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MDA Exhibit R -2RDT&EBudgetItemJustification	Date February 2003
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APPROPRIATION/BUDGETACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
Total PECost	312973	350436	438242	562752	706514	1043454	1152740	1261906
5041 Space -Based Infrared System (SBIRS) Low/Space Tracking and Surveillance System (STSS)	234076	286331	0	0	0	0	0	0
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	0	275904	284950	285358	203972	75091	35070
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	0	0	81979	177486	88650
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	0	24291	44065	232096	565071	749927	1064774
5049/0403 Russian -American Observation Satellite Program (RAMOS)	50903	48998	29623	77358	39090	35134	24380	24354
0811 Ballistic Missile Defense Radars Block 2006	0	0	101000	144947	133883	0	0	0
0911 Ballistic Missile Defense System Radars Block 2008	0	0	0	0	0	136144	102493	22211
5060 Test & Evaluation	13806	4872	0	0	0	0	0	0
5090/0602 Program Operations	14188	10235	7424	11432	16087	21154	23363	26847

A. Mission Description and Budget Item Justification

Note: The STSS has been broken into three STSS capability blocks (STSS Block 2006 --Project 0812, STSS Block 2008 --Project 0912, and STSS Block 2010 --Project 0012). Two of the other projects in this PE are not block specific, but have undergone project code changes. RAMOS (Project 5049) has been changed to Project 0403. Program Operations (Project 5090) has been changed to Project 0602. The BMDS Radar project is a new initiative starting in FY 2004. BMDS Radar has been broken into two BMDS Radar capability blocks (BMDS Radar Block 2006 --Project 0811 and BMDS Radar Block 2008 --Project 0911). The Test and Evaluation (Project 5060) activity beginning in FY 2004 is described in PE 0603888C.

The MDA develops the Ballistic Missile Defense System (BMDS) using biennial capability blocks. This approach is the most efficient and effective way to get missile defense assets into the hands of the warfighters as quickly as possible while allowing for rapid insertion of emerging technology in the most affordable manner. These capability blocks will build on and be integrated with the predecessor blocks. Block capabilities are built by using elements and components to integrate a single BMDS with multiple operating modes, and provide layered defense against ballistic missiles during all flight phases - Boost, Midcourse, and Terminal - using multiple basing modes and phenomenology.

Based on Presidential direction, MDA is developing an initial defensive operational capability that is based on the BMDS Test Bed and augmented with additional development assets. MDA will continue to employ the Test Bed for testing beyond initial fielding to evolve an integrated, layered Ballistic Missile Defense capability.

As a part of the total BMDS, the Sensors Program Element (PE) funds the sensor -related element portions of Blocks 2006, 2008, and 2010 and other sensor -related mission area investment activities. Technologies and capabilities developed under the Sensors Program Element include: the Space Tracking and Surveillance System (STSS) (having been renamed during FY 2003 from Space Based Infrared System Low (SBIRS Low)), Russian -American Observation Satellites (RAMOS), BMDS Radar, and related sensor initiatives. The efforts in this Sensors Program Element have been structured to leverage existing sensors, define sensor upgrade requirements and take advantage of uses previously prohibited by the ABM Treaty to evolve a network of sensors at the BMDS level to detect, track, and discriminate ballistic missile threats; to control interceptors; and to support kill assessment and re-targeting. This capability will be delivered using the BMDS Block approach by integrating and incrementally improving current sensor capabilities, initiating RDT&E program of fill gaps in the global sensor network, and to improve sensor performance and increase flexibility and survivability.

MDA is investing in an integrated, layered approach to sensors that includes diversity in spectra, basing modes and technologies, as well as flexibility in sensor locations, to form a sensor network that is integrated with the BMDS through the Command & Control, Battle Management, and Communication (C2BMC) system.

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<p>Consistent with the MDA block management framework, the STSS has been broken into three STSS capability blocks (STSS Block 2006 --Project 0812, STSS Block 2008 --Project 0912, and STSS Block 2010 --Project 0012.</p> <p>The STSS project (formerly SBIRSLow) is expected to provide global infrared (IR) tracking and discrimination data to the BMDS. The project will develop R&D satellites, ground station and processing infrastructure to detect missiles in boost phase and precisely track boosters and other objects in midcourse through interceptor reentry. STSS will provide data in support of closing the interceptor fire control loop. This substantial capability allows over-the-horizon fire control and tracking of missile through all phases of missile flight: boost, midcourse and terminal. This space-based sensor capability, when the constellation is adequately populated and integrated into the C2BMC system, provides a global 24-hour, 7-day-a-week infrared sensor for the BMDS.</p> <p>The Russian-American Observation Satellites (RAMOS) project is an innovative U.S. and Russian Federation space-based remote research and development program addressing ballistic missile defense related technologies. It engages Russian developers of early warning satellites in the joint definition and execution of aircraft and space experiments and provides a foundation for additional future cooperative activities. The RAMOS program will design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid-to-long wavelength infrared bands. Current plans call for Russia to provide the launch capability, satellite platforms, ultraviolet sensors and visible cameras, and the ground processing and control equipment while the U.S. will provide the infrared sensors and visible pushbroom cameras. The satellites are scheduled for launch in FY 2007-08 with a nominal two-year on-orbit life expectancy and goal to extend the mission an additional five years.</p> <p>The BMDS Radar project will significantly enhance BMD effectiveness by expanding the battlespace. The BMDS Radar is envisioned to be a Family of Radars (FOR) that will have both land and sea-based components. The BMDS FOR will provide early detection, tracking, and discrimination of threat missiles, providing precise data to the BMDS sensor network. The BMDS Radar project will begin by validating the concept of forward basing and sensor layering and evaluating advanced algorithms using existing assets (MDA and non-MDA) to the maximum extent practical. In parallel, it will define possible improvements or modifications to both MDA and non-MDA owned sensors, and will define and procure additional Radar configurations as needed to support the integrated BMDS. Current plans call for the BMDS Family of Radars Configuration Element I (FORCEI) to be available in late CY 2006 to support initial defensive operations. Evolving radar configurations will use advanced algorithms and provide enhanced capabilities to support the BMDS. The BMDS FOR initiative beginning in FY 2006 will provide for continued sensor research to improve the capabilities and develop advanced algorithms for a BMDS FORCE baseline configuration(s) for Block 2008 and beyond.</p> <p>Test and Evaluation (T&E) project funding included developing an advanced radar technology Test Bed and proving out leap-ahead technologies and the T&E activity was transferred to PE 060388C.</p> <p>Program Operations under this project covers personnel and related support costs, statutory and fiscal requirements. May include funding for government civilians performing program-wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA); cost estimating; audit; technology integration across all MDA projects; and assessment of schedule, cost and performance, documentation of related programmatic issues and, foreign currency fluctuations on limited number of foreign contracts. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510.</p>		

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APPROPRIATION/BUDGETACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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B. Program Change Summary	FY2002	FY2003	FY2004	FY2005
Previous President's Budget (FY2003PB)	335338	373447	489181	1145680
Current President's Budget (FY2004PB)	312973	350436	438242	562752
Total Adjustments	-22365	-23011	-50939	-582928
Congressional Specific Program Adjustments	0	-14000	0	0
Congressional Undistributed Adjustments	-2544	-6169	0	0
Reprogrammings	-12768	-2842	-50939	-582928
SBIR/STTR Transfer	-7053	0	0	0

The FY2002 Sensors Program Element budget request in the FY2003 budget compared to the FY2004 budget showed a reduction of \$22,365,000. This resulted from a reduction of \$2,544,000 based on Congressional Undistributed Adjustments; a reduction of \$7,053,000 based on a transfer to the Small Business Innovative Research Program; and a reprogramming of \$12,768,000 based on reprogramming that was consistent with priorities.

The FY2003 Sensors Program Element budget request in the FY2003 budget compared to the FY2004 budget showed a reduction of \$23,011,000. This resulted from a reduction of \$6,169,000 based on Congressional Undistributed Adjustments; a reduction of \$14,000,000 based on the Congressional Specified Program Adjustments and a reduction of \$2,842,000 based on reprogramming that is consistent with priorities.

The FY2004 Sensors Program Element budget request in the FY2003 budget compared to the FY2004 budget showed a reduction of \$50,939,000. This resulted from a reprogramming of \$50,939,000 based on restructuring in FY2002 of STSS and RAMOS and the initiation of BMDS Radar project.

The FY2005 Sensors Program Element budget request in the FY2003 budget compared to the FY2004 budget showed a reduction of \$582,928,000. This resulted from a reprogramming of \$582,928,000 based on restructuring in FY2002 of STSS and RAMOS, the initiation of BMDS Radar project and reprogramming that is consistent with priorities.

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
5041 Space -Based Infrared System (SBIRS) Low/Space Tracking and Surveillance System (STSS)	234076	286331	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

The FY2002 and 2003 SBIRS Low/STSS development is described in a single project, 5041. For FY2004 and beyond, the continued STSS development effort is described in three projects: 0812, 0912, and 0012.

