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Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System							
COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	220,048	322,220	331,525	347,811	412,623	501,197	778,067	981,424
0812 Space Tracking and Surveillance System (STSS) Block 2006	214,732	246,438	185,125	117,644	84,302	76,706	46,901	40,660
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	34,847	28,376	23,767	13,952	13,607	6,804	3,402
R312 Space Tracking and Surveillance System (STSS) Follow-On	0	29,869	105,789	190,221	287,686	389,581	695,581	902,581
0602 Program-Wide Support	5,316	11,066	12,235	16,179	26,683	21,303	28,781	34,781
Amount Included in PE 0904903D					-225,821	-453,824	-626,596	-627,266
Total PE Cost Reflected in R-1	220,048	322,220	331,525	347,811	186,802	47,373	151,471	354,158

Note: In FY07 the funding line for the STSS Operational Constellation was labeled Block 2012; this funding line is now labeled STSS Follow-on.

A. Mission Description and Budget Item Justification

A.1 System Element Description

The Space Tracking and Surveillance System (STSS) continues developing a satellite ground segment and preparing two R&D satellites for launch in late CY2007 (STSS Block 2006 -- Project 0812). STSS Block 2008 will upgrade the ground segment and data processing algorithms to take advantage of on-orbit experience (STSS Block 2008 -- Project 0912). MDA is beginning to plan for a constellation of STSS satellites (STSS Follow-on -- Project R312).

STSS is the evolutionary development of satellite based infrared and visible sensors to provide global tracking of ballistic missiles. Lessons learned from the Block 2006 and 2008 efforts will feed the development of the operational constellation. The next two STSS satellites will replace the two Block 2006 satellites in the Ballistic Missile Defense System (BMDS) testbed. The operational constellation will improve the BMDS sensor coverage providing valuable midcourse tracking, useful for extending the engagement envelope of all BMDS interceptors, regardless of basing mode. The ultimate size of the STSS constellation will be dictated by the needs of the BMDS.

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

- STSS extends sensor coverage to a global level. STSS enables global tracking of ballistic missiles, and will provide accurate tracking information to the BMDS battle manager, close the global fire control loop with BMDS interceptors, and extend the effective range of BMDS interceptors and other sensors.

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<ul style="list-style-type: none">• Space based sensors are not limited by basing rights issues or deployment decisions, and will allow coverage of countries not accessible from ground based sensors. STSS's visible and Infrared (IR) sensors will complement radars and contribute to a sensor architecture more robust to countermeasures.• Global sensor coverage contributes to the BMDS' ability to counter threats from any location, on any trajectory. <p><u>A.3 Major System Element Goals</u></p> <p>Block 2006</p> <ul style="list-style-type: none">• Launch two low earth orbit satellites• Demonstrate capability to acquire, track, discriminate and report ballistic missile and intercept events from lift-off through midcourse to reentry• Demonstrate capability to perform autonomous acquisition-to-track handover within a satellite• Demonstrate capability to perform track handover to a satellite• Demonstrate capability to uplink commands and downlink mission, health, and status data both directly and via cross link between two satellites• Explore approaches to close the global fire control loop for BMDS weapons and methods to conduct integrated operations with other BMDS elements <p>Block 2008</p> <ul style="list-style-type: none">• Upgrade Block 2006 Ground Segment, Spacecraft/Payload software and Ground Segment hardware• Improve the Block 2006 experiment through enhancement or added capabilities necessary to implement lessons learned in design and development of Block 2006 hardware and software development• Provide utility to the Follow on constellation through proof of concept for algorithms, system design and BMDS interfaces to be used in the operational constellation• Improve Operational Capability through system upgrade that will enable use of Block 2006/2008 system during contingency operations <p>STSS Follow-on (formerly programmed as Block 2012)</p> <ul style="list-style-type: none">• Design, develop and launch two satellites for continued testing• Add satellites to field an initial constellation• Provide accurate and timely global midcourse object tracking and reporting of long-range missile attacks against the United States, its allies and deployed forces• Provide accurate launch-on/engage data for use by BMDS		

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<ul style="list-style-type: none"> Support BMDS threat data acquisition efforts 		
<u>A.4 Major Events Schedule and Description</u>		
Major Event	Project	Timeframe
Contract Activity		
BLOCK 2006		
Ground Segment Integration & Test	0812	2Q FY 2006 - 3Q FY 2007
Satellite Integration and Test	0812	2Q FY 2006 - 4Q FY 2007
Launch (2 Satellites)	0812	1Q FY 2008
STSS On-Orbit Operations	0812	1Q FY 2008 - 4Q FY 2009
STSS Follow-On		
Acquisition Strategy Development	R312	1Q FY 2006 - 3Q FY 2007
RFP Release	R312	4Q FY 2007
Near Field Infrared Experiment		
TSP Delivery	0812	3Q FY 2006
Ground Segment Readiness Review #1	0812	4Q FY 2006
Ground Segment Readiness Review #2	0812	1Q FY 2007
LCT Delivery	0812	1Q FY 2007
Launch	0812	3Q FY 2007
On Orbit Operations	0812	3Q FY 2007 - 3Q FY 2008
BLOCK 2008		
Contract Modification	0912	2Q FY 2007
Drop 1 Space Vehicle Upgrades	0912	2Q FY 2007 - 1Q FY 2009
Drop 1 Ground Station Upgrades	0912	2Q FY 2007 - 3Q FY 2009
Installation and Checkout	0912	4Q FY 2008 - 2Q FY 2011
STSS Constellation		
Acquisition Strategy Development	R112	1Q FY 2006 - 3Q FY 2007
RFP Release	R112	4Q FY 2007
STSS Follow-On		
Contract Award	R312	1Q FY 2008
System Requirements Review	R312	4Q FY 2008
System Design Review	R312	3Q FY 2009
Preliminary Design Review	R312	2Q FY 2010
Critical Design Review	R312	3Q FY 2011

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B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007 PB)	231,488	390,585	427,174	771,878
Current President's Budget (FY 2008 PB)	220,048	322,220	331,525	347,811
Total Adjustments	-11,440	-68,365	-95,649	-424,067
Congressional Specific Program Adjustments	0	-67,000	0	0
Congressional Undistributed Adjustments	0	-1,365	0	0
Reprogrammings	-7,216	0	0	0
SBIR/STTR Transfer	-4,224	0	0	0
Adjustments to Budget Years	0	0	-95,649	-424,067

FY06 decrease of \$11.440 million includes SBIR/STTR transfer and MDA reprogrammings.

