Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	209.831	161.609	112.678	0.000	112.678	98.500	56.424	52.928	34.661	Continuing	Continuing
WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	203.343	161.609	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	364.952
MD12: *Space Tracking and Surveillance System (STSS)*	0.000	0.000	108.842	0.000	108.842	94.738	54.331	50.990	33.070	Continuing	Continuing
ZX40: *Program-Wide Support*	6.488	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	6.488
MD40: *Program-Wide Support*	0.000	0.000	3.836	0.000	3.836	3.762	2.093	1.938	1.591	Continuing	Continuing

Note

In accordance with the Missile Defense Agency revised budget structure, funding for the MDA Space Architecture in FY 2009 will remain in PE 0603893C in Project WX12. For FY 2011, funding for the Precision Tracking Space System, previously known as MDA Space Architecture/STSS Follow-on Constellation, will reside in Program Element 0604883C in Project MD10.

The Near Field Infrared Experiment (NFIRE) program funding will be captured in this Program Element, Project WX12, for FY 2010 only. Funding for NFIRE will discontinue in FY 2011.

The FY 2011 program is balanced, reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated BMDS architecture to counter existing regional threats, continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies show Missile Defense works; and develop technologies to Hedge against future missile threat growth.

The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities--weapons, sensors, and Command and Control, Battle Management and Communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile`s location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack -- all connected by a unifying C2BMC system. As a result, an effort funded in a Program Element may be

critical to success of efforts in other Program Elements -- we refer to these connections as ``interdependencies.`` Throughout the budget justification material, we have attempted to highlight interdependencies in order to fully explain the relationship between different parts of the proposed program.

A. Mission Description and Budget Item Justification

The Space Tracking and Surveillance System (STSS) launched two demonstration satellites on 25 September 2009 and has completed 50% of its system functionality testing. Upon completion of the system functionality tests, the satellites will begin system performance testing. Improved quality of service (i.e., track data of sufficient accuracy and low enough latency to enable weapons to complete ballistic missile engagements) is provided by STSS within the context of this Program Element. Funds are provided for STSS on-orbit operations which includes contractor operation of the STSS Demonstration Satellites and software upgrades (through FY 2010); Government costs; Element and BMDS Testing; Data Collection and Analysis activities. Near Field Infrared Experiment (NFIRE) tests and experiments are funded through FY 2010. Funding will also be provided for engineering efforts associated with Common Threat activities.

STSS

The STSS program will emphasize continued research and development to address the more sophisticated threats we expect to encounter in the far term. The greatest hedge against missile defense threats of all ranges remains a highly available early missile tracking capability from space. Space sensors provide the most cost effective and operationally suitable means of providing global persistent surveillance and engagement, directly addressing the number one missile defense priority need for STRATCOM and other Combatant Commanders. The STSS Demonstration Satellites will demonstrate the ability of a space sensor to provide high precision, real time tracking of missiles and midcourse objects, thus enabling simultaneous regional, theater, and strategic missile defense. Data from STSS testing planned for FY 2010 and FY 2011 will validate the ability to track cold, midcourse objects and close the fire control loop with BMDS interceptors from space. Additionally, STSS provides a new infrared sensor phenomenology for the BMDS, which, when combined with radars, provides robustness against current and advanced countermeasures.

MDA has developed and is testing the STSS Demonstration Satellites to demonstrate key functions of space sensors. Lessons learned from the Demonstration Satellites efforts will provide key data as MDA pursues longer term space sensor needs.

Space sensors extend BMDS sensor coverage to a global level. STSS will demonstrate the capability of satellites to track ballistic missiles and the ability to provide accurate tracking information to the BMDS battle manager to close the global fire control loop with BMDS interceptors, thus extending the effective range of BMDS interceptors and other sensors.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*

Space-based sensors are not limited by basing rights issues or deployment decisions, and will allow cost effective coverage of countries and large areas not accessible from ground based sensors. Approximately fifty Army Navy/Transportable Radar Surveillance - Model 2 (TPY-2) radars or approximately twenty sea-based X-Band radars are required to provide the equivalent mid-latitude coverage of a spaced-based constellation.
Space based visible and Infrared (IR) sensors will complement radars and contribute to a sensor architecture more robust to countermeasures.
Space-based sensors will enable near continuous threat observation and tracking from launch to intercept, covering threats by augmenting the coverage of the BMDS radars, and providing state vectors to Command and Control, Battle Management and Communications (C2BMC) to enable interceptor fire control via multiple BMDS assets (Aegis, Ground-based Midcourse Defense (GMD), Terminal High Altitude Area Defense (THAAD))

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Space Tracking and Surveillance System (STSS) Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission. BMD Test and Targets Element within PE 0603888C in the consolidated MDA-wide System Test Program will execute funds in support of this PE for the planning, design, execution, and management of STSS Demonstration Satellites in the BMD System testing in accordance with the BMDS Test Policy, MDA Directive 3202.03 (Jan 09). This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).

Goals for the Space Tracking and Surveillance System (STSS) Demonstration Satellites include:

Demonstrate capability of space sensors in the utilization of STSS as a mandatory asset for all future MDA flight tests
Demonstrate capability to acquire, track 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 from Overhead Persistent Infrared (OPIR) or other sources
Demonstrate capability to uplink commands and downlink mission, health, and status data directly and via cross link satellite-to-satellite
Develop upgrades to enable demonstration of tracking advanced threats, closing the fire control loop with Aegis, and rapid distribution of real-time STSS data to multiple users
Demonstrate closing the global fire control loop with BMDS weapons and integrated testing

Near Field Infrared Experiment

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*

The Near Field Infrared Experiment (NFIRE) technology project was designed to collect near field phenomenology data for use in plume to hard body handover algorithms for boost phase interceptor programs. MDA is using 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 has been to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment included three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. The dedicated fly-by experiments have been accomplished. The Near Field Infrared Experiment (NFIRE) satellite also carries a Laser Communication Terminal, which has been and continues to be used to conduct communication experiments with the German Terra SAR-X satellite. These experiments 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 NFIRE satellite is operated from the Missile Defense Space Experimentation Center (MDSEC) by the Ballistic Missile Defense Space System. Data products are utilized by multiple programs to improve missile engagement performance.