SBIRS Low (renamed STSS in December 2002) is an element of the BMDS. Through a spiral development process it will provide space-based infrared capability to acquire, track and discriminate ballistic missiles and supply over-the-horizon fire control to BMDS weapon systems extending their effective range. The near-term emphasis for STSS is on tracking performance, followed by improvements in the sensor's discrimination capability.

In FY2002, the SBIRS Low element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRS Low Program Definition and Risk Reduction (PDRR) effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRS Low design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMDS two-year capability Blocks as follows:

The Block 2006 STSS uses largely existing satellite hardware as a low-risk opportunity to bring a space-based capability into the Block 2006 BMDS Test Bed. Block 2006 consists of two satellites, to be put in low earth orbit, ground station and software to support communication of data from these satellites to the BMDS. Current plans for these two satellites to be launched on a single Delta II launch vehicle in the FY2007 timeframe. Key activities in the 2002-2003 timeframe include initiation of a new single contract for the Block 2006 program, hardware checkout and initial testing. FY2004 and beyond activity is described in Project 0812. The Block 2006 program also develops the STSS Surrogate Test Bed (SSTB), which will be integrated with the BMDS Test Bed. The SSTB demonstrates data fusion processing of data from surrogate infrared and visible sensors such as the AF Maui Optical Station (AMOS) telescopes, Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft, replicating the processing and interfaces of the Block 2006 satellite ground station. The SSTB is a key pathfinder for the Block 2006 integration into the BMDS. Activity in the 2002-2003 timeframe demonstrates functionality in key BMDS test such as IFT-10 and IFT-14. FY 2004 and beyond activity is described in Project 0812.

The Block 2008 STSS upgrades the ground station and software aspects of the Block 2006 STSS configuration. There is no near-term funding for this activity. FY2004 and beyond activity is described in Project 0912.

The Block 2010 STSS builds upon the lessons learned from previous development efforts from the PDRR program, Block 2006 and 2008 STSS. Currently Block 2010 is planned to consist of improved sensors, the first common satellite bus and upgraded ground station and software. The common bus will be the baseline for all follow-on satellites, and will be made available as a platform for other government sensors. FY2003 activity with the Missile Defense National Team (MDNT) will define the composition of this next generation satellite and ground station capability. FY2004 and beyond activity, including contract award is described in Project 0012.

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B. Accomplishments/Planned Program	FY2002	FY2003	FY2004	FY2005
Block 2006	55071	231770		
RDT&E Articles (Quantity)				

FY2002 accomplishments:

- Pursued ground-based data fusion processing with surrogate sensors in the Block 2004 Test Bed.
- Conducted surrogate sensor data collections such as the AF Maui Optical Station (AMOS) telescope, the Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft.
- Conducted Near Real Time Demonstrations in conjunction with Integrated Flight Tests (IFTs).
- Continued integration with the Ballistic Missile Defense System (BMD) Test Bed.
- Awarded new contract to implement the capability-based, spiral development approach.

FY2003 activities:

- Continues surrogate sensor data collections such as the AF Maui Optical Station (AMOS) telescope, the Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft.
- Continue Near Real Time Demonstrations in conjunction with IFTs.
- Continue further integration with the BMD Test Bed.
- Conduct full inventory and check-out of Flight Demonstration System hardware required for Block 2006.
- Perform analysis of the benefits of including an improved acquisition sensor on second satellite.
- Conduct Delta System Definition Review (SDR).
- Conduct Delta Preliminary Design Review (PDR).

FY2004 and 2005 plans are described in Project 0812.

	FY2002	FY2003	FY2004	FY2005
Block 2010	9162	54561		
RDT&E Articles (Quantity)				

FY2002 activities:

- Accomplished other risk reduction.*

FY2003 activities:

- Determine composition of Block 2010 program through interaction with the Missile Defense National Team (MDNT).
- Develop Request for Proposal (RFP) for Block 2010 work in mid to late FY2003.
- Initial Review of Block 2010 design options.
- Continue other risk reduction efforts.*

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*Other riskreductionactivitiesincludescryocoolers,batteries,RadiationHardenedParts,phenomenology,opticalfilters,MidcourseSpaceExperiment(MSX)datareduction,contaminationcontrol,focalplanearrays{visibleandlong -wave}andsurvivability.

FY 2004and2005plansaredescribedinProject0012.

	FY2002	FY2003	FY2004	FY2005
PDRREffort	169843			
RDT&EArticles(Quantity)				

FY2002accomplishments:

- Completedsoftwaredevelopmentprocessimprovementsidentifiedbythesoftwaredevelopmentcapabilityevaluation.
- Conductedcomponentandsystempreliminarydesignaudits.(preparationforsystemPDRundertheoldacquisitionstrategy)
- Completedcriticalsystemperformancecapabilitydemonstrations.
- Continuedriskreductionefforts.
- ClosedoutPDRRcontractsattheendofFY2002.

C.OtherProgramFundingSummary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603889CBallisticMissileDefense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0604861CTheaterHigh -AltitudeArea DefenseSystem -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865CPatriotPAC -3TheaterMissile DefenseAcquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867CNavyAreaTheaterMissile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502CSmallBusinessInnovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585CPentagonReservation	6381	7432	14481	13384	12758	12850	13158	13476		

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PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE0603869C Meads Concepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

D. Acquisition Strategy

SBIRSLow/STSS will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development, and evolution a ry acquisition through the use of two -year capability blocks.

In FY2002, the SBIRSLow/STSS program was restructured, resulting in a new acquisition strategy.

The STSS effort is now being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), formerly TRW, with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMD Capability blocks. A contract for the Block 2006 activity and the initial definition work on Block 2010 was awarded in fourth quarter FY2002. Additional options for new contracts will be awarded to the NGST team to accomplish future work on Block 2010. Such award(s) are planned for the first quarter FY2004. Prior to the formation of the new NGST team, the Program Definition and Risk Reduction effort included a competition between the TRW, now NGST, and Spectrum Astro with Raytheon and Northrop Grumman Electronic Systems (NGES) as the respective payload subcontractors. In order to reduce the risk of the restructured program, a main component of the Block 2010 strategy is to maintain competition at the sensor payload level. This competition between Raytheon and NGES will be continued, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

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The restructured program implements MDA's capability -based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS. From an overall system standpoint, MDA will measure the capabilities of each development cycle and make decisions about the sensor complex for eventual integration into the BMDS.

The current strategy is a marked change from the acquisition strategy in place at the beginning of FY2002 in which TRW/Raytheon and Spectrum As tro/NGES pursued separate competing designs under separate PDRR contracts.

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MDA Exhibit R -3RDT&EP roject Cost Analysis	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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I. Product Development Cost (\$in Thousands)												
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006												
Capability Based R&D Contract	SS/CPAF	TRW/CA	16457	190456							206913	
PDRR Effort												
PDRR Contract	C/FFP	TRW/CA	81843								81843	
PDRR Contract	C/FFP	Spectrum Astro/AZ	88000								88000	
Block 2010												
Capability Based R&D Contract	SS/CPAF	TRW/CA		45644							45644	
Subtotal Product Development			186300	236100		0		0			422400	

Remarks

Funding transfer red from USAF to MDA beginning in FY2002.

Capability Based R&D Contract is a multi -year contract covering the testing, integration, and on -orbit operations of 2 Block 2006 satellites and the initial portion (FY2003) of the Block 2010 effort. Operations continue through Block 2008.

This contract continues in Project 0812 and 0912.

II. Support Costs Cost (\$in Thousands)												
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 2006												
Program Support (OGC)	Various	Various	7227	7257							14484	
Program Definition Support	Various	Various	8936	10010							18946	
SBIRS Low Surrogate Test Bed	Various	Various	3872	5247							9119	
Block 2010												
Risk Reduction	Various	Various	9162	8917							18079	
PDRR Effort												
Subtotal Support Costs			29197	31431		0		0			60628	

Remarks

Program support and program definition support costs have been allocated to Block 2006, as this is the major activity, in this time frame.

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MDAExhibitR -3RDT&EP rojectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-1NOMENCLATURE 0603884CBallisticMissileDefenseSensors
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III.TestandEvaluationCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
SubtotalTestandEvaluation												

Remarks

IV.ManagementServicesCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
Block2006												
FFRDC	FFRDC	AEROSPACE/CA	18579	18800		0		0			37379	CONT.
SubtotalManagementServices			18579	18800		0		0			37379	

Remarks

ProjectTotalCost			234076	286331		0		0			520407	
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Remarks

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MDAExhibitR -4ScheduleProfile	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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FiscalYear	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Decisions																																				
NewContractDefinitization				▲																																
ProgramRestructure																																				
Other																																				
PDRRContractComplete				▲																																
Block2006																																				
DeltaPDR								▲																												
FDSHardwareInventoryandCheckOut																																				
AlgorithmDevelopment																																				
NearRealTimeDemo#1								◊																												
SurrogateDataCollection																																				
Block2010																																				
a.InitialBlk10DesiredCapability																																				
Analysis																																				
b.DesignReview												▲																								

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MDAExhibitR -4AScheduleDetail						Date February2003		
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ScheduleProfile	FY2002	FY2 003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
Decisions								
NewContractDefinitization	4Q							
ProgramRestructure	2Q-3Q							
Other								
PDRRContractComplete	4Q							
Block2006								
DeltaPDR		2Q						
FDSHardwa reInventoryandCheckOut		1Q-3Q						
AlgorithmDevelopment		1Q-4Q						
NearRealTimeDemo#1		2Q						
SurrogateDataCollection	1Q-4Q	1Q-4Q						
Block2010								
a.InitialBlk10DesiredCapabilityAnalysis		1Q-3Q						
b.Design Review		4Q						

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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
0812 Space Tracking and Surveillance System (STSS) Block 2006	0	0	275904	284950	285358	203972	75091	35070
RDT&E Articles Qty	0	0	0	0	0	2	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 2003 SBIRSLow/STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 012. This development activity provides progressive improvements in ground station and experimental satellites, aligned with the BMD Stwo -year capability Blocks.

