate an enemy's ability to penetrate the defense system.

The FBX-T is a high-resolution, X-band, phased array radar based upon the Terminal High Altitude Area Defense Radar (THAAD) hardware and software design. This commonality allowed for the accelerated procurement and development of a forward based capability. Up to three FBX-T's may be developed and deployed to meet the national objective of protecting the United States from Intercontinental Ballistic Missiles (ICBMs) and medium range threats.

FBX-T will include modified software algorithms for tracking and discrimination from a forward-based perspective. The radar will have a direct interface with the BMDS command and control system. The radar will perform surveillance autonomously or as cued by other sensors, and it will acquire, track and discriminate threat missiles and missile components, and pass this information to other BMDS tracking, discrimination, and fire control radars downstream. The land-based FBX-T is designed to be air transportable, roll-on/roll-off ship transportable, and rail transportable. The radar consists of a solid-state, phased-array antenna supported by an electronics unit and a cooling unit. Acquire generators, a radar support trailer, and two supply containers also are part of the deployable radar.

The FBX-T #1 is on schedule to deliver a search and track capability in Block 2004. Discrimination enhancements will be added in Block 2006 as part of the BMDS Test Bed. Advanced capabilities will be added through upgrades and improvement programs via a series of spiral software enhancements. Acquisition of two additional Forward Based X-Band Radars, Block 2006 and Block 2008 assets, will reduce sensor gaps in multiple threat areas.

A Contractor Logistics Support (CLS) contract will be awarded to deploy, operate and sustain the radar at its forward based location. The contract will also include radar site survey, site preparations, personnel training, and radar system maintenance.

Efforts will include investigation of Electro-Optical/Infrared (EO/IR) sensors in the Airborne Infrared Surveillance (AIRS) program. The program's primary objective is to evaluate the AIRS ability to operate as the primary sensor in an Engagement Sequence Group (i.e., use AIRS data to engage ballistic missile threats).

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Capability Development	110,018	245,915	228,443	212,327
RDT&E Articles (Quantity)	0	1	0	1

The FBX-T radars provide a capability to detect ballistic missiles early in their flight and provide precise tracking information for use by the BMDS.

FY 2004 Accomplishments:

- Definitized contract for initial FBX-T
- Continued sensor analysis to support definition of BMDS sensor architecture
- Defined BMDS sensor architecture and roadmap

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

- Developed test plans and began algorithm assessment with TPS-X radar
- Continued to evaluate forward based algorithms with TPS-X radar
- Completed assembly of FBX-T hardware
- Conducted FBX-T Near Field Range testing
- Acquired 2nd FBX-T radar
- Completed software requirements for FBX-T Capability Release 1 (CR1)
- Began planning for FBX-T deployment

FY 2005 Planned Accomplishments:

RDT&E Test Article: Acquisition of one FBX-T #1 radar was initiated in FY 2003 for delivery in FY 2005 with search and track functionality

- Complete testing and validation of Forward-based algorithms with TPS-X
- Complete FBX-T software CR1
- Acquire Generators
- Commence activities necessary to deploy FBX-T #1
- Implement Anti-Tamper program and complete security documentation
- Integrate and test C2BMC interface for FBX-T
- Develop FBX-T software Capability Release 2 (CR2)
- Continue sensor analysis to support definition of BMDS sensor architecture
- Complete Final Integration and Test of FBX-T #1
- Develop Mission Plans for FBX-T #1
- Evaluate AIRS performance parameters to identify areas for improvement
- Demonstrate AIRS ability to close fire control loop in off line test

FY 2006 Planned Program:

- Deploy FBX-T #1 with search and track functionality
- Develop Site requirements for FBX-T #1
- Develop Capabilities Release (CR2) software implementing forward based capability
- Continue manufacture of FBX-T #2 radar

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

FY 2007 Planned Program:

RDT&E Test Article: Acquisition of FBX-T #2 radar was initiated in FY 2004 for delivery in FY 2007 with forward base capability.