FY07 decrease of \$68.365 million includes a congressional specific program reduction of \$67.0 million and a portion of the MDA congressional undistributed reduction.

FY08 decrease of \$95.649 million and FY09 decrease of \$424.067 million reflects MDA programmatic changes.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0812 Space Tracking and Surveillance System (STSS) Block 2006	214,732	246,438	185,125	117,644	84,302	76,706	46,901	40,660
RDT&E Articles Qty	1	1	2	0	0	0	0	0
<p><i>Note: RDT&E Articles: FY06 - One STSS ground station; FY07 - One NFIRE Satellite; FY08 - two STSS Block 2006 Research and Development Satellites</i></p> <p><i>NFIRE Funding: FY06 funding for NFIRE was moved from the BMDS Interceptors program element (PE 0603886C) to the BMD Technology program element (PE 0603175C). The FY07 funding was reviewed and deemed insufficient for the current schedule and requirements to complete the NFIRE satellite launch that would include not only the Track Sensor Payload, but an additional communications payload, the Laser Communications Terminal (LCT) from the German government. It was determined that additional funding in FY07 to support the NFIRE program would be assigned to the STSS PE. In FY07, NFIRE funding is located in BMD Technology PE 0603175C (\$10.8 million) and STSS PE 0603893C (\$25.2 million), for a total of \$36 million to conduct the planned program.</i></p> <p><i>In FY 2008, funding for NFIRE will move from STSS PE 0603893 and the BMD Technology PE 0603175C to the BMDS Space Program PE 0603895C.</i></p> <p><u>A. Mission Description and Budget Item Justification</u></p> <p>Block 2006 STSS is a space based demonstration of key ballistic missile tracking capabilities; adding two space based sensors and associated ground station processing capability to the BMDS Test Bed.</p> <p>The Block 2006 STSS activity provides key knowledge on which to base the design of a future constellation. Block 2006 STSS delivers a ground segment in FY07 and launches two satellites with visible and infrared sensors into low earth orbit in early FY08 for testing with other BMDS elements. These two satellites will provide valuable risk reduction for acquisition, tracking, and discrimination functionality including stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. Key demonstrations will be performed showing the ability to close the global BMDS interceptor fire control loop with data from the Block 2006 satellites.</p> <p>To provide STSS with appropriate test opportunities, MDA is procuring dedicated ballistic missile targets for on-orbit testing. The STSS-centric tests conducted with these targets will also include opportunities for secondary participation from other BMDS Elements. STSS is contracting with National Aeronautics and Space Administration (NASA) for launch services for the two Block 2006 satellites using a single Delta II launch vehicle.</p>								

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<p>The Block 2006 program will develop and demonstrate most of the functions and interfaces required for Engagement Sequence Groups (ESGs): Ground-based interceptor Launch-On and Engage-On STSS and Standard-Missile 3 Launch-On and Engage-On STSS allowing BMDS interceptors to launch and/or engage on STSS sensor data. Testing will include configurations of the BMDS to include surrogate sensors such as the AF Maui Optical Station (AMOS) telescopes and High Altitude Observatory (HALO) II aircraft.</p> <p>Near Field Infrared Experiment (NFIRE)</p> <p>The Near Field Infrared Experiment (NFIRE) technology effort will collect high and low resolution images of a boosting rocket to improve our understanding of exhaust plume phenomenology and plume-to-rocket body discrimination. We will use this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms for boost phase interceptors. A secondary objective of the experiment is to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment will include three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. Targets of opportunity may include aircraft flights, space launches and missile tests at a viewing distance of 100 to 1000 kilometers. Dedicated fly-bys are high resolution observations of a dedicated target vehicle at a range of less than 10 kilometers. Ground observations may include bright burning events such as forest fires, volcanoes, and static tests of rocket engines. In addition to the plume data collections, NFIRE will carry a Laser Communication Terminal, to conduct communication experiments with the German Terra SAR-X satellite. These experiments will test low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the Ballistic Missile Defense System. The laser communication experiments will be conducted on a non-interference basis with the other MDA missions. The NFIRE satellite will be operated from the Missile Defense Space Experimentation Center (MDSEC) by the MDA Space Applications Center of Excellence. Data products will be utilized by multiple programs to improve missile engagement performance.</p> <p>NFIRE Goals:</p> <ul style="list-style-type: none">• Launch the Near Field Infrared Experiment satellite• Conduct multiple data collection missions against ground, air, space and ballistic missile targets• Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments• Use the data to validate the models and simulations that are fundamental to developing the navigation, guidance and control, and endgame homing algorithms, as well as laser communication proof of concept		

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B. Accomplishments/Planned Program				
	FY 2006	FY 2007	FY 2008	FY 2009
Space	126,916	118,873	23,694	0
RDT&E Articles (Quantity)	0	0	2	0
<p>Designs, develops, builds and tests two R&D satellites for launch in 2007 in support of the MDA mission to launch and sustain the Space Tracking Surveillance System</p> <p>FY06 Accomplishments</p> <ul style="list-style-type: none"> Continued support to National Aeronautics and Space Administration (NASA) for launch services for the 2 Block 2006 satellites Conducted satellite bus integration and testing for Satellites 1 and 2. Delivered Payload 1 to Space Vehicle integration Integrated Payload 1 to the Satellite bus and conducted systems integration for Satellite 1 Initiated hardware development in support of STSS dedicated missile flight tests Conducted range integration activities with Reagan Test Site (RTS), Vandenberg Air Force Base (VAFB) and the Pacific Missile Range Facility (PMRF) for STSS flight tests <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> Deliver Payload 2 to space vehicle integration Conduct Satellite bus integration and testing for Satellites 1 and 2 Integrate Payload 2 to the Satellite bus and conduct systems integration for Satellite 2 Conduct Satellites 1 and 2 thermal vacuum testing Begin integration of the two satellites with NASA booster and Orbital Insertion Stage (OIS) Complete range integration activities with Reagan Test Site (RTS), Vandenberg Air Force Base (VAFB) and the Pacific Missile Range Facility (PMRF) for STSS flight tests <p>FY08 Planned Program:</p> <p>RDT&E Articles: Two satellites</p> <ul style="list-style-type: none"> Finish integration of the two satellites with the NASA booster and Orbital Insertion Stage (OIS) Launch two STSS satellites into Low Earth Orbit (LEO) 				