SBIRSLow (renamed STSS in December 2002) is an element of the BMD S. Through a spiral development process it will provide space -based infrared capability to acquire, track and discriminate ballistic missiles and supply over -the-horizon fire control to BMD S weapon systems extending their effective range. The near term emphasis for STSS is on tracking performance, followed by improvements in the sensor's discrimination capability.

In FY 2002, the SBIRSLow element was restructured from an Operational Requirements Document (ORD) -based, production -schedule-driven SBIRSLow Program Definition and Risk Reduction (PDRR) effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRSLow design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

The Block 2006 STSS uses largely existing satellite hardware as a low risk opportunity to bring a space based capability into the Block 2006 BMD S Test Bed. Block 2006 consists of two satellites, to be put in low earth orbit, and ground station and software to support communication of data from these satellites to the BMD S. Current plans for these two satellites to be launched on a single Delta III launch vehicle in FY 2007. Key activities in the 2002 -2003 timeframe include initiation of a new single contract for the Block 2006 program, hardware checkout and initial testing. FY 2004 and beyond activity is described in this Project.

The Block 2006 STSS provides for the integration, ground testing, launch and initial testing of two space vehicles built from largely existing Flight Demonstration System (FDS) legacy components. These satellites will function as part of the BMD S Block 2006 Test Bed. Project 0812a is to develop the ground segment and software algorithms required to operate and process data from the Block 2006 satellites with growth path to the ground system required for an expanding constellation of R&D satellites developed over subsequent blocks.

The Block 2006 STSS provides the BMD S Test Bed as a space node and provides the proof -of-concept for key STSS functionality including stereo data fusion, cueing radar over the horizon and providing intercept handovers. All on -orbit testing with ballistic missile targets will be orchestrated to allow BMD S participation. The budget includes launch services for the 2 Block 2006 satellites launched on a single Delta III launch vehicle.

The Block 2006 program will develop, launch and conduct initial testing of two satellites with visible and infrared sensors suites for use in the BMD S Block 2006 Test Bed. These two satellites will provide a valuable risk reduction and concept demonstration in information about acquisition, tracking and discrimination performance including an assessment of the STSS contribution to over -the-horizon fire control of BMD S interceptors. Program support and program definition support through the end of FY 2007 have been attributed to Block 2006. Funding for target to be used in Block 2006 is included, beginning in FY 2005.

The Block 2006 program also develops the STSS Surrogate Test Bed (SSTB), which will be integrated with the BMD S Test Bed. The SSTB demonstrates data fusion processing of data from surrogate infrared and visible sensors such as the AF Maui Optical Station (AMOS) telescopes, Airborne Surveillance Test Bed (AST) and High Altitude Observatory (HALO) II aircraft, replicating the processing and interfaces of the Block 2006 satellite ground station. The SSTB is a key pathfinder for the Block 2006 integration into the BMD S. The SSTB will be primarily performed by the government program office.

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MDAExhibitR -2ARDT&EProjectJustification			Date February2003	
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)		R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors		
<u>B.Accomplishments/PlannedProgram</u>				
	FY2002	FY2003	FY2004	FY2005
Space			128310	133000
RDT&EArticles(Quantity)				
<p>FY2004Pl ans:</p> <ul style="list-style-type: none"> -CompleteTrackSensorAssemblyIntegrationandTest(AI&T). -ConductDeltaPDRandReactivationReview. -ConductDeltaCDR. -CompletePayloadSoftwareBuild2. -CompleteClosedLooptestingofSensorPayloadSoftware. <p>FY2005Plans:</p> <ul style="list-style-type: none"> -CompletePayloadSoftwareBuild3. -ConductSystemCompatibilityTests(PayloadandSatelliteBus). -InitiateSpaceVehicleIntegration. 				
	FY2002	FY2003	FY2004	FY2005
Ground			50075	20000
RDT&EArticles(Quantity)				
<p>FY2004Plans:</p> <ul style="list-style-type: none"> -M atureGroundSystemDesign. -InitiateSatelliteOperationTrainingPlan. <p>FY2005Plans:</p> <ul style="list-style-type: none"> -GroundHardwareIntegration. -ConductInitialCrewTraining. 				

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MDA Exhibit R -2 ARDT&E Project Justification			Date February 2003	
APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)		R-INOMENCLATURE 0603884C Ballistic Missile Defense Sensors		
	FY2002	FY2003	FY2004	FY2005
Other				10000
RDT&E Articles (Quantity)				
FY2005 Plans: -Initial funding for targets for Block 2006 satellite testing.				
	FY2002	FY2003	FY2004	FY2005
Gov't			53335	74950
RDT&E Articles (Quantity)				
FY2004 Plans: -Develop connectivity and algorithm stoward providing near real time IR and IR -RADAR fused data to the BMDS. -First multi -sensor data fusion testing. -Initial payment toward Launch Services for the 2 Block 2006 satellites. -FFRDC and Program Office Support. -Cycle and others support.				
FY2005 Plans: -Continued developing connectivity and algorithm stoward providing near real time IR and IR -RADAR fused data to the BMDS. -Continued payment toward Launch Services for the 2 Block 2006 satellites. -FFRDC and Program Office Support. -Cycle and others support.				
	FY2002	FY2003	FY2004	FY2005
SE/PM			44184	47000
RDT&E Articles (Quantity)				
FY2004 -Perform ground test data analysis. -Conduct initial System Compatibility Tests (Payload and Satellite Bus and Ground System).				

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MDAExhibitR -2ARDT&EProjectJustification	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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FY2005

-ConductSystemCompatibilit yTests(Payload,SatelliteBusandGroundSystem).

C.OtherProgramFundingSummary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603869CMeadsConcepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603175CBallisticMissileDefenseTechnology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603879CAAdvancedConcepts,EvaluationsandSystems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880CBallisticMissileDefenseSystemSegment	790535	1046652	0	0	0	0	0	0		
PE0603881CBallisticMissileDefenseTerminalDefenseSegment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882CBallisticMissileDefenseMidcourseDefenseSegment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883CBallisticMissileDefenseBoostDefenseSegment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886CBallisticMissileDefenseSystemInterceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603888CBallisticMissileDefenseTestandTargets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889CBallisticMissileDefenseProducts	0	0	343644	384763	333636	343447	349335	360951		
PE0604861CTheaterHigh -AltitudeAreaDefenseSystem -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865CPatriotPAC -3TheaterMissileDefenseAcquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867CNavyAreaTheaterMissileDefense -EMD	96121	0	0	0	0	0	0	0		
PE0605502CSmallBusinessInnovativeResearch -MDA	145102	0	0	0	0	0	0	0		
PE0603890CBallisticMissileDefenseSystemEngineeringandIntegration	0	0	483996	522458	604445	628594	703055	706501		

Project:0812

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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PE0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

SBIRSLow/STSS will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two -year capability blocks.

In FY2002, the SBIRSLow/STSS program was restructured, resulting in a new acquisition strategy.

The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST) (formerly TRW), with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the Block 2006 activity - there refurbishment, ground testing, launch and on -orbit testing of existing satellite hardware -- and the initial definition work on Block 2010 was awarded in fourth quarter FY2002. Additional options or new contracts will be awarded to the NGST team to accomplish future work on Block 2010. Such award(s) are planned between the third quarter FY2003 and the first quarter FY2004. A key component of the Block 2010 strategy is competition at the sensor payload level. This competition will be between Raytheon and NGES, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

The restructured program implements MDA's capability -based acquisition strategy by a) using large existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS. From an overall system standpoint, MDA will measure the capabilities of each development cycle and make decisions about the sensor complex for eventual integration into the BMDS.

The current strategy is a marked change from the acquisition strategy in place at the beginning of FY2002 in which TRW/Raytheon and Spectrum Astro/Northrop Grumman pursued separate competing designs under separate PDRR contracts.