- Deploy FBX-T #2
- Continue Algorithm Integration and Test

	FY 2004	FY 2005	FY 2006	FY 2007
Sustainment	0	14,604	43,800	51,040
RDT&E Articles (Quantity)	0	0	0	0

MDA will fund CLS which will include the radar operators and maintainers. Host command, host nation or CLS Contract will provide physical security based on individual sites. All FBX-T radars will be deployed overseas. Host command or host nation will provide Force Protection.

FY 2004 Accomplishments:

- Developed CLS acquisition strategy

FY 2005 Planned Accomplishments:

- Award Contractor Logistics Support (CLS) contract for FBX-T Operation and Sustainment
- Conduct site surveys at overseas sites
- Prepare site for early FY06 radar installation
- Acquire spares to support overseas deployment
- Operate and sustain radar at Vandenberg Air Force Base during final integration & test

FY 2006 Planned Program:

- Install radar and ensure readiness for operational use
- Operate and sustain FBX-T #1 radar at overseas site
- Repair and replace failed parts
- Conduct site surveys for FBX-T #2 overseas site
- Prepare site design plans/specifications for FBX-T #2
- Acquire spares to support FBX-T #2 overseas deployment
- Develop Mission Plans for FBX-T radars

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

FY 2007 Planned Program:

- Install radar and ensure readiness for operational use
- Operate and sustain FBX-T radars #1 and #2 at overseas sites
- Develop Mission Plans for FBX-T radars

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

D. Acquisition Strategy

The Forward X-Band Radar-Transportable (FBX-T) radar project will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. This acquisition strategy includes working with the FFRDC's and utilizing the TPS-X radar as a risk reduction asset for the BMDS Sensors.

The BMDS radar (FBX-T) project used an existing radar design to minimize development costs and schedule to the FBX-T. Design enhancements focus on software changes for the forward based algorithms and modified C2BMC connectivity. The contract is a cost plus award fee effort for three radars to support Blocks 04, 06, and 08.

A Contractor Logistics Support (CLS) contract will be awarded in FY 2005 to operate and maintain the FBX-T radar. The CLS contract will provide the operations and support activities required for site surveys, planning, and relocation; depot maintenance; failure reporting, analysis, and corrective action system; system operations; repair and replacement; and obsolescence management.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Capability Development										
FBX-T Radar #1	SS/CPAF	Raytheon/ MA	93,324	140,286	1Q	0	N/A	0	N/A	233,610
FBX-T Spiral Upgrade	SS/CPAF	Raytheon/ MA	0	0	N/A	125,700	1Q	170,504	1Q	296,204
FBX-T Radar #2	SS/CPAF	Raytheon/ MA	7,000	57,841	1Q	82,200	1Q	20,682	1Q	167,723
AIRS	SS/CPAF	OK City/ OK	0	7,150	1Q	0	N/A	0	N/A	7,150
FBX-T Radar #3	SS/CPAF	Raytheon/ MA	0	16,996	1Q	0	N/A	0	N/A	16,996
Subtotal Product Development			100,324	222,273		207,900		191,186		721,683

Remarks

Congressional Plus up in FY 05 of $1M for Plume Study and $9M for AIRS.

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Capability Development										
Program Management	FFP	TASC/ VA	2,400	2,600	1Q	3,175	1Q	3,325	1Q	11,500
Engineering Support	FFP	CSC/ VA	2,000	2,400	1Q	2,975	1Q	3,117	1Q	10,492
Program Support	Various	Various	131	994	1Q	2,094	1Q	2,094	1Q	5,313
AIRS/ Program Support	Various	Various	0	950	3Q	0	N/A	0	N/A	950