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<ul style="list-style-type: none"> • Conduct post launch analysis • Conduct initial on-orbit check out • Conduct tests with resident space objects, ground based and airborne targets • Complete hardware development in support of STSS flight tests • Finalize range integration activities with RTS, VAFB and PMRF for STSS flight tests • Conduct first dedicated flight tests with ballistic missile targets (funds for these targets are programmed for in Project R312) 				
	FY 2006	FY 2007	FY 2008	FY 2009
Ground	9,174	1,118	0	0
RDT&E Articles (Quantity)	1	0	0	0
<p>Designs, develops, builds and maintains a robust ground system for the STSS constellation in support of MDA as well as to integrate elements of the MDA Space Layer that will ensure synergistic use of our space assets.</p> <p>FY06 Accomplishments: RDT&E Article: One STSS Ground Station</p> <ul style="list-style-type: none"> • Completed the installation and checkout of the 4 Front End Processors (FEPs) capability at the Missile Defense Space Experimentation Center (MDSEC) which provides the ability to contact both satellites simultaneously and also provide a redundant capability as a back-up. The FEPs are the interface from our processing strings of equipment to the satellites. • Completed the first of two Operational Readiness Demonstrations which demonstrate how effective the first iteration of operations procedures that were completed in FY05 operate on the qualified Build 1 ground system. • Completed Code and Unit Test for software Build 2.4 which will be the qualified version of the Build 2 software. • Completed software qualification testing of version 2.4 which includes increased capability to the same five software items from Build 1. • Completed software integration and testing of version 2.4 <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Complete software qualification testing of version 2.5 which includes increased capability to the same five software items from Build 1 • Conduct Ground Acceptance Test 2 to demonstrate the full capability of the ground segment using the qualified Build 2 software to command and control two simulated STSS satellites. 				

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603893C Space Tracking & Surveillance System		
<ul style="list-style-type: none"> • Complete the second and final iteration of operations procedures along with the on-line training system which supports test rehearsals throughout the year for ground crew operations. The second iteration of procedures capture the additional capability that was developed with the second software build • Complete the second of two Operational Readiness Demonstrations which demonstrates the full capability of the developed ground system. This demonstration is executed on the final Build 2 qualified baseline • Archive relevant ground segment documentation and artifacts, and revise as required, to ensure their effective retrieval for subsequent use 				
	FY 2006	FY 2007	FY 2008	FY 2009
Government	26,848	28,490	28,818	30,667
RDT&E Articles (Quantity)	0	0	0	0
<p>Provides all necessary and continuous personnel, technology, and administrative support for the Space Tracking Surveillance System Program Office</p> <p>FY06 Accomplishments:</p> <ul style="list-style-type: none"> • Continued Federally Funded Research and Development Center (FFRDC) program management support to manage execution of the STSS program • Provided Program Office Support for travel, cost estimating and financial management support, administrative management services, hardware and software purchases and maintenance, computer network support, supplies, Reimbursement for Air Force (AF) civilian positions and costs associated with the organizational move to new base buildings in the 2nd quarter of FY06 <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> • Continue program management FFRDC support to manage execution of the STSS and NFIRE programs • Provide Program Office Support for travel, cost estimating and financial management support, administrative management services, hardware and software purchases and maintenance, computer network support, supplies, and reimbursement of AF and MDA civilian positions <p>FY08 Planned Program</p> <ul style="list-style-type: none"> • Continue program management FFRDC support to manage execution of the STSS program • Provide Program Office Support for travel, cost estimating and financial management support, administrative management services, hardware and software purchases and maintenance, computer network support, supplies and reimbursement of AF and MDA civilian positions 				

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<p>FY09 Planned Program</p> <ul style="list-style-type: none"> Continue program management FFRDC support to manage execution of the STSS program Provide Program Office Support for travel, cost estimating, administrative management services, hardware and software purchases and maintenance, computer network support, supplies and reimbursement of AF and MDA civilian manpower authorizations 				
	FY 2006	FY 2007	FY 2008	FY 2009
Systems Engineering	48,644	70,757	128,113	82,977
RDT&E Articles (Quantity)	0	0	0	0
<p>Oversees system level requirement and specification development, configuration development, integration, test, and verification for two satellites for launch in FY08. Interfaces with other MDA elements to ensure proper integration into the Ballistic Missile Defense System (BMDS).</p>				
<p>FY06 Accomplishments</p> <ul style="list-style-type: none"> Continued System Compatibility Tests (Ground to Satellite and Satellite to Satellite communication) Continued Advanced Tracking and Discrimination Algorithm Development Conducted BMDS Integration Began Launch and On-orbit Flight Test Preparations 				
<p>FY07 Planned Program</p> <ul style="list-style-type: none"> Complete Launch and On-orbit Flight Test Preparations Staff and train crews to operate the STSS system Continue Advanced Tracking and Discrimination Algorithm Development 				
<p>FY08 Planned Program</p> <ul style="list-style-type: none"> Staff and operate the STSS satellite operations center in the Missile Defense Space Experimentation Center (MDSEC) Complete Launch and On-orbit Flight Test Preparations Conduct Launch Continue Advanced Tracking and Discrimination Algorithm Development Provide sustainment of STSS Block 2006 ground operational and backup hardware sets at the MDSEC Provide maintenance of STSS Block 2006 qualified software 				