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MDA Exhibit R -3RDT&E Project Cost Analysis	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-INOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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I. Product Development Cost (\$in Thousands)												
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Space												
Capability Based R&D Contract	SS/CPAF	NGST/CA				128310		133000			261310	
Ground												
Capability Based R&D Contract	SS/CPAF	NGST/CA				50075		20000			70075	
SE/PM												
Capability Based R&D Contract	SS/CPAF	NGST/CA				44184		47000			91184	
Other												
Target Acquisition								10000			10000	
Subtotal Product Development			0	0		222569		210000			432569	

Remarks
The Capability Based R&D contract was awarded in FY2002. Prior year and FY2003 costs are described in Project 5041.

II. Support Costs Cost (\$in Thousands)												
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Gov't												
System Program Office Support	Various	Various/CA				11286		11484			22770	
Cycle Support	Various	Various/Various				22369		22802			45171	
Launch	MIPR	NASA/Various						20000			20000	
Other												
Subtotal Support Costs			0	0		33655		54286			87941	

Remarks

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MDAExhibitR -3RDT&EProjectCostAnalysis										Date February2003		
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)					R-1NOMENCLATURE 0603884CBallisticMissileDefe nseSensors							
III.TestandEvaluation Cost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
SubtotalTestandEvaluation												
Remarks												
IV.ManagementServicesCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
Gov` t												
FFRDC	FFRDC	AEROSPACE/CA				19680		20664			40344	
SubtotalManagementServices			0	0		19680		20664			40344	
Remarks												
ProjectTotalCost			0	0		275904		284950			560854	
Remarks												

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MDAExhibitR -4ScheduleProfile	Date February 2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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FiscalYear	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Block2006																																				
a.ContractDefinitization				▲																																
b.HardwareCheckout																																				
c.GroundStationDevelopment																																				
d.SpacecraftTestbed																																				
e.CapabilityReview								▲																												
f.DeltaPDR								▲																												
g.DeltaCDR												▲																								
h.SpacecraftIntegrationandTest																																				
i.SystemCompatibilityTests																																				
j.SatelliteIntegrationandTest																																				
k.LaunchIntegrationandTest																																				
l.Launch																																				

Note: FY2002 -2003 funded in Project 5041.

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MDAExhibitR -4AScheduleDetail						Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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ScheduleProfile	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
Block2006								
a.ContractDefinitization	4Q							
b. HardwareCheckout		1Q-4Q						
c.GroundStationDevelopment		1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q			
d.SpacecraftTestBed		1Q-4Q	1Q-3Q					
e.CapabilityReview		3Q						
f.DeltaPDR		3Q						
g.DeltaCDR			3Q					
h.SpacecraftIntegrationandTest			4Q	1Q-4Q				
i.SystemCompatibilityTests				1Q-4Q	1Q-2Q			
j.SatelliteIntegrationandTest					1Q-4Q	1Q		
k.LaunchIntegrationandTest						2Q		
l.Launch						3Q		

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MDA Exhibit R -2AR DT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	0	0	0	0	81979	177486	88650
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 2003 SBIRSLow/STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 0012. This development activity provides progressive improvements in ground station and experiment satellite, aligned with the BMD two-year capability Blocks.

SBIRSLow (renamed STSS in December 2002) is an element of the BMDS. Through a spiral development process it will provide space-based infrared capability to acquire, track and discriminate ballistic missiles and supply over-the-horizon fire control to BMDS weapons systems extending their effective range. The near term emphasis for STSS is on tracking performance to extend the effective range of BMDS interceptors, followed by improvements in the sensor's discrimination capability.

In FY 2002, the SBIRSLow element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRSLow PDRR effort to the current evolutionary acquisition, spiral development R&D effort. The PDRR effort matured a SBIRSLow design and reduced risk. The technology advances and system design understanding gained in the PDRR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

The Block 2008 STSS upgrade addresses the ground station and software aspects of the Block 2006 STSS configuration. There is no near term funding for this activity. FY 2004 and beyond activity is described in this project.

The Block 2008 STSS continues integrated operations with other BMDS elements and Test Bed activities with visible and IR tracking of a variety of short and long range test targets. All testing will be orchestrated to allow BMDS participation. Refinements will be made to ground station software to achieve near-real-time mission data processing and connectivity to the C2BM elements.

As the Block 2008 activity builds on the Block 2006 ground segment, and operates, collects and analyzes data from the Block 2006 satellites, no funding or activity is planned in the FY 2004-2005 timeframe.

B. Accomplishments/Planned Program

As the Block 2008 is a refinement of the Block 2006 ground segment, no funding or activity is planned in the FY 2004-2005 timeframe.

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MDAExhibitR -2AR DT&EProjectJustification								Date February2003		
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)					R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors					
C.OtherProgramFunding Summary										
	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603888CBallisticMissileDefenseTest andTargets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889CBallisticMissileDefense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0604861CTheaterHigh -AltitudeArea DefenseSystem -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865CPatriotPAC -3TheaterMissile DefenseAcquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867CNavyAreaT heaterMissile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502CSmallBusinessInnovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585CPentagonReservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598CManagementHeadquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE0603869CMeasConcepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603175CBallisticMissileDefense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603879CAdvancedConcepts, EvaluationsandSystems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880CBallisticMissileDefense SystemSegment	790535	1046652	0	0	0	0	0	0		
PE0603881CBallisticMissileDefense TerminalDefenseSegment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882CBallisticMissileDefense MidcourseDefenseSegment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883CBallisticMissileDefenseBoost DefenseSegment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886CBallisticMissileDefense SystemInterceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603890CBallisticMissileDefense SystemEngineeringandIntegration	0	0	483996	522458	604445	628594	703055	706501		

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MDA Exhibit R -2AR DT&E Project Justification		Date February 2003
APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors	
<p><u>D. Acquisition Strategy</u> SBIRSLow/STSS will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development and evolutionary acquisition through the use of two -year capability blocks.</p> <p>In FY2002, the SBIRSLow /STSS program was restructured, resulting in a new acquisition strategy.</p> <p>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 in g, satellite bus development and sensor payloads. The program develops ground station and series of R&D satellites aligned to the BMD Scapability blocks. A contract for the Block 06 activity and the initial definition work on Block 10 was awarded in the first quarter FY2002. Additional options or new contracts will be awarded to accomplish future work on Block 10. Such award(s) are planned for the first quarter FY2004. A key component of the Block 20 strategy is competition at the sensor payload level . This competition will be between Raytheon and Northrop Grumman, as subcontractors to TRW, Spectrum Astro plays a major role in Block 10 bus development and systems engineering.</p> <p>Project 0912 activity is not included in the Block 06 contract. Work planned for the upgrade to the Block 06 ground configuration and software will be accomplished through modification to the Block 2006 contract. Based on the Block 2006 plan, such modification will likely take place in the FY2006 timeframe.</p>		

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MDAExhibitR -4ScheduleProfile	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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FiscalYear	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
TestingMilestones																																				
ContinueSatelliteDataCollection																																				
Studies&Analyses																																				
DataAnalysis																																				
Block2008																																				
ContractModification																																				
GroundStationUpgrades																																				

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MDAExhibitR -4AScheduleDetail						Date February2003		
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)				R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors				
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ScheduleProfile	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
TestingMilestones								
ContinueSatelliteDataCollection						2Q-4Q	1Q-4Q	1Q-4Q
Studies&Analyses								
DataAnalysis						2Q-4Q	1Q-4Q	1Q-2Q
Block2008								
ContractModification					4Q			
GroundStationUpgrades						2Q-4Q	1Q-4Q	1Q-4Q

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-INOMENCLATURE 0603884C Ballistic Missile Defense Sensors
-------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------

COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
0012 Space Tracking and Surveillance System (STSS) Block 2010	0	0	24291	44065	232096	565071	749927	1064774
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: In FY 2002 and 2003 SBIRSLow/STSS development is described in a single Project, 5041. For FY 2004 and beyond, the continued STSS development effort is described in three Projects: 0812, 0912, and 0012. This development activity provides progressive improvements in ground station and developmental satellites, aligned with the BMD two-year capability Blocks.

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In FY 2002, the SBIRSLow element was restructured from an Operational Requirements Document (ORD)-based, production-schedule-driven SBIRSLow PDR effort to the current evolutionary acquisition, spiral development R&D effort. The PDR effort matured a SBIRSLow design and reduced risk. The technology advances and system design understanding gained in the PDR program will be leveraged by STSS, most directly in the Block 2010 development effort described in Project 0012.

The Block 2010 STSS builds upon the lessons learned from previous development efforts: the PDR program and Block 2004, 2006 and 2008 STSS development activities. Block 2010 satellite composition will be determined through interaction with the MDNT, and is currently envisioned to consist of a satellite with improved sensors, the first common satellite bus, as well as the ground station and software. Likely features of this next generation of satellites include larger aperture trackers, self-cueing acquisition sensors, increased vehicle lifetime, and increased near-real-time data processing on-board the satellite. The budget includes launch services for the single Block 2010 satellite. The common bus will be the baseline for all follow-on satellites, and will be made available as a platform for other Government sensors. Funding is included in this PE for spacecraft bus, space vehicle integration, launch services and operations for one host satellite in the FY 11 timeframe.