Goals for Near Field Infrared Experiment:

Conduct multiple data collection missions from the MDSEC against ground, air, space and ballistic missile targets of opportunity
Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments
Provide data to validate 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

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	208.923	180.000	0.000	0.000	0.000
Current President's Budget	209.831	161.609	112.678	0.000	112.678
Total Adjustments	0.908	-18.391	112.678	0.000	112.678
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-18.391			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	4.002	0.000			
• SBIR/STTR Transfer	-3.094	0.000			
• Other Adjustment Detail	0.000	0.000	112.678	0.000	112.678

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*

Change Summary Explanation

FY 2009 increase of $.908 million reflects MDA programmatic changes to support program requirements and SBIR/STTR transfer.

FY 2010 decrease of $18.391 million reflects Congressional directed and undistributed reductions.

No FY 2011 data provided in PB10.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	203.343	161.609	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	364.952
Quantity of RDT&E Articles	2	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, funding for the Space Tracking and Surveillance System (STSS) for FY 2011 is now captured in this Program Element under Project MD12.

The Near Field Infrared Experiment (NFIRE) Program funding will be captured in this Program Element, Project WX12, for FY 2010 only. Funding for NFIRE will discontinue in FY 2011.

A. Mission Description and Budget Item Justification

The Space Tracking and Surveillance System (STSS) project is segmented into three primary pieces: the STSS Demonstration Satellites, which includes Software updates; Government costs; and MDA Space Architecture activity. Funding will also be provided for engineering efforts associated with Common Threat activities.

The Space Tracking and Surveillance System (STSS) Demonstration Satellites will demonstrate key functions of missile tracking with space sensors. The knowledge gained from these efforts will contribute to future MDA space sensor constellation development. The STSS Demonstration Satellites provide key knowledge on which to base the design of a future constellation. The STSS Demonstration Satellites were launched 25 September 2009 with visible and infrared sensors into low earth orbit for testing with other BMDS elements. These two satellites will provide valuable risk reduction for acquisition, tracking, and discrimination functionality to include stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. The program will demonstrate the functions and interfaces required for space data delivery to the BMDS, validating the data quality necessary for interceptors to launch and/or engage on STSS sensor data. STSS will participate with other BMDS Flight Tests and take advantage of Targets of Opportunity (TOOs). MDA provided funds to the National Aeronautics and Space Administration (NASA) for launch services for the two Demonstration Satellites using a single Delta II launch vehicle.

The two Demonstration satellites are being operated 24 hours a day, 7 days a week, 365 days a year from the ground station processing center at the Missile Defense Space Experimentation Center (MDSEC) with a government and contractor team. There is a backup satellite operations site at the Northrop Grumman Aerospace Systems facility in Redondo Beach, California. The first three months of on-orbit activities were dedicated to checking functionality of all subsystems to ensure the

satellite is working and operating successfully in their orbital environment. Laser calibration tests will be conducted to verify the satellites payloads are pointing precisely for tracking missiles. These initial checkouts precede a series of robust performance tests which consists of aircraft tracking tests and satellite tracking tests (both simulating missiles). Once performance is verified to ensure successful missile target tracking, cooperative and dedicated missile testing begins.

As the Space Tracking and Surveillance System (STSS) Demonstration Satellites are operated and tested, they will collect data within the satellites` field of view. Data collection commences upon completion and success of initial check-out activities, which occur in 2nd Qtr FY 2010. STSS will strive to meet reasonable expectations to view all available Targets of Opportunity (TOOs) to include participation with other BMDS target and flight tests that will provide an adequate demonstration of the MDA Space Layer capabilities and allow collection of future system risk reduction information.

MDA will initiate planning of integrated BMDS intercept tests based on track data passed from the STSS Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis, Ground-based Midcourse Defense (GMD), or other interceptors.

Software upgrades will provide improvements to the STSS` utility to the BMDS. Lessons learned from design and development and operation of the Demonstration Satellites will guide the upgrade work. Software upgrades are funded through FY 2010 by this Program Element.

STSS Demonstration Satellites and Software Upgrades will provide data to the BMD Digital Simulations Architecture (DSA) which is the primary Modeling and Simulation (M&S) System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support performance assessment (PA) and technical assessment (TA) events, which provide critical system level performance data relative to all Elements, system engineers, M&S developers, the Operational Test Agency (OTA) and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.

STSS Demonstration Satellites and Software Upgrades will support the BMDS Hardware-in-the-Loop (HWIL) Modeling and Simulation (M&S) through data collection efforts, allowing for enhanced modeling within the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and Warfighter needs.

The Space Tracking and Surveillance System (STSS) Demo Analysis Center (SDAC) will enable independent government analysis of STSS Demonstration Satellites data. The Center infrastructure will include network communications, encryption/decryption devices, and software tools for mission planning and simulation, and data management tools. This infrastructure enables test engineering and analysis support for STSS Demo validation and verification, BMDS testing, and collection of scientific data for refinement of BMDS-relevant models.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT WX12: *Space Tracking and Surveillance System (STSS) Capability Development*

In conjunction with lessons learned from the Space Tracking and Surveillance System (STSS) Demonstration program and the Near Field Infrared Experiment (NFIRE) program, MDA Space Architecture modeling and simulation activities will assess the capability of a low earth orbit constellation to complement sensor coverage and missile detection and tracking capabilities provided by Advanced Overhead Persistent Infrared (OPIR) sensors.