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
TPS-X O&S	CPAF	Raytheon/ MA	0	4,685	1Q	0	N/A	0	N/A	4,685
GFE		Various	56	3,975	1Q	3,975	1Q	4,000	1Q	12,006
Gov Salaries & /Travel			0	2,218	N/A	2,087	N/A	2,223	N/A	6,528
Sustainment										
CLS	SS/CPAF	Raytheon/ MA	0	12,590	3Q	40,600	2Q	46,000	2Q	99,190
Site Maintenance	SS/CPAF	Various/ Various	0	2,014	2Q	3,200	2Q	5,040	2Q	10,254
Subtotal Support Costs			4,587	32,426		58,106		65,799		160,918

Remarks

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Capability Development										
FBX-T FFRDC/UARC	Various	MIT/LL, MITRE, JHU/APL/ Various	5,107	4,920	3Q	6,237	3Q	6,382	3Q	22,646
FBX-T FFRDC/UARC	Various	MIT/LL, MITRE, JHU/APL	0	900	1Q	0	N/A	0	N/A	900
Subtotal Management Services			5,107	5,820		6,237		6,382		23,546
Remarks										
Project Total Cost			110,018	260,519		272,243		263,367		906,147
Remarks										

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Definitize FBX-T Contract	▲																															
Acquire FBX-T #2			▲																													
Award FBX-T CLS Contract						△																										
Studies & Analyses																																
Evaluate Forward-Based Algorithms (TPS-X)	▲	—	—	▲	△	—	—	△																								
Perform Sensor Architecture Analysis	▲	—	—	▲	△	—	—	—	—	—	—	△																				
Development Milestones																																
Conduct FBX-T Capability Release-1 (CR-1) CDR					△																											
Integrate FBX-T CR-1								△																								
Conduct FBX-T CR-2 PDR							△																									
Conduct FBX-T CR-2 CDR									△																							
Program Milestones																																
Complete FBX-T Radar #1 Integration and Test								△																								
Deliver FBX-T #1								△																								
Deliver FBX-T #2														△																		
Demonstration																																
Conduct FBX-T CR-1 Performance Demonstration								△																								
Conduct FBX-T CR-2 Performance Demonstration															△																	

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Acquisition Milestones								
Definitize FBX-T Contract	1Q							
Acquire FBX-T #2	3Q							
Finalize TPS-X Forward-Based Task Order	1Q							
Award FBX-T CLS Contract		2Q						
Studies & Analyses								
Evaluate Forward-Based Algorithms (TPS-X)	1Q-4Q	1Q-4Q						
Perform Sensor Architecture Analysis	1Q-4Q	1Q-4Q	1Q-4Q					
Development Milestones								
TPS-X Forward-Based Algorithm PDR	1Q							
TPS-X Forward-Based Algorithm CDR	3Q							
Conduct FBX-T systems Requirements Review (SRR)	1Q							
Conduct FBX-T Capability Release-1 (CR-1) CDR		1Q						
Integrate FBX-T CR-1		4Q						
Conduct FBX-T CR-2 PDR		3Q						
Conduct FBX-T CR-2 CDR			1Q					
Testing Milestones								
Support TPS-X Forward-Based Algorithm Flight Test	2Q							
FBX-T Radar Software Functional Qualification Test		3Q						
Support TPS-X Forward-Based Algorithm Flight Test		1Q,2Q,3Q						
Support FBX-T Radar High Power & Integration Test		2Q						
Support FBX-T Radar Near Field Test		1Q						
Program Milestones								
Complete FBX-T Radar System Requirements Phase	3Q							
Complete FBX-T Radar #1 Integration and Test		4Q						
Conduct TPS-X FBX-T Algorithms Progress Reviews		1Q,3Q,4Q						
Deliver FBX-T #1		4Q						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Deliver FBX-T #2				2Q				
Demonstration								
Conduct FBX-T CR-1 Performance Demonstration		4Q						
Conduct FBX-T CR-2 Performance Demonstration				3Q				

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0911 Ballistic Missile Defense Radars Block 2008	0	0	8,100	274,600	564,491	345,473	118,679	114,800
RDT&E Articles Qty	0	0	0	0	1	1	0	0

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense Systems (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. The MDA Sensors Directorate mission is to develop, acquire, field and operate BMDS sensors utilizing the Block approach to deliver increasing capabilities. The Sensors Directorate provides a BMDS vs. Element-Centric focus to enhance BMDS sensor synergy. The BMDS sensor architecture objective is to continue to close sensor coverage gaps by implementing a layered sensor approach. Expanding the layered sensor architecture will improve BMDS ability to detect, track and engage ballistic missiles in all phases of their flight.