FY 2003 activity with the MDNT will define the composition of this next generation satellite and ground station capability, leading to the creation of a Request For Proposal (RFP).

FY 2004 and beyond activity, including contract award is described in Project 0012.

Project 0012 is a continuation of the STSS program. FY 2002 and 2003 activity toward Block 2010 satellite and ground system are described in Project 5041.

B. Accomplishments/Planned Program

	FY2002	FY2003	FY2004	FY2005
Space			11874	32892
RDT&E Articles (Quantity)				

Planned FY 2004 activities:
 -Award of contract for continued Block 2010 development, 4Q FY 2003 -1Q FY 2004.
 -Conduct payload studies and design work.

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MDAExhibitR -2ARDT&EProjectJustification	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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-Continuecontractorriskreduonefforts.

PlannedFY2005activities:
 -Continuepayloadstudiesanddesignwork.
 -Initiatespacecraftdesign.
 -Continuecontractorriskreduonefforts.

	FY 2002	FY2003	FY2004	FY2005
Government			12417	11173
RDT&EArticles(Quantity)				

PlannedFY2004Activities:
 -Continueriskreduonefforts.*

PlannedFY2005Activities
 -Continueriskreduonefforts.*

*Riskreduoneactivitiesincludesc ryocoolers,batteries,radiationhardenparts,phenomenology,opticalfilters,MidcourseSpaceExperiment(MSX)datareduction,contaminationcontrol,focal planearrays{ visibleandlong -wave}andsurvivability.

C.OtherProgramFundingSummary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603175CBallisticMissileDefense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603869CMeasConcepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603879CAdvancedConcepts, EvaluationsandSystems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880CBallisticMissileDefense SystemSegment	790535	1046652	0	0	0	0	0	0		
PE0603881CBallisticMissileDefense TerminalDefenseSegment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882CBallisticMissileDefense MidcourseDefenseSegment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883CBallisticMissileDefenseBoost DefenseSegment	583463	718036	626264	653612	755163	665772	477109	354346		

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MDA Exhibit R -2 ARDT & E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0604861C Theater High -Altitude Area Defense System -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865C Patriot PAC -3 Theater Missile Defense Acquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867C Navy Area Theater Missile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502C Small Business Innovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

SBIR/STTR will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two -year capability blocks.

The STS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST) (formerly TRW) with subcontractors playing key roles in systems engineering, satellite bus development and sensor payloads. The program develops a ground station and series of R&D satellite tes aligned to the BMDS capability blocks. A contract for the Block 2006 activity and the initial definition work on Block 2010 was awarded in fourth quarter FY 2002. Additional options or new contracts will be awarded to accomplish future work on Block 2010. Such award(s) are planned between the fourth quarter of FY 2003 and the first quarter of FY 2004. A key component of the Block 2010 strategy is competition at the sensor payload level. This competition will be between Raytheon and NGS, as subcontractors to NGST. Spectrum Astro plays a major role in Block 2010 bus development and systems engineering.

The restructured program implements MDA's capability -based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS. From an overall system standpoint, MDA will measure the capabilities of each development cycle and make decisions about the sensor complex for eventual integration into the BMDS.

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MDAExhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallistic MissileDefenseSensors
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I.ProductDevelopmentCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
Space												
CapabilityBasedR&DContract	SS/CPAF	NGST/CA				11926	1Q	31618	1Q	CONT.	43544	TBD
SubtotalProductDevelopmen t			0	0		11926		31618			43544	

Remarks
TheCapabilityBasedR&DcontractwasawardedinFY2002.PrioryearandFY2003costsaredescribedinProject5041.

II.SupportCostsCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
Government												
RiskReduction	Various	Various/Various				12365	1/4Q	12447	1/4Q	CONT.	24812	CONT.
SubtotalSupportCosts			0	0		12365		12447			24812	

Remarks
TheCapabilityBasedR&DcontractwasawardedinFY2002.PrioryearandFY2003costsaredescribedinProject5041.

III.TestandEvaluationCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
SubtotalTestandEvaluation												

Remarks

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MDAExhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-1NOMENCLATURE 0603884CBallistic MissileDefenseSensors
------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

IV.ManagementServicesCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
SubtotalManagementServices												

Remarks

ProjectTotalCost			0	0		24291		44065			68356	
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Remarks

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MDAExhibitR -4ScheduleProfile	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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FiscalYear	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Block2010																																				
ContractAward																																				
GovernmentTrades																																				
RFPDevelopment																																				
RiskReduction																																				
SatelliteDesign&Development																																				

Note:FY2003activityfundedinProject5041.

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MDAExhibitR -4AScheduleDetail						Date February2003		
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)				R-1NOM ENCLATURE 0603884CBallisticMissileDefenseSensors				
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ScheduleProfile	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
Block2010								
ContractAward			1Q					
GovernmentTrades		1Q-3Q						
RFPDevelopment		3Q-4Q						
RiskReduction			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
SatelliteDesign&Development			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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MDAE Exhibit R - 2 ARDT & E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
5049/0403 Russian - American Observation Satellite Program (RAMOS)	50903	48998	29623	77358	39090	35134	24380	24354
RDT&E Articles Qty	0	0	0	0	0	0	2	0

A. Mission Description and Budget Item Justification

The Russian - American Observation Satellites (RAMOS) project, a Ballistic Missile Defense Sensors Mission Area Investment activity, is an innovative U.S. - Russian space - based remote sensor research and development program addressing ballistic missile defense and national security. This program engages Russian developers of early warning satellites in the joint definition and execution of aircraft and space experiments. The RAMOS program will design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid - to - long wavelength infrared bands. Preliminary experiments designed to support program definition occurred between 1995 and 1999 using existing U.S. and Russian space and aircraft platforms to collect imagery. The U.S. Midcourse Space Experiment and the Miniature Sensor Technology Integration satellites were used to collect nearly simultaneous stereo imagery with the Russian RESURS O1 satellite. Joint experiments using U.S. and Russian prototype sensors were flown aboard the U.S. Flying Infrared Signatures Technology Aircraft, demonstrating our ability to jointly plan, execute, and analyze RAMOS type experiments.

The RAMOS team began Program Design in the fall of 2000. The RAMOS project consists of two orbital satellites each with a sensor suite consisting of an infrared imaging radiometer, a visible wide - angle photometer, a visible camera and an ultraviolet radiometer. Current plans call for Russia to provide the launch capability, satellite platforms, and the ground processing and control equipment while the U.S. will provide the primary sensors (infrared and visible wide - angle photometer). The Russian side will also provide visible and ultraviolet cameras. The satellites are scheduled for launch in FY2008 with an nominal two - year on - orbit life expectancy. Note that RAMOS is not an operational element of the overall Ballistic Missile Defense System (BMDS). It is a cooperative program with the Russian Federation on mutually beneficial research that is missile defense related and provides a foundation for future cooperative efforts.

B. Accomplishments/Planned Program

	FY2002	FY2003	FY2004	FY2005
Design and Development	48903	35122	20023	17800
RDT&E Articles (Quantity)				

Key activities and goals include: conclude preliminary design and begin detailed design of the satellite sensors, payload support equipment, ground support equipment, and all associated projects to accomplish the space experiments; complete definition of ground facilities design sensor prototype to be used during interface testing; begin writing sensor software; perform system engineering and configuration control processes; update risk mitigation plans and monitor design process; continued development of models and simulation to test the design and concepts, to include computer mass and mathematical models, orbit model of experiments simulations, and simulation to validate hardware and design trades; begin procurement of long - lead items.

	FY2002	FY2003	FY2004	FY2005
Fabrication, Assembly, and Test		3000	8800	56358
RDT&E Articles (Quantity)				

Key activities and goals include: fabrication of sensors, sensor prototypes, and payload engineering models; conduct component and subcomponent testing; finalize test plans and continue to perform quality assurance activities during sensor fabrication; conduct fabrication, assembly, and test of payload calibrations system and ground facilities; and develop manufacturing plans and integration and test plans.

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MDAE Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-INOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY2002	FY2003	FY2004	FY2005
Launch and Mission Ops Planning	2000	4000	800	3200
RDT&E Articles (Quantity)				

Key activities and goals include: define launch vehicle interfaces; complete joint calibration plan; complete definition of ground facility, mission operations design, and operations concept; continue science experiments planning; develop concept for management, processing, storage, and analysis of experiment data.

	FY2002	FY2003	FY2004	FY2005
RAMOS Solar Arrays		6876		
RDT&E Articles (Quantity)				

Activities are aimed at demonstrating improved efficiencies associated with amorphous silicon substrate based solar cell technology, space -qualification of prototype units, and successful integration of a "blanket" of solar cells for test and evaluation of future space vehicle applications.

C. Other Program Funding Summary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603869C Meads Concepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		

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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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PE0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE0604861C Theater High -Altitude Area Defense System -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865C Patriot PAC -3 Theater Missile Defense Acquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867C Navy Area Theater Missile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502C Small Business Innovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

D. Acquisition Strategy

Russian-American Observation Satellite is a cooperative experiment program designed to engage the Russians in early warning and ballistic missile defense related technologies. The task to complete the design, fabrication, launch, and operations of the two -satellite constellation will be completed under three major contracts.