Threat Systems Engineering supports the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process. The Threat Systems Engineering uses intelligence community data to define the BMDS threat space and directly supports the development of the BMD System Description Document and System and Element Specifications. This threat space is documented in the Adversary Data Packages (ADP), which includes common and consistent representation of Missile Systems and countermeasures to drive BMDS requirements, designs, and directly supports the execution of Integrated Master Test Plan (IMTP) (i.e. flight test targets, ground tests and digital simulations, and pre-mission analysis). Threat Systems Engineering also develops scenarios (trajectory and signature) for system and element utilization for compliance and assessment evaluations of BMDS capability to defend homeland, deployed forces, and friends and allies.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Demonstration Satellites	187.375	118.687	0.000	0.000	0.000
See Description Below					
FY 2009 Accomplishments: Integrated the two satellites with the National Aeronautics and Space Administration (NASA) booster and Orbital Insertion Stage (OIS) Launched two STSS Demonstration Satellites into Low Earth Orbit (LEO) on 25 September 2009 Conducted post launch analysis Conducted initial on-orbit check out from the Missile Defense Space Experimentation Center (MDSEC) Conducted mission planning and mission assurance, coordinated range activities, continued target build for: BMDS Flight Test for Space Tracking and Surveillance System (STSS) Sensor Characterization Participated in development of MDA BMDS Integrated Master Test Plan (IMTP)					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Supported development of STSS-related Critical Engagement Conditions (CECs) and ensured their traceability to the Integrated Master Test Plan (IMTP). ; CECs are the conditions where data is obtained from flight and ground tests in order to anchor models and simulations. ; Nine (9) CECs developed--0% completed Collection of test data from CECs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance Collection of test data will begin with system performance testing of the STSS Demonstration Satellites in FY 2010 Continued set up of STSS Demo Analysis Center for independent government validation and verification activities of STSS Demonstration Satellites data The Space Knowledge Center identified risks, proposed mitigation strategies, and shared knowledge across program to gain efficiencies across MDA programs					
FY 2010 Plans: Conduct tests from the Missile Defense Space Experimentation Center (MDSEC) with resident space objects, ground based and airborne targets FY 2010 testing of the STSS Demonstration Satellites will begin the execution of the STSS data collection for nine (9) CECs No CECs (0%) will be completed in FY 2010 as additional data collections are required to be statistically significant Additional data collection in FY 2011 will be required to complete the CECs Collection of test data from CECs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance Conduct cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity Conduct hardware/software refresh for the Ground Station to prevent obsolescence Continue software upgrade activity as required					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Initiate planning for integrated BMDS intercept tests based on track data passed from the Space Tracking and Surveillance System (STSS) Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis, Ground-based Midcourse Defense (GMD), or other interceptors *FY 2011 Base Plans:* FY 2011 Planned Program: Referenced in Project MD12 *FY 2011 OCO Plans:* NA					
MDA Space Architecture See Description Below *FY 2009 Accomplishments:* Conducted modeling and simulation for BMDS space layer Completed BMDS utility assessment of STSS Developed capability needs document for future BMDS space architecture *FY 2010 Plans:* N/A *FY 2011 Base Plans:* MDA Space Architecture becomes Precision Tracking Space System (PTSS) in FY 2011 and Planned Program is referenced in Project MD10, Program Element 0604883C *FY 2011 OCO Plans:* NA	15.968	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Common Threat	0.000	1.185	0.000	0.000	0.000

See Description Below

FY 2009 Accomplishments:
N/A

FY 2010 Plans:
Maintain and update the agency-wide Common and consistent BMDS threat
Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for BMDS Builds
Produce all the threat definition and scenario data required to support the BMDS Integrated Master Test Plan, including several Flight Tests Ground Test, BMDS Performance Assessment 2009 (PA-09), Technical Assessment 2010 (TA-10), and FY 2010 war games and exercises
Produce scenario data to support Element and Component analysis of alternatives, requirements development, design and assessment for BMDS Integrated Build D updates and all phases of the European Phased Adaptive Approach (PAA) including: Terminal High Altitude Area Defense (THAAD), Precision Tracking Space System (PTSS), Air-Borne Infra-Red (ABIR), Aegis BMD Ashore, Aegis BMD 5.1, Far Term Sea-based Terminal, Early Intercept, Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2), Command and Control, Battle Management and Communications (C2BMC), and Space Tracking and Surveillance System (STSS)
Develop threat data for special projects
Validate BMDS test targets are threat representative

FY 2011 Base Plans:
N/A

FY 2011 OCO Plans:
NA

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Near Field Infrared Experiment (NFIRE)	0.000	11.352	0.000	0.000	0.000
See Description Below *FY 2009 Accomplishments:* Reference Program Element 0603895C, ;Project ;WX16 for FY 2009 Accomplishments *FY 2010 Plans:* NOTE: The Near Field Infrared Experiment (NFIRE) Program funding will be captured in this Program Element for FY 2010. There is no funding for NFIRE beyond FY 2010. Continue On-Orbit Operations at the Missile Defense Space Experimentation Center (MDSEC) ;to support data collection and analysis on targets of opportunity Conduct cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity Continue laser communication experiments to assess viability of the technology Continue to support, as requested by Air Force Space Command (AFSPC) and other agencies, Space Situational Awareness Assess satellite health/utility for potential, future utilization *FY 2011 Base Plans:* N/A *FY 2011 OCO Plans:* NA					
Element/BMDS Integration and Test	0.000	30.385	0.000	0.000	0.000
See Description Below					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Test planning occurred in the Space Tracking and Surveillance System (STSS) Demonstration Satellites task during FY 2009 in which STSS personnel participated in development of MDA BMDS Integrated Master Test Plan (IMTP) *FY 2010 Plans:* Conduct acquisition/calibration of Demonstration Satellites with ground laser source Perform planning and execution of Missile Surrogate Testing (Aircraft and Resident Space Objects) Perform planning and execution of Space Tracking and Surveillance System (STSS) participation in BMDS flight tests Plan and participate in available Targets of Opportunity (TOOs) Plan and coordinate range activities to support the MDA Integrated Master Test Plan (IMTP) Conduct participation of High Altitude Observatory (HALO) II to collect ``truth`` data that will verify satellites` sensor performance Complete setup of STSS Demo Analysis Center for engagement in independent government validation and verification activities of STSS Demonstration Satellites data, participation in BMDS testing, and collection of scientific data for refinement of BMDS-relevant models. *FY 2011 Base Plans:* FY 2011 Planned Program: Referenced in MD12 *FY 2011 OCO Plans:* NA					
Accomplishments/Planned Programs Subtotals	203.343	161.609	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314
• 0603882C: *Ballistic Missile Defense Mid-Course Segment*	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922
• 0603883C: *Ballistic Missile Defense Boost Defense Segment*	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: *Ballistic Missile Defense Sensors*	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: *Ballistic Missile Defense System Interceptor*	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: *Ballistic Missile Defense Test and Targets*	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: *Ballistic Missile Defense Enabling Programs*	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
• 0603891C: *SPECIAL PROGRAMS - MDA*	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: *BMD AEGIS*	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919
• 0603894C: *MULTIPLE KILL VEHICLE*	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: *BMD SYSTEM SPACE PROGRAM*	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: *BMD C2BMC*	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603897C: *BMD HERCULES*	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 0603898C: *BMD JOINT WARFIGHTER SUPPORT*	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603901C: *DIRECTED ENERGY RESEARCH*	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221
• 0603904C: *MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)*	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: *REGARDING TRENCH*	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
• 0603907C: *SEA BASED X-BAND RADAR (SBX)*	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285
• 0603908C: *BMD EUROPEAN INTERCEPTOR SITE*	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: *BMD EUROPEAN MIDCOURSE RADAR*	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: *BMD EUROPEAN CAPABILITY*	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: *BMD European Comm Support*	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
• 0603913C: *ISRAELI COOPERATIVE*	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545
• 0604880C: *LAND-BASED SM-3*	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428
• 0604881C: *Aegis SM-3 BLOCK IIA CO-DEVELOPMENT*	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387
• 0604883C: *PRECISION TRACKING SPACE SYSTEM*	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: *AIRBORNE INFRARED (ABIR)*	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: *Small Business Innovative Research BMDO*	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: *Pentagon Reservation*	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0901598C: *Management Headquarters-MDA*	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The Space Tracking and Surveillance System (STSS) program follows the Missile Defense Agency`s capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS Demonstration Satellites effort utilizes a single prime contractor, Northrop Grumman Aerospace Systems (NGAS), formerly known as Northrop Grumman Space Technology (NGST), with the subcontractor Raytheon providing the sensor payload. The contract for the STSS Demonstration Satellites effort was awarded in third quarter FY 2002. This contract implements MDA`s capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS.