MDA identifies BMDS capabilities, architectures and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs). These ESGs describe a combination of weapons, sensors and C2BMC capabilities that must work together to detect, track and intercept an enemy missile - the complete kill chain from the time the threat missile is first detected through the intercept of the target. Through ESGs, the responsible engineering organization (REO) identifies the necessary interfaces required to deliver a usable configuration of the BMDS. ESGs are also useful in helping the operator plan and train for operation of that capability, and they provide a means to track and test future improvements to the system. The increased sensor coverage will give BMDS more ways (expands Engagement Sequence Groups) and opportunities to engage ballistic missile threats which improves the probability of successfully destroying the target.

Block 2008 efforts include:

- Acquire Forward Based X-Band Radar-Transportable (FBX-T) #3;
- Acquire X-Band Dish Radars to augment FBX-T radars for extended tracking and discrimination;
- Upgrade an existing Large X-Band Dish radar to provide midcourse tracking and discrimination;
- Upgrade existing sensors for asymmetric threat coverage; and
- Implement sensor netting through sensor coordination and data collection to support improved tracking and discrimination via data fusion.

The BMDS is deploying forward based radars that support a layered sensor architecture. The Forward Based X-Band Radar-Transportable (FBX-T) will provide a capability to detect ballistic missiles early in their flight and provide precise tracking information for use by the BMDS. This approach provides overlapping sensor coverage and the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. This will enhance the capability of the BMDS to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight.

The FBX-T radar will pass target data to the command and control system for use by midcourse and terminal sensors and weapons for tracking and subsequent intercept. Earlier detection with forward based radars, coupled with layered sensors, gives the BMDS a tracking and discrimination capability with more shot opportunities to engage the target, resulting in an increased probability of successful engagement. The radar broadens the BMDS capability in the near future, adding robustness against a wide range of threats and may be used to provide support for increased protection of forward based military assets, allies, and friends. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the FBX-T is planned to be ground based and re-locatable with the potential for sea-basing. The radar capability now under development will extend the BMDS battlespace; allow for rapid reconfiguration of the BMDS; and complicate an enemy's ability to penetrate the defense system.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
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The FBX-T is a high-resolution, X-band, phased array radar based upon the Terminal High Altitude Area Defense Radar (THAAD) hardware and software design. This commonality allowed for the accelerated procurement and development of a forward based capability. Up to three FBX-T's may be developed and deployed to meet the national objective of protecting the United States from Intercontinental Ballistic Missiles (ICBMs) and medium range threats.

FBX-T will have a direct interface with the BMDS command and control system. The radar will perform surveillance autonomously or as cued by other sensors, and it will acquire, track and discriminate threat missiles and missile components, and pass this information to other BMDS tracking, discrimination, and fire control radars downstream. The land-based FBX-T is designed to be air transportable, roll-on/roll-off ship transportable, and rail transportable. The radar consists of a solid-state, phased-array antenna supported by an electronics unit and a cooling unit. Acquire generators, a radar support trailer, and two supply containers also are part of the deployable radar.

The existing Contractor Logistics Support (CLS) contract will be used to deploy, operate and sustain all the FBX-T radars. The contract provides for radar site survey, site preparations, personnel training, and radar system maintenance. CLS effort for Block 2008 will begin in FY09.

FBX-T enhancements will be continued as part of the BMDS Test Bed. Advanced capabilities will be added through upgrades and improvement programs via a series of spiral enhancements. Acquisition of an additional FBX-T #3 will further reduce sensor gaps.