The first contract is with Utah State University/Space Dynamics Laboratory (USU/SDL), Logan, UT, a designated University Affiliated Research Center for space sensors. Space Dynamics Lab is the current U.S. prime contractor for RAMOS and has a prime/subcontractor relationship with the Russian State Company, Rosoboronexport, for Russian tasks. This contractual approach has been used for design and development of the RAMOS project through the critical design phase. After the critical design phase, Utah State University will remain as the prime U.S. contractor for primary sensor (infrared and visible pushbroom) development and fabrication as well as mission planning and data reduction.

The second contract will be a direct contract with the Russian State Company, Rosoboronexport. During FY2003, Missile Defense Agency (MDA) plans to negotiate a government-to-government agreement with the Russian Federation to underpin the RAMOS program. Once this agreement is concluded, MDA will contract directly with Rosoboronexport for the Russian efforts. Under this contract, Rosoboronexport, through Russian subcontractors, will be responsible for the development and fabrication of the visible and ultraviolet cameras, satellite platforms, development and operation of the ground system in Moscow, and launch services for the two RAMOS satellites.

The third contract is with Ball Aerospace and Technologies Corporation (BATC) of Broomfield, CO. As the RAMOS Systems Engineering and Integration contractor for Missile Defense Agency, BATC will be primarily responsible for monitoring and assessing progress on the Russian effort and facilitating the integration of U.S. and Russian components. BATC will also support preparation of program documentation for technology protection and security and provide in-country administrative, security and technical support of RAMOS Program Office.

RAMOS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes the achievement of stated system performance objectives through best U.S. and Russian space industry practices.

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MDA Exhibit R - 3RDT & E Project Cost Analysis									Date February 2003			
APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)					R-INOMENCLATURE 0603884C Ballistic Missile Defense Sensors							
I. Product Development Cost (\$ in Thousands)												
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development												
U.S. Hardware Development	SS/CPFF	Utah State Univ/SDL/Logan, UT	33795	22422		7023	1Q	5900		CONT.	69140	CONT.
R.F. Hardware Development	SS/Other	Rosoboron export, RF	27828	4500		7000	1Q	6900		CONT.	46228	CONT.
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/Broomfield, CO	16659	6000		5000		2000		CONT.	29659	CONT.
Fabrication, Assembly, and Test												
U.S. Hardware Development	SS/CPFF	Utah State Univ/SDL/Logan, UT		3000		3800	1Q	24858		CONT.	31658	CONT.
R.F. Hardware Development	SS/FFP	Rosoboron export/Moscow		0		4200	1Q	27500			31700	
Engineering and Integration Sp	C/CPAF	Ball Aerospace and Tech/Broomfield, CO		0		800		4000			4800	
Launch and Mission Ops Planning												
U.S. Hardware Development	SS/CPAF	Utah State Univ/SDL/Logan, UT		1500		400	1Q	1100		CONT.	3000	CONT.
R.F. Hardware Development	SS/FFP	Rosoboron export, RF		1500		200	1Q	1100		CONT.	2800	CONT.
Engineering & Integration Supt	C/CPAF	Ball Aerospace & Tech Corp/Broomfield, CO		1000		200		1000		CONT.	2200	CONT.
RAMOSSolar Arrays												
Design and Development	SS/Other	Unisolar/Michigan		6876	2Q						6876	
Subtotal Product Development			78282	46798		28623		74358			228061	

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MDA Exhibit R -3RDT&E Project Cost Analysis	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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Remarks

In FY2001, this project was funded under Program Element 0603875C (International Cooperative Programs). Prior to FY2001, funding for RAMOS was covered under several projects, including: 1161 Advanced Sensor Technology and 4000 Operational Support.

II. Support Costs Cost (\$in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Development												
Development Support	MIPR	AFRL/Hanscom AFB, MA	1181	2000		800		2800		CONT.	6781	
Subtotal Support Costs			1181	2000		800		2800			6781	

Remarks

Provides support to US and Joint US -RF data management and data system definition, coordination, development, testing, and operation efforts. Includes support to the RAMOS Program Office with scientific analysis, modeling and simulation, user -community coordination, data processing and database development, and calibration method definition and execution to assure that RAMOS measurement data and scientific data products satisfy the overall RAMOS mission objectives.

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

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation												

Remarks

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MDAExhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.Adv ancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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IV.ManagementServicesCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
DesignandDevelopment												
SecurityMonitoringSupt	MIPR	DTSA	200	200		200		200		CONT.	800	CONT.
SubtotalManagementServices			200	200		200		200			800	

Remarks
 Providesecuritymonitoring(ITARandTAAcompliance)supportservicesduringUS -RFtechnicalinterchangemeetingsintheUnitedStatesandRussianFederation.

ProjectTotalCost			79663	48998		29623		77358			235642	
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Remarks

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MDAExhibitR -4AScheduleDetail						Date February2003		
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)				R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors				
ScheduleProfile	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
TestingMilestones								
BeginPayloadTestandCalibrationActivities					1Q			
Deliveries								
ShipUSPayload#1					4Q			
ShipUSPayload#2						2Q		
PDR								
RAMOSProjectPreliminaryDesignReview		4Q						
CDR								
CompleteCriticalDesignofU.S.Sensors			4Q					
RAMOSCriticalDesignReview				1Q				
Decisions								
EarliestOpportunitytoAuthorizeDetailedDesign		4Q						
EarliestOpportunitytoAuthorizeHardwareFab				1Q				
EarliestOpportunitytoAuthorizePayloadShipment					4Q			
EarliestOpptytoDeclareSatellitesOperational								1Q
Milestones								
LaunchSatellite#1							4Q	
LaunchSatellite#2							4Q	
ContractualActivities&Events								
MDA/RussianContractSigned			1Q					
MDA/USU/SDLContractAward			1Q					

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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOM ENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
0811 Ballistic Missile Defense Radars Block 2006	0	0	101000	144947	133883	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Block 2006: BMDS Radar is a new Project, 0811, beginning in FY2004. The objective of the BMDS Radar project is first to validate the concept of forward basing and BMDS sensor layering and to assess and validate advanced algorithms. This effort will make use of existing radar configurations to the maximum extent practical. Second, it will provide a Family of Radars (FOR) that can be deployed to observe ballistic missile early in their flight, providing precise track information for use by other elements of the BMDS system.

The BMDS FOR is a transformational capability for the BMDS. When deployed, the BMDS FOR will provide for new missile defense concepts of operation that were unavailable under the ABM Treaty restrictions. The BMDS FOR broadens BMDS capability in the near future, adding robustness against a wider range of threats. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the BMDS FOR is planned to be based both on the ground and on mobile sea assets. The BMDS FOR will extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS, through mobile basing; to respond to unanticipated changes in the future geopolitical environment; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system.

MDA plans to initiate development, test, and assessment of BMDS Radar algorithms starting in 2004, leveraging existing radars and technologies to the maximum extent practical, and to provide BMDS Radar by Block 2006, capable of supporting initial defensive operations. To support this development, MDA established a Sensors Directorate to oversee the concept validation of BMDS FOR and the acquisition of additional assets as required to achieve Block 2006 and following operational capabilities. Concept validation will include optimization of the capability of the current BMDS inventory of sensor assets. Family of Radars Configuration Element(s) (FORCE) will be deployed for Block 2006 with FOR configurations implementing spiral upgrades for Blocks 2008 and 2010.

MDA and OSD are exploring the potential synergy that could result by coordinating the BMDS FOR and the Cobra Judy Replacement acquisitions. A recommendation is expected by the fourth (4th) quarter of FY2003, and acquisition strategies modified accordingly.

B. Accomplishments/Planned Program

	FY2002	FY2003	FY2004	FY2005
Capability Development			101000	144947
RDT&E Articles (Quantity)				

FY2002 Accomplishments:
-No activity in FY2002

FY2003 Planned Program:
FY2003 Funding provided by Congressional earmarking of \$10,000,000 out of Midcourse Program Element, PE0603882C.

- Complete BMDS FOR project planning and initiated definition and acquisition strategy for Block 2006 FOR configuration(s).
- Finalize the BMDS FORCE I definition for concept validation.

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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOM ENCLATURE 0603884C Ballistic Missile Defense Sensors
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- Develop initial acquisition strategy and prepare acquisition package
- Release acquisition package and review and evaluate responses.
- Finalize Concept Validation (CV) plans for the initial set of algorithms.
- Initiate FORCE II requirements developments.

FY2004 Planned Program:

- Award BMDS FORCE I contract(s)
- Define BMDS sensor architecture.
- Conduct Design Reviews.
- Continue to evaluate tracking and discrimination algorithms.
- Develop test plans.
- Develop integration plan
- Complete definition and acquisition strategy for Block 2006 FOR configuration(s).
- Initiate definition and acquisition strategy for Block 2008 FOR configuration(s).