The Space Tracking and Surveillance System (STSS) Software Upgrades effort utilizes the STSS Demonstration Satellites prime contractor, Northrop Grumman Aerospace Systems (NGAS), with subcontractors playing key roles as needed. The contract for the STSS Demonstration Satellites activity was awarded in third quarter FY 2002.

Competition will be used for future procurement and services as appropriate.

MDA will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System (BMDS) mission. The objectives are to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs enterprise-wide. Advisory and Assistance Services (A&AS) support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.

E. Performance Metrics

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency			DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Capability Based R&D WX12	SS/CPAF	NGAS CA	296.145	90.355	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites Launch Vehicle Integration WX12	TBD/TBD	NASA FL	17.386	0.000		0.000		0.000		0.000	0	17.386	17.386
Demonstration Satellites Element Integration WX12	TBD/TBD	SDTW, NAVAIR Kirtland AFB NM, Pt Mugu CA	6.655	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites Advanced Algorithm Development WX12	TBD/TBD	MIT/LL, Lockheed Martin, Zantech, Sparta, CSC Hanscom AFB MA, LAAFB CA	1.150	0.000		0.000		0.000		0.000	0	1.150	1.150
Demonstration Satellites Risk Reduction Analysis WX12	TBD/TBD	AFRL NM	2.629	0.000		0.000		0.000		0.000	0	2.629	2.629
Demonstration Satellites Systems Engineering WX12	TBD/TBD	Aerospace Los Angeles AFB CA, Schriever AFB CO	29.650	10.511	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites Knowledge Center WX12	Various/ Various	Various Various	2.607	0.000		0.000		0.000		0.000	0	2.607	2.607
MDA Space Architecture System Engineering WX12	Various/ Various	Various Various	1.600	0.000		0.000		0.000		0.000	0	1.600	1.600

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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MDA Space Architecture Modeling and Simulation-1 WX12	TBD/TBD	Sandia National Laboratory Albuquerque, NM	6.160	0.000		0.000		0.000		0.000	0	6.160	6.160
MDA Space Architecture Modeling and Simulation-2 WX12	TBD/TBD	Aerospace Los Angeles AFB, CA	5.300	0.000		0.000		0.000		0.000	0	5.300	5.300
MDA Space Architecture Risk Reduction Analysis WX12	C/FFP	Sparta Centreville, VA	2.800	0.000		0.000		0.000		0.000	0	2.800	2.800
MDA Space Architecture Modeling and Simulation-3 WX12	TBD/TBD	SAF/FMB Washington DC	1.708	0.000		0.000		0.000		0.000	0	1.708	1.708
Common Threat Common Threat WX12	Various/ Various	Various Various	0.000	1.185	Apr 2010	0.000		0.000		0.000	0	1.185	1.185
Near Field Infrared Experiment (NFIRE) Prime Contract WX12	SS/CPAF	General Dynamics AZ	0.000	4.278	Jan 2010	0.000		0.000		0.000	0	4.278	4.278
Near Field Infrared Experiment (NFIRE) Mission Planning/Data Reduction WX12	TBD/TBD	MIT/LL MA	0.000	2.830	Jul 2010	0.000		0.000		0.000	0	2.830	2.830
Near Field Infrared Experiment (NFIRE) Satellite Operations WX12	SS/CPFF	MDSEC CO	0.000	4.244	Jan 2010	0.000		0.000		0.000	0	4.244	4.244
		Subtotal	373.790	113.403		0.000		0.000		0.000			

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

In FY 2009, funding for Capability Based R&D efforts was placed on contract for Northrop Grumman Aerospace Systems (NGAS) to complete the development of the Demonstration Satellites, perform the Space Vehicle-to-Launch Vehicle integration, launch the two demonstration vehicles, conduct mission planning, initial satellite check-out and begin operations and testing of the Demonstration Satellites. In FY 2010, funding is provided to NGAS to continue mission planning for missile flight tests, conduct testing and evaluation for Targets of Opportunity. Funding in FY 2009 was provided for Software Drop 0 and upload to the Demonstration Satellites in FY 2010. In FY 2010 funds will be provided to continue Software Upgrades for External Data Review, Improving Onboard Tracker, Optimizing Track Revisit, and improving control of Front End Processors. Additionally, funding is provided in FY 2010 to cover costs for replacing mission operations hardware and software.

In FY 2009, funded Launch Vehicle Integration for Delta II and launch services provided by the National Aeronautics and Space Administration (NASA) and the costs for transporting the satellites to the launch site for integration onto the launch vehicle.