The deployment and networking of additional sensors supports the MDA goal of using a layered sensor architecture to provide a more robust BMDS. Target tracking and eventually discrimination will be performed by upgrades to an existing Large X-Band Dish radar and procurement of two smaller X-Band Dish Radars to be used in conjunction with FBX-T radars. Pairing the FBX-T radars with X-Band Dish Radars (depending on the region being covered) significantly increases the amount of time available for tracking and eventually discrimination. This strategy along with upgrading an existing Large X-Band Dish Radar will eliminate discrimination gaps for most missile trajectories emanating from specific rogue nations, and thereby increasing BMDS effectiveness.

The FBX-T's will provide BMDS precise acquisition and tracking information on ballistic missiles from boost into midcourse, providing the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. The extended coverage provided by the adjunct dish radars will further enhance the capability of the BMDS to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight.

Upgrades to the existing Large X-Band Dish Radar will include software and signal processing enhancements to be completed for Block 2008. Upgrades will be based on SBX functionality and will include tracking and discrimination algorithms and connectivity capabilities. Procurement of the additional X-Band Dish radars will begin in FY07 with delivery in Block 2008 and Block 2010 respectively. Contractor Logistics Support will be provided to operate and sustain the radars. Support will include radar site survey, site preparations, personnel training, and radar system maintenance.

Identify options to improve asymmetric threat coverage, which may involve upgrade and improvements to existing sensors including processors, communications capabilities, and software enhancements.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Capability Development	0	0	8,100	274,600
RDT&E Articles (Quantity)	0	0	0	0

The FBX-T radars provide a capability to detect ballistic missiles early in their flight and provide precise tracking information for use by the BMDS.

FY 2006 Planned Program:

- Continue to improve FBX-T capabilities thru Spiral Upgrades
- Continue sensor analysis to support definition of BMDS sensor architecture
- Continue manufacture of FBX-T #3 radar
- Initiate Studies for Large X-Band Dish upgrade
- Perform trade-studies and acquisition strategy development for X-Band Dish radars for FBX-T
- Evaluate, integrate and test Hercules Suite 2 algorithms
- Develop common software with added discrimination capabilities for X-Band radars

FY 2007 Planned Program:

- Complete manufacture of FBX-T #3 radar
- Award contract for upgrade of Large X-Band Dish radar
- Award contract for two X-Band Dish radars for FBX-T
- Continue to improve FBX-T thru Spiral Upgrades
- Begin asymmetric upgrades to existing sensors
- Continue sensor analysis to support definition of BMDS sensor architecture
- Continue data fusion and sensor netting efforts
- Provide software with added discrimination capabilities to other BMDS sensor programs
- Continue common software efforts for X-Band radars

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

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PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
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PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

D. Acquisition Strategy

The BMDS radar (FBX-T) project used an existing radar design to minimize development costs and schedule to the FBX-T. Design enhancements focus on software changes for the forward based algorithms and modified C2BMC connectivity. The contract is a cost plus award fee effort. The existing FBX-T contract will be used to acquire FBX-T #3 and spiral upgrades to the FBX-T radars.

FBX-T CLS for Block 2006 will be used to provide O&S for FBX-T(s) in Block 2008 and beyond. The CLS contract will provide the operations and support activities required for site surveys, planning, and relocation; depot maintenance; failure reporting, analysis, and corrective action system; system operations; repair and replacement; and obsolescence management.

An acquisition strategy will be developed in FY07 to upgrade existing Large X-Band Dish radar and to acquire two X-Band Dish radars for the FBX-T's, a Block 2008 and Block 2010 asset.