FY2005 Planned Program:

- Deliver validated algorithms for BMDS FORCE I
- Conduct Design Reviews.
- Complete Basing Mode Integration Plan.
- Execute BMDS FORC 2 BMC and platform integration efforts.
- Continue BMDS integration efforts.
- Complete definition and acquisition strategy for Block 2008 FOR configuration(s).
- Continue assessment of advanced algorithms.

C. Other Program Funding Summary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0901598 C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE0603869 C Meads Concepts - Dem/Val	0	114781	0	0	0	0	0	0		
PE0603175 C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603879 C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880 C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603882 C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOM ENCLATURE 0603884C Ballistic Missile Defense Sensors
-------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------

PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0604861C Theater High -Altitude Area Defense System -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865C Patriot PAC -3 Theater Missile Defense Acquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867C Navy Area Theater Missile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502C Small Business Innovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		

D. Acquisition Strategy

The BMDS Radar project will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

The detail of the BMDS FOR acquisition development strategy will be approved in FY2003. The BMDS FOR project is envisioned to include a research and development program designed to provide Forward Based Radar concept validation and potential emergency capability through the use of existing or modified assets, while an operational radar is ready for deployment by Block 2006. Planning for spiral upgrades for Blocks 08 and 10 will proceed in parallel with the Block 2006 radar efforts.

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MDAE xhibitR -3RDT&EProjectCostAnalysis										Date February2003		
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)					R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors							
I.ProductDevelopmentCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY20 03 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
CapabilityDevelopment												
Contractor(s)	C/CPIF	TBD				44000	1Q	88947	1Q	CONT.	132947	CONT.
Subtotal ProductDevelopment			0	0		44000		88947			132947	
Remarks												
II.SupportCostsCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
CapabilityDevelopment												
SETA/FFRDC	Various	Various				25000	1Q	32000	1Q	CONT.	57000	CONT.
SubtotalSupportCosts			0	0		25000		32000			57000	
Remarks												
III.TestandEvaluationCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
CapabilityDevelopment												
ConceptValidation	C/Various	TBD				10000	1Q	12000	1Q	CONT.	22000	CONT.
AlgorithmTestandAssessment	Various	TBD				22000	1Q	12000	1Q	CONT.	34000	CONT.
SubtotalTestandEvaluation			0	0		32000		24000			56000	
Remarks												

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MDAE xhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------

IV.ManagementServicesCost(\$inThousands)												
Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY20 05 Award Date	Costto Complete	Total Cost	Target Valueof Contract	
CostCategories:												
SubtotalManagementServices												

Remarks

ProjectTotalCost			0	0		101000		144947			245947	
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Remarks

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MDAExhibitR -4AScheduleDetail						Date February2003		
APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)				R-1NOMENCLATURE 0603884CBallisticMissileDefenseSensors				
ScheduleProfile	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
TestingMilestones								
BMDSFORCEItest					2Q			
Deliveries								
BMDSFORCEIDelivery						1Q		
DelivervalidatedalgorithmsforBMDSFOR				3Q				
Studies&Analyses								
BMDSFORprojectplanningandanalysis		1Q-4Q						
DefineCVplan		3Q-4Q						
Evaluatetrackinganddiscriminationalgorithms		2Q-4Q	1Q-3Q					
Performadvancedalgorithmassessment			4Q	1Q-4Q	1Q-3Q			
AcquisitionMilestones								
AwardBMDSFORCEIcontract(s)			1Q					
Releaseacquisitionpackage		3Q						
ProgramMilestones								
Algorithmintegration				3Q-4Q	1Q-3Q			
Completebasingmodeintegrationplan					2Q			
DefineBMDSsensorarchitecture			1Q-2Q					
DefineRadarandAlgorithmVV&APlan		2Q						
ExecuteBMDS2BMC&projectintegrationefforts				3Q-4Q	1Q-2Q			
FinalizeBMDSFORCVplans		3Q						
DesignReviews								
ConductDesignReviews			3Q-4Q	1Q-4Q	1Q-2Q			

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
0911 Ballistic Missile Defense System Radars Block 2008	0	0	0	0	0	136144	102493	22211
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Block 2008: BMDS Radar is a new project, 0911, beginning in FY04.

The objective of the BMDS Radar project is first to validate the concept of forward basing and BMDS sensor layering and to assess and validate advanced algorithms. This effort will make use of existing radar configurations to the maximum extent practical. Second, it will provide a Family of Radars (FOR) that can be deployed to observe ballistic missile early in their flight, providing precise track information for use by other elements of the BMDS system.

The BMDS FOR is a transformational capability for the BMDS. When deployed, the BMDS FOR will provide for new missile defense concepts of operation that were unavailable under the ABM Treaty restrictions. The BMDS FOR broadens BMDS capability in the near future, adding robustness against a wider range of threats. In recognition of the difficulty in predicting our adversaries or the location of future battlefields, the BMDS FOR is planned to be based both on the ground and on mobile sea assets. The BMDS FOR will extend the BMDS battlespace; allow for more sophisticated engagement strategies; allow for rapid reconfiguration of the BMDS, through mobile basing; to respond to unanticipated changes in the future geopolitical environment; and reduce vulnerability to countermeasures, complicating an enemy's ability to penetrate the defense system.

MDA plans to initiate development, test, and assessment of BMDS Radar algorithms starting in 2004, leveraging existing radars and technologies to the maximum extent practical, and to provide BMDS Radar by Block 2006, capable of supporting initial defensive operations. To support this development, MDA established a Sensors Directorate to oversee the concept validation of BMDS FOR and the acquisition of additional assets as required to achieve Block 2006 and following operational capabilities. Concept validation will include optimization of the capability of the current BMDS inventory of sensor assets. Family of Radars Configuration Element(s) (FORCE) will be deployed for Block 2006 with FOR configurations implementing spiral upgrades for Blocks 2008 and 2010.

B. Accomplishments/Planned Program

Funding in this project is not programmed until FY2007.

C. Other Program Funding Summary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0605502C Small Business Innovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		

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MDA Exhibit R -2 ARDT&E Project Justification							Date February 2003			
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE					
4. Advanced Component Development and Prototypes (ACD&P)					0603884C Ballistic Missile Defense Sensors					

PE0604867C Navy Area Theater Missile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0603890C Ballistic Missile Defense System Core	0	0	483996	522458	604445	628594	703055	706501		
PE0604861C Theater High -Altitude Area Defense System -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865C Patriot PAC -3 Theater Missile Defense Acquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0603869C Meads Concepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

D. Acquisition Strategy

The BMDS Radar project will follow the Missile Defense Agency's capability -based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

Planning for spiral upgrades for Blocks 2008 and 2010 will proceed in parallel with the Block 2006 radar efforts.

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-INOMENCLATURE 0603884CB Ballistic Missile Defense Sensors
-------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------

COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
5060 Test & Evaluation	13806	4872	0	0	0	0	0	0
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Note: FY2002 funding is for Advanced Concept Studies under the Advanced Systems Deputate. Funding for this activity continues under PE0603880C in FY2003. The above FY2003 funding is for the congressionally directed Airborne Infrared Surveillance (AIRS) Project. Funding for AIRS in FY2002 was under the BMD Technology PE(0603175C).

The Advanced Concept Studies were managed under Project Hercules in FY2002 and has become part of the Advanced Systems Deputate. The goal of this funding was to establish the Advanced Systems Innovation Cell, the Small Business Innovation Research evaluation group, and to allow the creation of a decision architecture prototype.

The Airborne Infrared Surveillance Project (AIRS) is a demonstration activity to provide a pathfinder for airborne infrared surveillance and fire control in the Ballistic Missile Defense (BMD) Block 2006 or earlier. These activities will include matured techniques and technologies that provide a bridge between the Test and Evaluation (T&E) data collection asset and a mature airborne infrared surveillance and fire control asset. Specifically, activities will include efforts on self-cueing, communications, and real-time discrimination.

B. Accomplishments/Planned Program

	FY2002	FY2003	FY2004	FY2005
Advanced Concept Studies	13806			
RDT&E Articles (Quantity)				

FY2002 Accomplishments:
 Developed prototype decision architecture.
 Developed advanced optical clutter mitigation architecture.
 Processed over 150 innovative concepts and proposals in a formal scientific, and engineering, peer review process; prepared briefings, and presented decision briefings to MDA senior leadership.
 7 innovative concepts selected for further investigation and were put forth as POM initiatives.
 Currently funded 2 proposals with FY2002 Advanced Systems (AS) funding.
 Provided a form for unique unsolicited proposals from concerned citizens to make a contribution to missile defense.
 Funding for these activities has been transferred to PE0603880C, Project 1053 in FY2003.

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MDA Exhibit R -2 ARDT&E Project Justification		Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884CB allistic Missile Defense Sensors
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	FY2002	FY2003	FY2004	FY2005
Airborne Infrared Surveillance System		4872		
RDT&E Articles (Quantity)				

FY2003
 Airborne Infrared Surveillance System (AIRS) is a demonstration activity to provide a pathfinder for airborne infrared surveillance and fire control in the Ballistic Missile Defense (BMD) Block 2006 or earlier. These activities will include maturing techniques and technology that provide a bridge between the Test and Evaluation (T&E) data collection asset and a mature airborne infrared surveillance and fire control asset. Specifically, activities will include efforts on self cueing, communications, and real-time discrimination.