Element Integration efforts are divided into several areas for FY 2009 (Funding in FY 2010 captured under Element/BMDS Integration and Test):

Funding goes to the Navy at Pt Mugu, CA for the planning and calibration testing using after-burning aircraft or other sources for the Demonstration Satellites. Aircraft are used to generate targets for the Acquisition sensor and Track sensor with Below The Horizon (BTH) backgrounds.
The Space Tracking and Surveillance System (STSS) Demonstration Satellites require assets for missile tests to be conducted jointly by the Air Force Satellite Control Network (AFSCN) and the Space and Missile Systems Center (SMC) Test Wing. These assets are critical in supporting STSS launches and the subsequent operations and testing of the Demo Satellites.
The High Altitude Observatory-II assets are funded to capture data in all phases of the targets` flights with infrared sensors. The data is used to anchor results for which the performance of the Demonstration Satellites` sensor can be assessed.
Funding covers cost associated with the continued set up of STSS Demo Analysis Center (SDAC), including: facility modification & accreditation, installation of network communication and encryption devices, installation of software tools for mission planning and simulation, creation of database and data management tools, and development of Overhead Persistent Infrared (OPIR) data analysis tools. This infrastructure enables test engineering and analysis support for STSS Demo validation and verification, BMDS testing, and collection of scientific data for refinement of BMDS-relevant models.

Advanced Algorithm Development was accomplished by a team of multiple contractors and 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).

BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of STSS

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels. Systems Engineering support is provided by Aerospace directly to the Demonstration Satellites effort.

Common threat engineering produces common and consistent adversary missile trajectory and signature data and directly supports the development of BMD System architecture, BMD System Specification, and the execution of Integrated Master Test Plan (IMTP). These BMDS common threat data are updated to reflect the latest intelligence community assessments of adversary capabilities and are contained in the Adversary Data Packages (ADP) for BMDS Integrated Builds and drives BMDS ground tests, flight tests, digital simulations, and pre- and post-mission analysis activities.

Near Field Infrared Experiment (NFIRE) funding will be forwarded to several contractors and government organizations to include, but not limited to General Dynamics, Air Force Research Laboratory (AFRL) and the Missile Defense Space Experimentation Center (MDSEC). For FY 2010, the Space Tracking and Surveillance System (STSS) Program Element (PE) 0603893C will provide funding for the NFIRE program, in Project WX12 as there is no funding programmed in PE 063895C.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Program Mission Support WX12	Various/ Various	SMC CA	11.449	8.550	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites Other Government Agency (OGA) Civilian WX12	Various/ Various	SMC CA	5.138	3.424	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites MDA Civilian WX12	Various/ Various	MDA AL	1.120	2.470	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Other Government Agency (OGA) Contract Support Services (CSS) WX12	Various/ Various	SMC, MDA CA, AL	6.453	3.377	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
		Subtotal	24.160	17.821		0.000		0.000		0.000			

Remarks

Demonstration Satellites Support Costs include the following:

MDA Civilian Salaries - Program office is providing funds for this expenditure to the responsible functional manager
Other Government Agency (OGA) Civilian personnel - Reimbursement of Air Force Personnel costs that directly support the Space Tracking and Surveillance System (STSS) program, for the Demonstration Satellites and Software Upgrades
Contract Support Services (CSS) Costs - Program office is providing funds for this expenditure to the responsible functional managers for administrative support, Comprehensive Cost and Requirement System (CCARs) administrative support, logistics and financial management/cost estimating support
AF tenant related costs - Base network support and Los Angeles Air Force Base shared costs for: Telephone Operations and maintenance, Multimedia Equipment Maintenance and Art services, local online Unit Manning Document application, base-wide maintenance, Microsoft Enterprise Licensing
Other program costs - the Program office is responsible for funding personnel travel, training, hardware and software purchases and maintenance and supplies

Starting FY 2010, CSS effort will begin to transition to an enterprise-wide Advisory and Assistance Services (A&AS) contract. This approach is being pursued to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs. A&AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.

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Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Element/BMDS Integration and Test Space Tracking and Surveillance System (STSS) Demo Sensor Calibration with Aircraft WX12	TBD/TBD	NAVAIR Pt Mugu CA	0.000	2.826	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Ground Support for Acquisition Line-of-Sight Calibration WX12	TBD/TBD	AFRL Kirtland AFB NM	0.000	1.238	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test STSS Demo Analysis Center (SDAC) - Government Verification & Validation (V&V) WX12	Various/ Various	Various Various	0.000	1.336	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Truth Sensors (High Altitude Observatory (HALO) II) WX12	TBD/TBD	MDA AL	0.000	0.365	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test BMDS Integration-Test Engineering and Resources WX12	TBD/TBD	Various Various	0.000	3.708	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Element/BMDS Integration and Test Infrared (IR) Star Calibration WX12	TBD/TBD	Mt Lemmon Tucson, AZ	0.000	0.050	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test STSS Capability Based R&D-Test Support WX12	SS/CPAF	NGAS Redondo Beach, CA	0.000	13.250	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Systems Engineering WX12	TBD/TBD	Aerospace Los Angeles AFB CA	0.000	7.612	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
		Subtotal	0.000	30.385		0.000		0.000		0.000			

Remarks

Element/BMDS Integration and Test efforts are divided into several areas for FY 2010 (FY 2009 costs included in Element Integration under Demonstration Satellites above):

Funding goes to the Navy at Pt Mugu, CA for the planning and calibration testing using after-burning aircraft or other sources for the Demonstration Satellites. Aircraft are used to generate targets for the Acquisition sensor and Track sensor with Below The Horizon (BTH) backgrounds.
Funding for Ground Support for Acquisition Line-of-Sight (LOS) Calibration goes to the Air Force Research Laboratory (AFRL) to provide laser ground source to perform line-of-sight calibration of acquisition sensors on board the two Space Tracking and Surveillance System (STSS) Demonstration Satellites.
Funding covers cost associated with the continued set up of Space Tracking and Surveillance System (STSS) Demo Analysis Center, including: facility modification & accreditation, installation of network communication and encryption devices, installation of software tools for mission planning and simulation, creation of database and data management tools, and development of Overhead Persistent Infrared (OPIR) data analysis tools. This infrastructure enables test engineering and analysis support for STSS Demo validation and verification, BMDS testing, and collection of scientific data for refinement of BMDS-relevant models.
The High Altitude Observatory-II assets are funded to capture data in all phases of the targets` flights with infrared sensors. The data is used to anchor results for which the performance of the Demonstration Satellites` sensor can be assessed.