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<ul style="list-style-type: none"> Conduct initial satellite check-out and testing with Resident Space Objects, Airborne and Ground-based targets and dedicated ballistic missile targets <p>FY09 Planned Program</p> <ul style="list-style-type: none"> Staff and operate the STSS satellite operations center in the MDSEC Provide sustainment of STSS ground operational and backup hardware sets Continue Advanced Tracking and Discrimination Algorithm Development Support BMDS Space and MDA testbed activities 				
	FY 2006	FY 2007	FY 2008	FY 2009
IR Engagement Sequence	3,150	2,000	4,500	4,000
RDT&E Articles (Quantity)	0	0	0	0
<p>The Infrared (IR) Engagement Sequence effort provides the means for the STSS Program to collect, process and disseminate IR data from surrogate sensors for the purpose of testing, evaluating, and maturing advanced discrimination and tracking algorithms</p> <p>FY06 Accomplishments:</p> <ul style="list-style-type: none"> Developed stronger STSS surrogate sensor interfaces aboard the High Altitude Observatories (HALO) II aircraft, the Widebody Airborne Sensory Platform (WASP) aircraft, and the Air Force Maui Optical and Supercomputing Site (AMOS) telescopes in order to advance near-real-time multi-sensor track fusion techniques. Demonstrated the utility of STSS advanced tracking and discrimination algorithms to the BMDS community utilizing surrogate InfraRed (IR) sensor data in preparation of the STSS Block 2006 satellite launch <p>FY07 Planned Program:</p> <ul style="list-style-type: none"> Continue to utilize the STSS Surrogate Testbed (SSTB) Fusion Workstation (FW) located at the MDSEC to collect, process and distribute live and archived IR surrogate for distribution throughout the BMDS community for testing, verification, validation and accreditation of STSS and BMDS advanced algorithms Continue to demonstrate the utility of STSS advanced tracking and discrimination algorithms to the BMDS community utilizing surrogate IR sensor data in preparation of the STSS Block 2006 satellite launch 				

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FY08 Planned Program

- Continue to utilize the STSS Surrogate Testbed (SSTB) Fusion Workstation (FW) located at the MDSEC to collect, process and distribute live and archived IR surrogate and Block 2006 satellites for distribution throughout the BMDS community for testing, verification, validation and accreditation of STSS and BMDS advanced algorithms
- Continue to demonstrate the utility of STSS advanced tracking and discrimination algorithms to the BMDS community utilizing STSS Block 2006 satellite

FY09 Planned program

- Continue to utilize the STSS Surrogate Testbed (SSTB) Fusion Workstation (FW) located at the MDSEC to collect, process and distribute live and archived infrared surrogate and Block 2006 satellites for distribution throughout the BMDS community for testing, verification, validation and accreditation of STSS and BMDS advanced algorithms
- Continue to demonstrate the utility of STSS advanced tracking and discrimination algorithms to the BMDS community utilizing STSS Block 2006 satellite

	FY 2006	FY 2007	FY 2008	FY 2009
Near Field Infrared Experiment (NFIRE)	0	25,200	0	0
RDT&E Articles (Quantity)	0	1	0	0

The Near Field Infrared Experiment (NFIRE) technology effort will collect high and low resolution images of a boosting rocket to improve our understanding of exhaust plume phenomenology and plume-to-rocket body discrimination. We will use this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms for boost phase interceptors. A secondary objective of the experiment is to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability.

FY07 Planned Program

- Receive Laser Communications Terminal (LCT) payload for payload integration
- Complete and certify Ground Segment Mission Operations Center to ensure the system is ready to support mission operations
- Conduct Mission Training to ensure the mission operators are prepared to execute
- Conduct Mission Rehearsals to test the interactions between the ground system, space system, and personnel prior to a mission
- Complete delivery and acceptance of Launch Vehicle to support launch of the spacecraft
- Launch the NFIRE Satellite to insert the spacecraft into orbit
- Conduct Initial On-Orbit Operations to ensure the functionality and performance of the TSP prior to executing a mission

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- Accept delivery of two Multi-stage Boost Targets
- Conduct Target of Opportunity Missions to collect low resolution plume data and validate the tracking performance of the TSP
- Conduct Near Field Boosting Target Fly-by mission to collect high resolution plume data
- Conduct Hyper-Temporal Experiment to assess early launch detect and tracking capability
- Conduct laser communications experiments to assess the viability of the technology for use by the BMDS and STSS Follow on constellation

FY08 Planned Program - Funding moved to BMDS Space PE 0603895C

C. Other Program Funding Summary

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603895C BMD System Space Program	0	0	27,666	35,093	46,849	56,183	133,617	157,117	456,525
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

D. Acquisition Strategy

STSS follows the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks. The STSS effort is being pursued through a single prime contractor, Northrop Grumman Space Technology (NGST), with the subcontractor Raytheon providing the sensor payload. The program develops a ground station and series of R&D satellites aligned to the BMDS capability blocks. A contract for the first R&D spiral, the Block 2006 satellites was awarded in third quarter FY02. This contract implements MDA's capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis							Date February 2007			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Space										
Capability Based R&D Contract	SS/CPAF	NGST/CA	312,098	63,819	1/4Q	14,376	1/4Q	0	N/A	390,293
Launch Vehicle Integration	C/MIPR	NASA/FL	58,629	24,989	1/4Q	0	N/A	0	N/A	83,618
Target Acquisition	Various	MDA/Various	19,695	30,065	1/4Q	0	N/A	0	N/A	49,760
System Test Studies	SS/CPAF	NGST/CA	0	0	N/A	9,318	1/4Q	0	N/A	9,318
			0	0	N/A	0	N/A	0	N/A	
Ground										
Capability Based R&D Contract	SS/CPAF	NGST/CA	77,303	578	1/4Q	0	N/A	0	N/A	77,881
Government Furnished Equipment	MIPR	Joint National Integration Center (JNIC) /Schriever AFB CO	1,350	540	1/3Q	0	N/A	0	N/A	1,890
Systems Engineering										
Capability Based R&D Contract	SS/CPAF	NGST/CA	165,081	67,707	1/4Q	77,199	1/4Q	20,638	N/A	330,625
Advanced Algorithm Development	C/MIPR	MIT/LL, Lockheed Martin,Xontech,S parta,CSC Nichols/Hanscom AFB MA, LA AFB CA	8,265	3,050	2Q	500	1/4Q	0	N/A	11,815
Risk Reduction Analysis	C/MIPR	AFRL/NM	5,310	0	N/A	0	N/A	0	N/A	5,310
System Test & Operations	SS/CPAF	NGST/CA	0	0	N/A	13,000	1/4Q	10,000	N/A	23,000
Residual STO	SS/CPAF	NGST/CA	0	0	N/A	37,414	1/4Q	52,339	N/A	89,753
IR Engagement Sequence										
Data Collection and Analysis	MIPR	MIT/LL, AFRL / Hanscom AFB MA,Kirtland AFB NM	11,402	2,000	2Q	4,500	2Q	4,000	2Q	21,902