An acquisition strategy will be developed in FY07 to operate and sustain Large X-Band Dish radar and X-Band Dish radar for FBX-T radar.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Capability Development										
FBX-T Spiral Upgrade	SS/CPAF	Raytheon/ MA	0	0	N/A	5,100	1Q	106,255	1Q	111,355
FBX-T Radar #3	SS/CPAF	Raytheon/ MA	0	0	1Q	0	N/A	78,865	1Q	78,865
X-Band Dish Radar for FBX-T	C	TBD	0	0	N/A	1,000	1Q	10,000	1Q	11,000
Large X-Band Dish radar upgrade	SS/CPAF	Raytheon/ MA	0	0	N/A	2,000	1Q	19,000	1Q	21,000
Sensor for Asymmetric Threat Upgrade	CPAF	TBD	0	0	N/A	0	N/A	60,480	2Q	60,480
Subtotal Product Development			0	0		8,100		274,600		282,700

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Support Costs										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

III. Test and Evaluation Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			0	0		8,100		274,600		282,700

Remarks

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

Date
February 2005

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

R-1 NOMENCLATURE
0603884C Ballistic Missile Defense Sensors

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Award Contract to Upgrade Large X-Band Dish Radar													Δ																			
Contract for Asymmetric Sensor Upgrade														Δ																		
Award Contract for 2 X-Band Dish Radar for FBX-Ts														Δ																		
Program Milestones																																
Complete Upgrade to Large X-Band Dish Radar																				Δ												
Deliver 1st X-Band Dish Radar for FBX-T Radar																					Δ											
Deliver FBX-T #3																						Δ										
Complete Upgrade to Asymmetric Sensor																						Δ										

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Acquisition Milestones								
Award Contract to Upgrade Large X-Band Dish Radar				1Q				
Contract for Asymmetric Sensor Upgrade				2Q				
Award Contract for 2 X-Band Dish Radars for FBX-Ts				2Q				
Contract for Asymmetric Sensor Upgrade				2Q				
Program Milestones								
Complete Upgrade to Large X-Band Dish Radar					4Q			
Deliver 1st X-Band Dish Radar for FBX-T Radar						1Q		
Deliver FBX-T #3						2Q		
Complete Upgrade to Asymmetric Sensor						2Q		

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE: 0603884C Ballistic Missile Defense Sensors

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0011 Ballistic Missile Defense Radars Block 2010	0	0	9,400	15,700	19,000	101,000	165,863	84,565
RDT&E Articles Qty	0	0	0	0	0	0	1	0

A. Mission Description and Budget Item Justification

The mission of the Missile Defense Agency (MDA) is to develop an integrated layered Ballistic Missile Defense Systems (BMDS) to defend the United States, its deployed forces, friends and allies from ballistic missiles of all ranges and in all phases of flight. The MDA Sensors Directorate mission is to develop, acquire, field and operate BMDS sensors utilizing the Block approach to deliver increasing capabilities. The Sensors Directorate provides a BMDS vs. Element-Centric focus to enhance BMDS sensor synergy. The BMDS sensor architecture objective is to continue to close sensor coverage gaps by implementing a layered sensor approach. Expanding the layered sensor architecture will improve BMDS ability to detect, track and engage ballistic missiles in all phases of their flight.

MDA identifies BMDS capabilities, architectures and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs). These ESGs describe a combination of weapons, sensors and C2BMC capabilities that must work together to detect, track and intercept an enemy missile - the complete kill chain from the time the threat missile is first detected through the intercept of the target. Through ESGs, the responsible engineering organization (REO) identifies the necessary interfaces required to deliver a usable configuration of the BMDS. ESGs are also useful in helping the operator plan and train for operation of that capability, and they provide a means to track and test future improvements to the system. The increased sensor coverage will give BMDS more ways (expands Engagement Sequence Groups) and opportunities to engage ballistic missile threats which improves the probability of successfully destroying the target.

Enhancement of the existing sensor architecture will be based on continued sensor coverage gap analysis and architecture studies. The study will take into account existing sensors (land, sea, air and space based), new sensor technologies and techniques to enhance sensor coverage and advanced sensor algorithms. The analysis will result in various options to increase coverage, the best of which will be subjected to cost-study trade-offs and feasibility for inclusion in Block 10 acquisition, and follow-on spiral development efforts.