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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Integration-Test Engineering and Resources funding covers test engineering to conduct pre-mission planning, execution, and post-mission analyses for testing associated with STSS participation in BMDS flight tests. The STSS Capability Based R&D-Test Support funding covers costs associated with the STSS Prime Contractor providing planning, execution, analyses, and reporting support for program office directed STSS-related testing activities. Funding for Systems Engineering is allocated to Aerospace to provide independent test engineering to: assist in requirements definition, mission planning and tasking capability for BMDS missile flight tests and targets of opportunity; prepare test plans and engagement scripts; analyze mission results and prepare detailed reports; aid in issue resolution; support interface with design engineers to understand and develop operating and test procedures; and support interface with other agencies.												

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Aerospace WX12	TBD/TBD	Aerospace CA	19.650	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Demonstration Satellites Space Dynamics Laboratory (SDL) WX12	TBD/TBD	SDL UT	0.449	0.000		0.000		0.000		0.000	0	0.449	0.449
		Subtotal	20.099	0.000		0.000		0.000		0.000			

Remarks

For FY 2010, all Aerospace costs are appropriately aligned under the Product Development Cost Category as these are system engineering efforts for the Demonstration Satellites. BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of the Space Tracking and Surveillance System (STSS) to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels. Systems Engineering support is provided by Aerospace directly to the Demonstration Satellites effort.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT WX12: *Space Tracking and Surveillance System (STSS) Capability Development*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space Dynamics Laboratory (SDL) is funded via University Affiliated Research Center (UARC) contract.													

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	418.049	161.609		0.000		0.000		0.000			

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT WX12: *Space Tracking and Surveillance System (STSS) Capability Development*

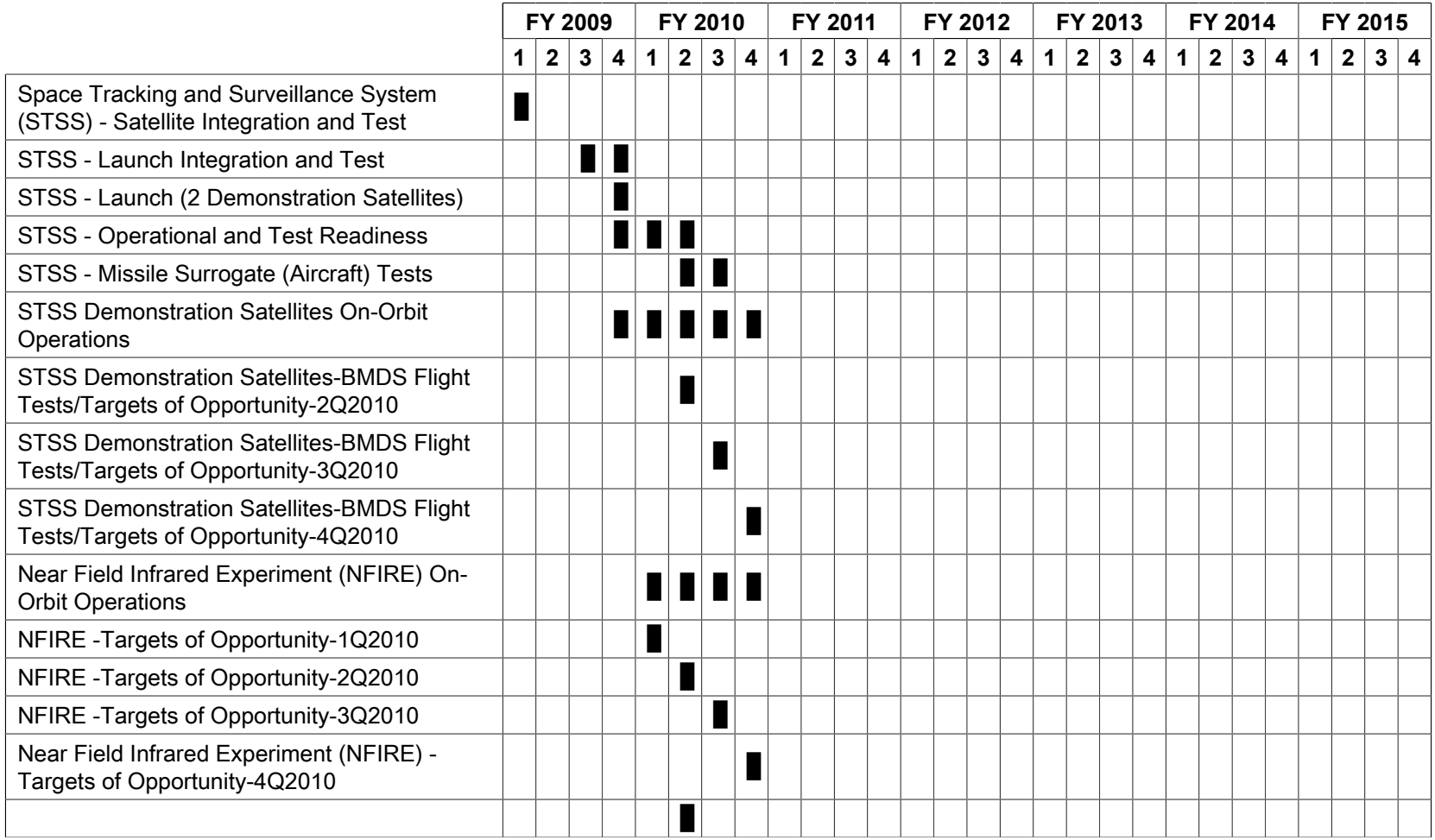

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** WX12: *Space Tracking and Surveillance System (STSS) Capability Development*

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NFIRE Laser Comm Terminal (LCT) Experiments/Operations-2Q2010																												
NFIRE LCT Experiments/Operations-3Q2010							▮																					
NFIRE LCT Experiments/Operations-4Q2010								▮																				