C. Other Program Funding Summary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0605502C Small Business Innovative Research -MDA	145102	0	0	0	0	0	0	0		
PE0901585CPentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE0604867C Navy Area Theater Missile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		
PE0603886C Ballistic Missile Defense System Interceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603890C Ballistic Missile Defense System Engineering and Integration	0	0	483996	522458	604445	628594	703055	706501		
PE0603888C Ballistic Missile Defense Test and Targets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889C Ballistic Missile Defense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0604861C Theater High -Altitude Area Defense System -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865C Patriot PAC -3 Theater Missile Defense Acquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-INOMENCLATURE 0603884CB Ballistic Missile Defense Sensors
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PE0603869C Meads Concepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880CB Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603881CB Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE0603882CB Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		

D. Acquisition Strategy

Acquisition strategy is to leverage existing T&E assets to mature necessary functions and aspects of surveillance and fire control and to serve as part of a contingency/emergency capability as part of the BMDS Test Bed. Technology and techniques developed under AIRS will serve as a pathfinder for similar technologies in the high altitude, long endurance, stratospheric airship under study as well as the Spaced Based Infrared Radar (SBIR) technology. The contracting strategy for FY2003 as a follow on effort to FY2002 is the sole source of approximately 80% of the effort. They have met the necessary criteria in that no other source is available with the necessary technical expertise, the availability of facilities and modification of the HALO II aircraft.

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MDAExhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-1NOMENCLATURE 0603884CBallisticMissileDefenseSensors
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I.ProductDevelopmentCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
AdvancedConceptStudies												
DecisionArchitecture	Various	SPARTA/SMDC	3000								3000	
ConceptStudies	Various	Various	5000								5000	
CMMitigation	Various	LockheedMartin/ Various	2000								2000	
AirborneInfrared SurveillanceSystem												
AIRS	CPFF		0	2436	2Q						2436	
SubtotalProductDevelopment			10000	2436		0		0			12436	

Remarks

II.SupportCostsCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
AdvancedConceptStudies												
Conceptdefinition	Various	Various	3806								3806	
SubtotalSupportCosts			3806	0		0		0			3806	

Remarks

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MDAExhibitR -3RDT&EProjectCostAnalysis	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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III.TestandEvaluationCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
AirborneInfrared SurveillanceSystem												
AIRS	Various	Various		2436	2Q						2436	
SubtotalT estandEvaluation			0	2436		0		0			2436	

Remarks

IV.ManagementServicesCost(\$inThousands)												
CostCategories:	Contract Method &Type	Performing Activity& Location	Total PYs Cost	FY2003 Cost	FY2003 Award Date	FY2004 Cost	FY2004 Award Date	FY2005 Cost	FY2005 Award Date	Costto Complete	Total Cost	Target Valueof Contract
SubtotalManagementServices												

Remarks

ProjectTotalCost			13806	4872		0		0			18678	
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Remarks

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MDAExhibitR -4ScheduleProfile	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPr ototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
------------------------------------------------------------------------------------------------	------------------------------------------------------------------

FiscalYear	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
AIRS																																				
CelestialAlignmentUpgrage								▲																												
FBEKilo							▲																													
FirstTrackingUpgrade				▲																																
GFECDCInstallation																																				
GeoRegistration												▲																								
ImageEnhancement							▲																													
Integration&TestIridium																																				
PointingSystemUpgrade							▲																													
RovingSands																▲																				
SpaceObjectTracking							▲																													
SpaceTrackDemo							▲																													
TreatyVerificationDemo												▲																								

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MDAExhibitR -4AScheduleDetail						Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-1NOMENCLATURE 0603884CBallisticMissileDefenseSensors
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ScheduleProfile	FY2002	FY2 003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
AIRS								
CelestialAlignmentUpgrade		4Q						
FBEKilo		3Q						
FirstTrackingUpgrade		1Q						
GFECDCInstallation		4Q	1Q					
GeoRegistration		4Q						
ImageEnhancement		2Q						
Integration&TestIridium		1Q-2Q						
PointingSystemUpgrade		2Q						
RovingSands			3Q					
SpaceObjectTracking		3Q						
SpaceTrackDemo		2Q						
TreatyVerificationDemo			1Q					

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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COST (\$ in Thousands)	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
5090/0602 Program Operations	14188	10235	7424	11432	16087	21154	23363	26847
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

Fiscal Years 2002 and 2003 are reflected in Project 5090 and Fiscal Years 2004 and out are in Project 0602.

This project covers personnel and related support costs, statutory and fiscal requirements.

Personnel covers government civilians performing program -wide oversight functions such as contracting, program integration, safety, quality and mission assurance at Missile Defense Agency (MDA), Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, Office of Naval Research, and US Air Force.

Assistance required to support Missile Defense Agency program -wide management functions is also contained in this project. Typical efforts include cost estimating; audit; technology integration across MDA projects; and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. There are requirements for this area based on most economical and efficient utilization of contractors versus government personnel.

Fiscal Requirements include reimbursable services acquired through the Defense Working Capital Fund (DWCF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. MDA has additional requirements to provide for foreign currency fluctuation on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101 -510.

B. Accomplishments/Planned Program

	FY2002	FY2003	FY2004	FY2005
Management Support	12643	7277	6306	9481
RDT&E Articles (Quantity)				

Fund the contract SETA support costs directly associated with Missile Defense Agency program -wide support organizations. This effort provides the funding for the Missile Defense Agency's executing agents (Army Space and Missile Defense Command, Army PEO -AMD, Air Force, and Navy) including government salaries & benefits, SETA support, and various management/overhead costs.

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MDA Exhibit R -2 ARDT&E Project Justification	Date February 2003
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APPROPRIATION/BUDGET ACTIVITY 4. Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603884C Ballistic Missile Defense Sensors
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	FY2002	FY2003	FY2004	FY2005
Fiscal Requirements	30	1287	1118	1951
RDT&E Articles (Quantity)				

This effort funds various requirements at the Missile Defense Agency, to include accounting services, special termination costs for foreign currency fluctuations, and charges from cancelled appropriations.

	FY2002	FY2003	FY2004	FY2005
IM/IT Operations	1515	1671	0	0
RDT&E Articles (Quantity)				

This effort pays for Information Management/Information Technology requirements within the Missile Defense Agency. These requirements are removed to the Management Headquarters Program Element in Fiscal Years 2004 -2009.

C. Other Program Funding Summary

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	To Complete	Total Cost
PE0603175C Ballistic Missile Defense Technology	145021	151130	240820	205791	200956	247990	287864	306472		
PE0603869C Meads Concepts -Dem/Val	0	114781	0	0	0	0	0	0		
PE0603879C Advanced Concepts, Evaluations and Systems	0	0	151696	216778	166308	193949	241947	234484		
PE0603880C Ballistic Missile Defense System Segment	790535	1046652	0	0	0	0	0	0		
PE0603881C Ballistic Missile Defense Terminal Defense Segment	195800	136399	810440	924356	985514	805785	558071	371649		
PE 0901585C Pentagon Reservation	6381	7432	14481	13384	12758	12850	13158	13476		
PE0901598C Management Headquarters - MDA	30191	25365	93441	101373	114107	121743	128972	133499		
PE0603882C Ballistic Missile Defense Midcourse Defense Segment	3655089	3103844	3613266	3841412	2078522	1908511	1482389	1437923		
PE0603883C Ballistic Missile Defense Boost Defense Segment	583463	718036	626264	653612	755163	665772	477109	354346		

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MDAExhibitR -2ARDT&EProjectJustification	Date February2003
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APPROPRIATION/BUDGETACTIVITY 4.AdvancedComponentDevelopmentandPrototypes(ACD&P)	R-INOMENCLATURE 0603884CBallisticMissileDefenseSensors
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PE0603886CBallisticMissileDefense SystemInterceptors	0	0	301052	541178	1127180	1729613	2558327	2904096		
PE0603888CBallisticMissileDefenseTest andTargets	0	0	611522	711181	661416	643302	639839	672396		
PE0603889CBallisticMissileDefense Products	0	0	343644	384763	333636	343447	349335	360951		
PE0603890CBallisticMissile Defense SystemEngineeringandIntegration	0	0	483996	522458	604445	628594	703055	706501		
PE0604861CTheaterHigh -AltitudeArea DefenseSystem -TMD -EMD	818632	888323	0	0	0	0	0	0		
PE0604865CPatriotPAC -3TheaterMissile DefenseAcquisition -EMD	130630	176155	0	0	0	0	0	0		
PE0604867CNavyAreaTheaterMissile Defense -EMD	96121	0	0	0	0	0	0	0		
PE0605502CSmallBusinessInnovative Research -MDA	145102	0	0	0	0	0	0	0		

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