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/Oblg Date	FY 2008 Cost	FY 2008 Award/Oblg Date	FY 2009 Cost	FY 2009 Award/Oblg Date	Total Cost
Near Field Infrared Experiment (NFIRE)										
NFIRE	C/CPAF	General Dynamics, AFRL, JNIC/ AZ, NM,CO	0	25,200	N/A	0	N/A	0	N/A	25,200
Subtotal Product Development			659,133	217,948		156,307		86,977		1,120,365

Remarks

- Advanced Algorithm Development is accomplished by a team of multiple contractors or government organizations to include, but not limited to, the Massachusetts Institute of Technology/Lincoln Laboratory (MIT/LL), Defense Microelectronics Activity, Northrop Grumman Space Technology, Lockheed Martin, Photon Research Association, SPARTA and Computer Science Corporation/Nichols Research Corporation (CSC/Nichols). Determination of funding requirements will be made upon completion of prior fiscal year activities
- Beginning in Fiscal Year 2007, risk reduction activities were moved to STSS Follow-on
- Data Collection and Analysis demonstrates STSS performance characteristics and testing of STSS advanced algorithms. Funding is forwarded to several government organizations to include, but not limited to, MIT/LL and Air Force Research Laboratory. Determination of funding requirements will be made upon completion of prior fiscal year activities, and testing schedules of partnering activities.
- NFIRE funding will be forwarded to several Contractors and government organizations to include, but not limited to General Dynamics, AFRL and the JNIC. For FY08, the Agency will transfer the NFIRE program funding to the new program element BMDS Space Program (PE 0306895C). PE 0603893C and PE 0603895C will become the two core program elements within the MDA Space Applications Center of Excellence

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Government										
Program Mission Support	Various	SMC/ CA	29,175	8,819	2/4Q	9,292	2/4Q	10,289	N/A	57,575
OGA Civilian	Various	SMC/ CA	5,010	2,262	2/4Q	3,647	2/4Q	4,023	N/A	14,942
Subtotal Support Costs			34,185	11,081		12,939		14,312		72,517

Remarks

- Previously Shared Mission Support costs (with SBIRS High) in FY06 have been separated and assigned to using organization. Beginning in FY07, these costs will become referred to as Program Mission Support costs. All Program Mission Support costs as well as OGA/MDA Civilian costs have been allocated to Block 2006, through the launch in 2007 and into FY08. Beginning in FY08, these costs will begin to be shared with STSS Follow-on. Some MDA civilian personnel costs will be paid for with Block 2006 funds to support on-orbit activities through FY08

III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Government										
FFRDC	FFRDC	AEROSPACE/ CA	40,312	16,593	2Q	15,275	1/2Q	15,733	1/2Q	87,913
SETA	FFRDC	MITRE/ Wash DC	905	816	2Q	604	N/A	622	N/A	2,947
UARC	FFRDC	SDL/UT	500	0	N/A	0	N/A	0	N/A	500
Subtotal Management Services			41,717	17,409		15,879		16,355		91,360

Remarks

- All FFRDC costs have been allocated to Block 2006, through the launch in 2007 and into FY08. Starting in FY08, costs will be shared with STSS Follow-on and Advanced Technology

Project Total Cost			735,035	246,438		185,125		117,644		1,284,242
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BLOCK 2006																																				
Ground Segment Integration & Test																																				
Satellite Integration and Test																																				
Launch Integration and Test																																				
Launch (2 Satellites)																																				
STSS On-Orbit Operations																																				
Verification Test #1 (Vandenberg AFB launch)																																				
Verification Test #2 (Kwajalein Test Range)																																				
Verification Test #3 (Kwajalein Test Range)																																				
Verification Test #4 (Vandenberg)																																				
Near Field Infrared Experiment																																				
TSP Delivery																																				
SV Integration and Test																																				
Ground Segment Readiness Review #1																																				

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
BLOCK 2006								
Payload Fabrication and Integration & Test	1Q-2Q							
System Compatibility Tests	1Q-4Q	1Q-4Q						
IR Engagement Sequence	1Q-4Q	1Q-4Q	1Q-4Q					
Ground Segment Integration & Test	2Q-4Q	1Q-3Q						
Satellite Integration and Test	2Q-4Q	1Q-4Q						
Operational and Test Readiness	3Q-4Q	1Q-3Q						
Launch Integration and Test		4Q	1Q					
Additional System Flight Tests			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Launch (2 Satellites)			1Q					
STSS On-Orbit Operations			1Q-4Q	1Q-4Q				
Verification Test #1 (Vandenberg AFB launch)			3Q					
Verification Test #2 (Kwajalein Test Range)			3Q					
Verification Test #3 (Kwajalein Test Range)			4Q					
Verification Test #4 (Vandenberg)			4Q					
Near Field Infrared Experiment								
TSP Delivery	3Q							
SV Integration and Test	4Q	1Q-2Q						
Ground Segment Readiness Review #1	4Q							
Ground Segment Readiness Review #2		1Q						
LCT Delivery		1Q						
Launch		3Q						
On Orbit Operations		3Q-4Q	1Q-3Q					

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0912 Space Tracking and Surveillance System (STSS) Block 2008	0	34,847	28,376	23,767	13,952	13,607	6,804	3,402
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

STSS is the space based sensor element of the BMDS.