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** WX12: *Space Tracking and Surveillance System (STSS) Capability Development*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Space Tracking and Surveillance System (STSS) - Satellite Integration and Test	1	2009	1	2009
STSS - Launch Integration and Test	3	2009	4	2009
STSS - Launch (2 Demonstration Satellites)	4	2009	4	2009
STSS - Operational and Test Readiness	4	2009	2	2010
STSS - Missile Surrogate (Aircraft) Tests	2	2010	3	2010
STSS Demonstration Satellites On-Orbit Operations	4	2009	4	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2010	2	2010	2	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2010	3	2010	3	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2010	4	2010	4	2010
Near Field Infrared Experiment (NFIRE) On-Orbit Operations	1	2010	4	2010
NFIRE -Targets of Opportunity-1Q2010	1	2010	1	2010
NFIRE -Targets of Opportunity-2Q2010	2	2010	2	2010
NFIRE -Targets of Opportunity-3Q2010	3	2010	3	2010
Near Field Infrared Experiment (NFIRE) -Targets of Opportunity-4Q2010	4	2010	4	2010
NFIRE Laser Comm Terminal (LCT) Experiments/Operations-2Q2010	2	2010	2	2010
NFIRE LCT Experiments/Operations-3Q2010	3	2010	3	2010
NFIRE LCT Experiments/Operations-4Q2010	4	2010	4	2010

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	0.000	0.000	108.842	0.000	108.842	94.738	54.331	50.990	33.070	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, funding for Program Element 0603893C, Project MD12 was moved from Project WX12 in FY 2011.

This Program Element funds one of the major focus areas of the integrated BMDS architecture, the Space Tracking and Surveillance System (STSS). It represents the demonstration and development of space sensor technologies that will hedge against future missile threat growth.

A. Mission Description and Budget Item Justification

The Space Tracking and Surveillance System (STSS) Demonstration Satellites will demonstrate key functions of missile tracking with space sensors. The knowledge gained from these efforts will contribute to future MDA space sensor constellation development. The STSS Demonstration Satellites provide two on-orbit satellite assets with visible and infrared sensors into low earth orbit for testing with other BMDS elements and will provide key knowledge on which to base the design of a future constellation. These two satellites will provide valuable risk reduction for acquisition, tracking, and discrimination functionality to include stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. The program will continue to demonstrate the functions and interfaces required for space data delivery to the BMDS, validating the data quality necessary for interceptors to launch and/or engage on STSS sensor data. On-orbit, STSS Demonstration Satellites will collect data within the satellites` field of view. Data collection and analyses continues in FY 2011 with STSS striving to meet reasonable expectations to view all available Targets of Opportunity (TOOs) to include participation with other BMDS target and flight tests that will provide demonstration of the MDA Space Layer capabilities and allow collection of future system risk reduction information.

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. STSS Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission. BMD Test and Targets Element within PE 0603888C in the consolidated MDA-wide System Test Program will execute funds in support of this PE for the planning, design, execution, and management of STSS Demonstration Satellites in the BMD System testing in accordance with the BMDS Test Policy, MDA Directive 3202.03 (Jan 09). This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP). The Space Tracking and Surveillance System (STSS) Demonstrate key

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

functions of space sensors. MDA will continue planning for and conduct integrated BMDS intercept tests based on track data passed from the STSS Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis, GMD, or other interceptors.

STSS Demonstration Satellites will provide data to the BMD Digital Simulations Architecture (DSA) which is the primary Modeling and Simulation (M&S) System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support performance assessment (PA) and technical assessment (TA) events, which provide critical system level performance data relative to all Elements, system engineers, M&S developers, the Operational Test Agency (OTA) and Wargames. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.

STSS Demonstration Satellites will support BMDS Hardware-in-the-Loop (HWIL) Modeling and Simulation (M&S) Program through data collection efforts, allowing for enhanced modeling within the BMDS system-level framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and Warfighter needs.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Demonstration Satellites	0.000	0.000	84.401	0.000	84.401
See Description Below *FY 2009 Accomplishments:* FY 2009 Accomplishments: Referenced in Project WX12 *FY 2010 Plans:* FY 2010 Planned Program: Referenced in Project WX12 *FY 2011 Base Plans:* Conduct tests from the Missile Defense Space Experimentation Center (MDSEC) with resident space objects, ground based and airborne targets					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 testing of the Space Tracking and Surveillance System (STSS) Demonstration Satellites continues the execution of the STSS-related Critical Engagement Conditions (CECs)** with sufficient data collected to complete 44% of the CECs (4 of 9) by the end of FY 2011 Collection of test data from CECs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance ** CECs are the conditions where data is obtained from flight and ground tests in order to anchor models and simulations. Conduct cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity Conduct independent government validation of STSS Demonstration Satellites data in the STSS Demo Analysis Center Initiate planning for integrated BMDS intercept tests based on track data passed from the STSS Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis, Ground-based Midcourse Defense (GMD), or other interceptors Evaluate capability to provide appropriate Quality of Service (QoS) data (i.e., track data of sufficient accuracy and low enough latency to allow BMDS weapons to complete ballistic missile engagements) in support of BMDS elements and components to enable Integrated Build C and Build D functionality, including improved BMDS integrated sensor correlation and improved BMD System Track generation *FY 2011 OCO Plans:* NA					
Element/BMDS Integration and Test See Description Below	0.000	0.000	24.441	0.000	24.441

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY 2009 Accomplishments: Referenced in Project WX12 *FY 2010 Plans:* FY 2010 Planned Program: Referenced in Project WX12 *FY 2011 Base Plans:* Plan and participate in available Targets of Opportunity (TOOs) Conduct planning and execution of Missile Surrogate Testing (Aircraft and Resident Space Objects) Conduct acquisition/calibration of Demonstration Satellites with ground laser source Plan and coordinate range activities to support the MDA Integrated Master Test Plan (IMTP) Continue Space Tracking and Surveillance System (STSS) Demo Analysis Center participation in BMDS testing and collection of scientific data for refinement of BMDS-relevant models *FY 2011 OCO Plans:* NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	108.842	0.000	108.842