Block 2010 efforts include:

- Explore and evaluate the utilization of technologies such as Electro-Optics / Infrared to the BMDS;
- Acquire X-Band Dish Radar #2 to work in conjunction with Forward Based X-Band Radar-Transportable (FBX-T) radars for extended tracking and discrimination;
- Operate and sustain FBX-T Radars and X-Band Dish radars;
- Operate and sustain an existing Large X-Band Dish radar to provide midcourse tracking and discrimination;
- Operate and sustain upgraded existing sensors for asymmetric threat coverage; and
- Implement sensor netting through sensor coordination and data collection to support improved tracking and discrimination via data fusion.

The BMDS Block 2010 sensors provide a layered sensor architecture with the capability to detect ballistic missiles early in their flight and provide precise tracking information for use by the BMDS. This approach provides overlapping sensor coverage and the potential for BMDS weapons to extend their effective range beyond local sensors by using more sophisticated engagement strategies. This will enhance the capability of the BMDS to defend the United States and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight.

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Block 2010 CLS will begin in FY11. Existing Contractor Logistics Support (CLS) contracts will be used to operate and sustain the radars. The contract will include radar site survey, site preparations, personnel training, and radar system maintenance. Advanced capabilities will be added through upgrades and improvement programs via a series of spiral enhancements. The deployment and networking of additional sensors supports the MDA goal of using a layered sensor architecture to provide a more robust BMDS.

Efforts will include investigation of Electro-Optical / Infrared (EO/IR) sensors in the Airborne Infrared Surveillance (AIRS) program. Airborne Infrared Surveillance allows for the acquisition and tracking of targets from horizon-to-horizon through aircraft zenith. The AIRS program is a proof of concept for employing optical sensors as an operational element of the BMDS. The Airborne Infrared Surveillance program uses the High Altitude Observatory-II (HALO-II) system. Block 2006's FY05 EO/IR objective is to demonstrate the AIRS ability to operate as the primary sensor in an Engagement Sequence Group (i.e., use AIRS data to engage ballistic missile threats). The Block 2010 evaluation will include an assessment of the value that AIRS brings to the BMDS sensor architecture. A follow-on acquisition and procurement strategy may be developed in FY07 based on the evaluation of sensor performance.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Capability Development	0	0	9,400	15,700
RDT&E Articles (Quantity)	0	0	0	0

FY 2006 Planned Program:

- Continue development to the EO/IR concept

FY 2007 Planned Program:

- Initiate planning for X Band Dish Radars interface to BMDS
- Initiate series of trade studies for EO/IR

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
PE 0603883C Ballistic Missile Defense Boost Defense Segment	475,911	476,179	483,863	648,728	620,793	690,807	811,430	1,183,182	5,390,893
PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
PE 0603888C Ballistic Missile Defense Test and Targets	616,773	720,818	622,357	684,170	608,282	643,119	661,362	670,092	5,226,973
PE 0603889C Ballistic Missile Defense Products	309,949	383,830	455,152	509,982	509,161	516,599	516,017	515,729	3,716,419
PE 0603890C Ballistic Missile Defense System Core	449,747	399,829	447,006	538,442	532,412	530,934	520,679	531,832	3,950,881
PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

D. Acquisition Strategy

Contractor Logistics Support (CLS) contracts established in the prior Blocks will be used to operate and sustain the FBX-T radars, X-Band Dish radars, upgraded Large X-Band Dish and the upgraded asymmetrical sensors.

A second X-Band Dish radar for the FBX-T's will be acquired through the contract established in Block 2008 for the first X-Band Dish.

Acquisition Strategy for EO/IR is predicated on the AIRS effort through FY 2005.