The STSS Block 2008 provides for upgrades to the Block 2006 ground station hardware and software and Spacecraft/Payload software. The Block 2008 upgrade effort will incorporate lessons learned from design and development in Block 2006 and experiences of other BMD elements to improve the performance of the STSS system and its utility to the BMDS. These improvements will provide additional knowledge points on which to base design and algorithms choices for the Follow on STSS Constellation.

- Improve tracking capability for STSS satellite payload and ground station by upgrading on-board and ground station software
- Provide further automation of the Ground Mission Data Processing and Mission management software to reduce latency, eliminate person in loop, enable real time data process and, for contingency operations, automate planning and tracking
- Upgrade existing software and hardware at the Missile Defense Space Experimentation Center (MDSEC) to enhance interface and utility to BMDS elements
- Develop algorithms and upgrade Ground Mission Data processing Build 2 software to generate additional midcourse track features and improve systems ability to discriminate tracks

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

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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B. Accomplishments/Planned Program				
	FY 2006	FY 2007	FY 2008	FY 2009
Ground and Software Upgrades	0	34,847	28,376	23,767
RDT&E Articles (Quantity)	0	0	0	0

FY07 Planned Program:

- Modify Block 2006 contract to upgrade or add to Ground Segment's Build 2 software completed in FY06, Ground Segment hardware and Spacecraft/Payload software. These upgrades include enhancements as well as new capabilities necessary to implement lessons learned in design and development in Block 2006 hardware and software development, and those necessary to refine the Ground Segment to increase the utility of Block 2006 satellites to the BMDS. Specific examples are:
 - Allocate upgrades to first of two capability enhancements or ``Drops``. The first Drop will include all space vehicle software upgrades that will be accomplished in STSS Block 2008 as well as ground software improvements vital to improved Block 2006 operations.
 - Begin requirements and interface control document development for Drop 1
 - Begin to develop Drop 1 Payload, Spacecraft and Ground upgrade software
 - Conduct evaluation of prototype algorithms.

FY08 Planned Program

- Allocate desired upgrades to second of two capability enhancements or ``Drops``. The second Drop of upgrades will include only ground segment software upgrades that will improve the Block 2006 experiment, BMDS integration and reduce risk for future blocks
- Complete requirements and interface control documents for Drop 1
- Complete Drop 1 Design Audit
- Complete algorithm documents for Drop 1
- Complete and upload Drop 1 payload and spacecraft software
- Continue to develop Ground Software for Drop 1
- Begin development of Drop 2
- Complete update to System Test Plan
- Continue evaluation of prototype algorithms
- Conduct Installation and Checkout for Drop 1 at contractor facility

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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FY09 Planned Program

- Complete requirements and interface control documents for Drop 2
- Complete design audit for Drop 2
- Complete Drop 1 ground system improvements and conduct acceptance testing
- Continue development of Drop 2 (ground segment improvements)
- Complete evaluation of prototype algorithms
- Complete installation and check-out of Drop 2 upgrades
- Complete Drop 1 On-Orbit operations procedures
- Complete Operational Readiness Demonstration
- Conduct On-Orbit data analysis

C. Other Program Funding Summary

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603895C BMD System Space Program	0	0	27,666	35,093	46,849	56,183	133,617	157,117	456,525
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

D. Acquisition Strategy

STSS will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development and evolutionary acquisition. The Block 2008 Ground Segment and Software Upgrade effort will be pursued through the Block 2006 prime contractor, Northrop Grumman Space Technology (NGST), with subcontractors playing key roles as needed. A contract for the Block 2006 activity was awarded in third quarter FY02. Options on this contract will be awarded to accomplish the Block 2008 Ground Segment and Software Upgrade activity. Contract modification is expected to take place in the FY07 timeframe.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis								Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Ground and Software Upgrades										
Capability Based R&D Contract	SS/CPAF	NGST/CA	0	34,847	2Q	28,376	2Q	23,767	2Q	86,990
Subtotal Product Development			0	34,847		28,376		23,767		86,990
Remarks										
The Ground and Software upgrade activity is a refinement of the Block 2006 ground segment.										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										
Remarks										

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			0	34,847		28,376		23,767		86,990
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Remarks

The Ground and Software upgrade activity is a refinement of the Block 2006 ground segment.

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
BLOCK 2008																																				
Contract Modification					▲																															
Drop 1 Ground Station Upgrades					▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Drop 1 Space Vehicle Upgrades					▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Drop 2 Ground Station Upgrades									▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Installation and Checkout													▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
On-Orbit Ops and Data Analysis																	▲	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

Legend

<ul style="list-style-type: none"> ▲ Significant Event (complete) ★ Milestone Decision (complete) ◆ Element Test (complete) ▼ System Level Test (complete) ▲— Complete Activity 	<ul style="list-style-type: none"> ▲ Significant Event (planned) ★ Milestone Decision (planned) ◆ Element Test (planned) ▼ System Level Test (planned) ▲— Planned Activity
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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
BLOCK 2008								
Contract Modification		2Q						
Drop 1 Ground Station Upgrades		2Q-4Q	1Q-4Q	1Q-3Q				
Drop 1 Space Vehicle Upgrades		2Q-4Q	1Q-4Q	1Q				
Drop 2 Ground Station Upgrades			2Q-4Q	1Q-4Q	1Q-4Q			
Installation and Checkout			4Q	1Q-4Q	1Q-4Q	1Q-2Q		
On-Orbit Ops and Data Analysis				4Q	1Q-4Q	1Q-4Q	1Q-4Q	

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
R312 Space Tracking and Surveillance System (STSS) Follow-On	0	29,869	105,789	190,221	287,686	389,581	695,581	902,581
RDT&E Articles Qty	0	0	0	0	0	0	0	0
<i>Note: Based on delays in the anticipated first launch, the STSS Block 2012 effort is renamed STSS Follow-on beginning in FY08. All references to Block 2012 are renamed STSS Follow-on.</i>								
<u>A. Mission Description and Budget Item Justification</u>								
<p>The STSS Follow-on satellites replace the Block 2006 R&D satellites for continued testing and form the start of an operational capability. STSS will bring increased global coverage of ballistic missiles yielding improved BMDS system performance. The first two STSS Follow-on satellites will replace the Block 2006 satellites in the BMDS testbed. It is imperative to begin acquisition efforts to prevent the growing gap between the Block 2006 satellites and the first STSS Follow-on satellites. The STSS Follow-on constellation will improve the BMDS sensor coverage providing valuable midcourse tracking, useful for extending the engagement envelope of all BMDS interceptors, regardless of basing mode. The ultimate size of the STSS constellation will be dictated by the needs of the BMDS.</p> <p>The anticipated contract will be for two STSS Follow-on satellites with an option for three additional satellites. Eventual constellation size is expected to be larger but not yet determined. There will be a reassessment after five satellites to allow for a block technology upgrade if appropriate. If technology upgrade is not warranted, additional satellites in the original configuration may be procured.</p> <p>Mission Objectives for the STSS Follow-on satellite constellation are the following:</p> <ul style="list-style-type: none"> • Provide accurate and timely global midcourse object tracking and reporting of long-range missile attacks against the United States, its allies and deployed forces • Provide accurate, near launch-on/engage-on data for use by BMDS weapons systems • Support BMDS threat data acquisition efforts • Provide a cost-effective, initial operational spiral meeting near-term performance goals 								

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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<u>B. Accomplishments/Planned Program</u>				
	FY 2006	FY 2007	FY 2008	FY 2009
Space System Engineering	0	28,369	93,191	169,690
RDT&E Articles (Quantity)	0	0	0	0

Designs, develops, builds and tests STSS Follow-on satellites in support of the MDA mission to launch and sustain the Space Tracking Surveillance System

FY07 Planned Program

- Complete Acquisition Strategy Development
- Conduct system trades
- Develop top level STSS Follow-on Program Plans
- Develop STSS Follow-on System Level Performance model
- Develop Payload Level Concept Design
- Release RFP
- Risk Reduction
 - Cryocoolers Development
 - Focal Plane Array Development
 - Explore Rad Hard Electronics and Batteries
 - Begin Plume modeling study

FY08 Planned Program

- Award Prime Contract
 - Oversee Prime Contractor's Payload Competition
- Complete system trades
 - Define Preferred System Concepts, i.e., Enabling/Critical Technologies, Update constraints and cost/risk drivers
 - Develop Preliminary System Specification
 - Develop Test and Evaluation Strategy
 - Develop Performance Based Logistics (PBL) Strategy including support and maintenance concepts
- Conduct System Requirements Review (SRR)
 - Validate System Concepts and Technology Maturity against defined user needs

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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- Deliver Top-level System Performance Specification (contingent on successful completion of SRR)
- Develop Draft Test and Evaluation master Plan (TEMP)
- Conduct Integrated Baseline Review (IBR)
- Continue STSS Technology Development programs
 - Incorporate new studies and realign as needed to support STSS Follow-on prime activities
- Continue the acquisition of targets for Block 2006 Flight Tests (\$30M)

FY09 Planned Program

- Conduct System Requirements Review (SRR)
 - Validate System Concepts and Technology Maturity against defined user needs
 - Develop system performance functional specifications
 - Develop System Verification Plan
- Deliver top-level System Performance Specification (contingent on successful completion of SRR)
- Develop Draft Test and Evaluation Master Plan (TEMP)
- Conduct System Functional Review (SDR)
 - Evolve functional performance specifications into functional CI functional specifications and CI Verification Plan
- Deliver updated Cost Analysis Requirements Description (CARD)
- Continue STSS Technology Development programs
 - Incorporate new studies and realign as needed to support STSS Follow-on prime activities
- Continue the acquisition of targets for Flight Testing (\$29.586M)

	FY 2006	FY 2007	FY 2008	FY 2009
Government	0	1,500	12,598	20,531
RDT&E Articles (Quantity)	0	0	0	0

Provides necessary and continuous personnel, technology and administrative support for the STSS Follow-on program

FY07 Planned Program

- Provide program management FFRDC support to manage execution of the STSS Follow on program
- Provide Program Office Support for administrative management services and reimbursement for AF and/or MDA Civilian personnel

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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FY08 Planned Program

- Provide program management FFRDC support to manage execution of the STSS Follow-on program
- Provide Program Office Support for administrative management services and reimbursement for AF and/or MDA Civilian personnel

FY09 Planned Program

- Provide increased program management FFRDC support to manage execution of the STSS Follow-on program
- Provide Program Office Support for administrative management services and reimbursement for AF and/or MDA Civilian personnel

C. Other Program Funding Summary

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,120,879	1,092,076	962,585	1,004,282	924,101	851,213	678,694	501,147	7,134,977
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,391,246	3,043,058	2,520,064	2,359,665	2,179,602	1,699,963	1,153,082	1,183,003	16,529,683
PE 0603883C Ballistic Missile Defense Boost Defense Segment	455,572	628,958	548,759	432,432	448,375	678,913	829,683	1,026,239	5,048,931
PE 0603884C Ballistic Missile Defense Sensors	284,297	514,129	778,163	984,963	939,417	791,701	723,843	603,585	5,620,098
PE 0603886C Ballistic Missile Defense System Interceptors	200,446	356,004	227,499	393,317	522,388	730,236	836,029	570,206	3,836,125
PE 0603888C Ballistic Missile Defense Test and Targets	610,619	601,782	586,150	628,364	662,984	681,511	696,037	705,210	5,172,657
PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603895C BMD System Space Program	0	0	27,666	35,093	46,849	56,183	133,617	157,117	456,525
PE 0603896C BMD C2BMC	0	246,852	258,913	294,627	300,847	282,615	267,275	269,420	1,920,549
PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification							Date February 2007		
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APPROPRIATION/BUDGET ACTIVITY					R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					0603893C Space Tracking & Surveillance System				

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947

D. Acquisition Strategy

Per the January 2002 Missile Defense Directive, STSS adopted a spiral development, capability-based acquisition approach. The STSS Program Office will build and deploy satellites of increasing performance and technical sophistication. The STSS Follow-on satellite constellation represents the next spiral of STSS. The first two STSS Follow-on satellites will replace the Block 2006 satellites in the BMDS testbed, while providing increased coverage, improved system performance and near real time capability.