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

I. Product Development Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Capability Development										
X-Band Dish Radar for FBX-T	C	TBD	0	0	N/A	0	1Q	1,700	1Q	1,700
EO/IR		TBD	0	0	N/A	9,400	1Q	14,000	1Q	23,400
Subtotal Product Development			0	0		9,400		15,700		25,100

Remarks

II. Support Costs Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 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 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

IV. Management Services Cost ($ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award/ Oblg Date	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Subtotal Management Services										
Remarks										
Project Total Cost			0	0		9,400		15,700		25,100
Remarks										

Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Acquire 2ndX-Band Dish Radar for FBX-T																					Δ											
Development Milestones																																
Evaluate ABIR close fire control loop test offline										Δ																						
Conduct trade studies for ABIR													Δ																			
Program Milestones																																
Deliver 2nd X-Band Dish Radar for FBX-T																										Δ						

Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Acquisition Milestones								
Acquire 2nd X-Band Dish Radar for FBX-T						1Q		
Development Milestones								
Evaluate ABIR close fire control loop test offline			2Q					
Conduct trade studies for ABIR				1Q				
Program Milestones								
Deliver 2nd X-Band Dish Radar for FBX-T							2Q	

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

COST ($ in Thousands)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	5,348	13,106	8,321	21,595	36,294	32,494	25,896	25,417
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common support functions across the entire program such as strategic planning, program integration, cost estimating, contracting, and financial management to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions as well as support contractors providing government staff augmentation in these areas. Applies to costs at the MDA HQ as well as its Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities. Other costs include physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses at the various MDA Executing Agent locations, which at the MDA HQ are generally funded from the Management Headquarters Program Element (0901598C). Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Civilian Salaries and Support	5,348	13,106	8,321	21,595
RDT&E Articles (Quantity)	0	0	0	0

See Section A: Mission Description and Budget Item Justification

Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date: February 2005
APPROPRIATION/BUDGET ACTIVITY: **RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**	R-1 NOMENCLATURE: **0603884C Ballistic Missile Defense Sensors**

C. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	226,765	231,145	136,241	184,877	197,229	205,191	212,435	218,763	1,612,646
PE 0603879C Advanced Concepts, Evaluations and Systems	132,701	159,878	0	0	0	0	0	0	292,579
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	860,794	928,388	1,143,610	1,034,676	879,674	617,319	731,282	485,512	6,681,255
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	3,731,708	4,521,019	3,266,196	3,945,991	3,650,848	3,315,513	3,183,622	2,545,882	28,160,779
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PE 0603884C Ballistic Missile Defense Sensors	417,814	577,297	529,829	995,711	1,214,008	1,186,134	1,069,208	1,018,614	7,008,615
PE 0603886C Ballistic Missile Defense System Interceptors	114,669	279,815	229,658	444,900	677,243	1,137,337	1,468,827	1,717,507	6,069,956
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PE 0603891C Special Programs - MDA	0	0	349,522	482,903	826,173	1,097,252	1,015,198	1,244,072	5,015,120
PE 0605502C Small Business Innovative Research - MDA	146,030	0	0	0	0	0	0	0	146,030
PE 0901585C Pentagon Reservation	16,251	13,761	17,386	15,586	6,058	6,376	4,490	4,725	84,633
PE 0901598C Management Headquarters - MDA	92,100	113,777	99,327	95,443	98,984	98,728	81,492	81,760	761,611
Air Force – Other Procurement	0	0	2,400	1,453	11,279	386	17,710	25,709	58,937
Air Force – Operations and Maintenance	0	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
Air Force – Military Personnel	0	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
Army – Operations and Maintenance	37,600	49,597	66,974	68,246	69,809	71,472	73,325	75,230	512,253
Army National Guard – Operations and Maintenance	0	0	155	151	150	154	164	167	941
Army National Guard – Military Personnel	21,000	21,000	17,648	24,432	24,952	25,591	25,591	25,591	185,805
Navy – Operations and Maintenance	0	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PAC-3/MEADS – RDT&E	433,728	344,978	304,973	336,959	465,395	521,791	522,418	502,961	3,433,203
PAC-3/MEADS – Missile Procurement	841,964	574,972	581,924	578,579	660,584	616,020	509,032	738,679	5,101,754