Under the 2007 Defense Appropriations Act (DAA), Congress appropriated funding for continued architecture studies, technology development and acquisition program planning for FY07. This activity will largely be executed as part of the existing STSS Block 2006 contract with Northrop Grumman Space Technology (NGST). Beginning in FY08, this activity will be called STSS Follow-on. The current acquisition strategy is to procure the STSS Follow-on with NGST as the integrator while conducting a competition at the subcontractor level for the sensor payload. MDA does not intend to award the STSS Follow-on contract until FY08 contingent upon FY08 Congressional authorization and appropriation, consistent with the FY07 DAA.

It is anticipated the initial procurement will be for two STSS Follow-on satellites with unpriced options for an additional three satellites.

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Space System Engineering			0	0	N/A	0	N/A	0	N/A	
System Development & Demonstration	SS/CPAF	NGST/CA	0	0	N/A	55,466	1Q	132,137	1Q	187,603
Risk Reduction Efforts	Various	Various/Various	0	7,490	2Q	7,725	2Q	7,967	2Q	23,182
Target Acquisition	Various	MDA/ Various	0	0	N/A	30,000	1Q	29,586	1Q	59,586
System Studies	SS/CPFF	NGST/CA	0	20,879	2Q	0	N/A	0	N/A	20,879
Subtotal Product Development			0	28,369		93,191		169,690		291,250

Remarks

Risk Reduction Efforts will be evaluated and defined following trade studies being conducted in FY07. Until that time, we are unable to delineate what vendors or contracts will be available.

II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Government			0	0	N/A	0	N/A	0	N/A	
Subtotal Support Costs			0	0		0		0		0

Remarks

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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III. Test and Evaluation Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award/ Oblg Date	FY 2008 Cost	FY 2008 Award/ Oblg Date	FY 2009 Cost	FY 2009 Award/ Oblg Date	Total Cost
Government			0	0	N/A	0	N/A	0	N/A	
FFRDC	C/FFRDC	Aerospace/CA	0	0	N/A	10,043	2Q	17,929	2Q	27,972
UARC	C/FFRDC	SDL/UT	0	1,000	1Q	1,000	1Q	1,000	1Q	3,000
SETA	C/MIPR	Various/CA	0	500	1Q	1,555	2Q	1,602	2Q	3,657
Subtotal Management Services			0	1,500		12,598		20,531		34,629

Remarks

The additional FFRDC/SETA/UARC manpower is necessary to support the new development of the STSS Follow-on program

Project Total Cost			0	29,869		105,789		190,221		325,879
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
STSS Follow-On																																
Contract Award									△																							
Payload Competition									△	—	△																					
Integrated Baseline Review											△																					
System Requirements Review												△																				
System Design Review														△																		
Preliminary Design Review															△																	
Critical Design Review																																
Manufacture																													△	—	△	
System Test & Integration																																
RFP Release												△																				
Acquisition Strategy Development	△	—	△																													

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

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
STSS Follow-On								
Architecture Studies and Technology Development		1Q-3Q						
Proposal Review and Evaluations		4Q	1Q					
Contract Award			1Q					
Payload Competition			1Q-3Q					
Integrated Baseline Review			3Q					
Refine Requirements			2Q-3Q					
System Requirements Review			4Q					
Develop Initial Design				1Q-2Q				
System Design Review				3Q				
Refine Design				4Q	1Q			
Preliminary Design Review					2Q			
Finalize Design					3Q-4Q	1Q-2Q		
Critical Design Review						3Q		
Manufacture						4Q	1Q-4Q	1Q-4Q
System Test & Integration								3Q-4Q
RFP Release		4Q						
Acquisition Strategy Development	1Q-4Q	1Q-3Q						

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification	Date February 2007
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System
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COST (\$ in Thousands)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0602 Program-Wide Support	5,316	11,066	12,235	16,179	26,683	21,303	28,781	34,781
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Civilian Salaries and Support	5,316	11,066	12,235	16,179
RDT&E Articles (Quantity)	0	0	0	0

See Section A: Mission Description and Budget Item Justification

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification							Date February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603893C Space Tracking & Surveillance System				
C. Other Program Funding Summary									
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Cost
PE 0603175C Ballistic Missile Defense Technology	147,270	193,307	118,569	109,540	116,014	121,008	127,917	131,291	1,064,916
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PE 0603889C Ballistic Missile Defense Products	387,402	0	0	0	0	0	0	0	387,402
PE 0603890C Ballistic Missile Defense System Core	409,993	429,420	482,016	511,147	558,746	579,571	579,316	588,481	4,138,690
PE 0603891C Special Programs - MDA	271,021	353,031	323,250	305,409	369,073	526,966	789,017	792,271	3,730,038
PE 0603892C Ballistic Missile Defense Aegis	893,040	1,122,669	1,059,103	1,129,425	1,221,650	1,067,587	1,054,753	1,089,078	8,637,305
PE 0603894C Multiple Kill Vehicle	48,370	144,362	271,151	352,741	461,179	618,263	673,477	842,905	3,412,448
PE 0603895C BMD System Space Program	0	0	27,666	35,093	46,849	56,183	133,617	157,117	456,525
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PE 0603897C BMD Hercules	0	49,674	53,658	54,264	54,405	55,142	53,355	54,198	374,696
PE 0603898C BMD Joint Warfighter Support	0	54,935	48,787	50,428	54,086	56,603	58,890	60,206	383,935
PE 0603904C BMD Joint National Integration Center (JNIC)	0	110,629	104,012	106,985	111,542	111,947	113,592	115,287	773,994
PE 0603905C BMD Concurrent Test and Operations	0	23,159	0	0	0	0	0	0	23,159
PE 0603906C Regarding Trench	0	0	2,000	3,000	5,000	5,000	9,000	9,000	33,000
PE 0605502C Small Business Innovative Research - MDA	133,105	0	0	0	0	0	0	0	133,105
PE 0901585C Pentagon Reservation	14,874	15,527	6,058	6,376	4,490	4,725	4,801	4,877	61,728
PE 0901598C Management Headquarters - MDA	98,609	87,059	85,906	86,453	70,355	69,855	69,855	69,855	637,947