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314
• 0603882C: *Ballistic Missile Defense Mid-Course Segment*	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603883C: *Ballistic Missile Defense Boost Defense Segment*	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: *Ballistic Missile Defense Sensors*	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: *Ballistic Missile Defense System Interceptor*	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: *Ballistic Missile Defense Test and Targets*	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: *Ballistic Missile Defense Enabling Programs*	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
• 0603891C: *SPECIAL PROGRAMS - MDA*	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: *BMD AEGIS*	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919
• 0603894C: *MULTIPLE KILL VEHICLE*	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: *BMD SYSTEM SPACE PROGRAM*	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: *BMD C2BMC*	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603897C: *BMD HERCULES*	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 0603898C: *BMD JOINT WARFIGHTER SUPPORT*	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186
• 0603901C: *DIRECTED ENERGY RESEARCH*	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221
• 0603904C: *MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)*	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: *REGARDING TRENCH*	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603907C: *SEA BASED X-BAND RADAR (SBX)*											
• 0603908C: *BMD EUROPEAN INTERCEPTOR SITE*	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: *BMD EUROPEAN MIDCOURSE RADAR*	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: *BMD EUROPEAN CAPABILITY*	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: *BMD European Comm Support*	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
• 0603913C: *ISRAELI COOPERATIVE*	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545
• 0604880C: *LAND-BASED SM-3*	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428
• 0604881C: *Aegis SM-3 BLOCK IIA CO-DEVELOPMENT*	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387
• 0604883C: *PRECISION TRACKING SPACE SYSTEM*	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: *AIRBORNE INFRARED (ABIR)*	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: *Small Business Innovative Research BMDO*	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: *Pentagon Reservation*	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337
• 0901598C: *Management Headquarters-MDA*	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The Space Tracking and Surveillance System (STSS) program follows the Missile Defense Agency`s capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS Demonstration Satellites effort utilizes a single prime contractor, Northrop Grumman Aerospace Systems (NGAS), formerly known as Northrop Grumman Space Technology (NGST), with the subcontractor Raytheon providing the sensor payload. The contract

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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for the STSS Demonstration Satellites effort was awarded in third quarter FY 2002. This contract implements MDA`s capability-based acquisition strategy by a) using largely existing satellite hardware as a low risk opportunity, b) building upon the lessons learned from previous development efforts and c) establishing a series of planned enhancements to bring added capability to the BMDS.

Competition will be used for future procurement and services as appropriate.

MDA will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System (BMDS) mission. The objectives are to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs enterprise-wide. A&AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.

E. Performance Metrics

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Capability Based R&D MD12	SS/CPAF	NGAS CA	0.000	0.000		65.584	Jul 2011	0.000		65.584	Continuing	Continuing	Continuing
Demonstration Satellites Systems Engineering MD12	TBD/TBD	Aerospace Los Angeles AFB CA, Schriever AFB CO	0.000	0.000		4.065	Jul 2011	0.000		4.065	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		69.649		0.000		69.649			

Remarks

Funding for Capability Based R&D efforts is placed on contract for Northrop Grumman Aerospace Systems (NGAS) to assist in conducting mission planning and operations of the Demonstration Satellites.

BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of the Space Tracking and Surveillance System (STSS) to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels. Systems Engineering support is provided by Aerospace directly to the Demonstration Satellites effort.

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Program Mission Support MD12	Various/ Various	SMC CA	0.000	0.000		7.258	Jul 2011	0.000		7.258	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency		DATE: February 2010
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Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Other Government Agency (OGA) Civilian MD12	Various/ Various	SMC CA	0.000	0.000		2.620	Jul 2011	0.000		2.620	Continuing	Continuing	Continuing
Demonstration Satellites MDA Civilian MD12	Various/ Various	MDA AL	0.000	0.000		2.565	Jul 2011	0.000		2.565	Continuing	Continuing	Continuing
Demonstration Satellites Contract Support Services (CSS) MD12	Various/ Various	MDA AL	0.000	0.000		2.309	Jul 2011	0.000		2.309	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		14.752		0.000		14.752			

Remarks

Demonstration Satellites Support Costs include the following

MDA Civilian Salaries - Program office is providing funds for this expenditure to the responsible functional manager
Other Government Agency (OGA) Civilian personnel - Reimbursement of Air Force Personnel costs that directly support the Space Tracking and Surveillance System (STSS) program, for the Demonstration Satellites
Contract Support Services (CSS) Costs - Program office is providing funds for this expenditure to the responsible functional managers for administrative support, Comprehensive Cost and Requirement System (CCARs) administrative support, logistics and financial management/cost estimating support
AF tenant related costs - Base network support and Los Angeles Air Force Base shared costs for: Telephone Operations and maintenance, Multimedia Equipment Maintenance and Art services, local online Unit Manning Document application, base-wide maintenance, Microsoft Enterprise Licensing
Other program costs - the Program office is responsible for funding personnel travel, training, hardware and software purchases and maintenance and supplies

Starting FY 2010, Contract Support Services efforts will begin to transition to an enterprise-wide Advisory and Assistance (A&AS) contract. This approach is being pursued to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs. A&AS support include engineering and technical services; studies, analyses, and evaluation; and management and professional services.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Element/BMDS Integration and Test Space Tracking and Surveillance System (STSS) Demo Sensor Calibration with Aircraft MD12	TBD/TBD	NAVAIR Pt Mugu CA	0.000	0.000		0.862	Jan 2011	0.000		0.862	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Ground Support for Acquisition Line-of-Sight Calibration MD12	TBD/TBD	AFRL Kirtland AFB NM	0.000	0.000		0.649	Jan 2011	0.000		0.649	Continuing	Continuing	Continuing
Element/BMDS Integration and Test STSS Demo Analysis Center (SDAC) - Government Verification & Validation (V&V) MD12	Various/ Various	Various Various	0.000	0.000		1.363	Apr 2011	0.000		1.363	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Truth Sensors (High Altitude Observatory (HALO) II) MD12	TBD/TBD	MDA AL	0.000	0.000		0.376	Jan 2011	0.000		0.376	Continuing	Continuing	Continuing
Element/BMDS Integration and Test BMDS Integration-Test Engineering and Resources MD12	Various/ Various	Various Various	0.000	0.000		5.811	Jan 2011	0.000		5.811	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Element/BMDS Integration and Test Infrared (IR) Star Calibration MD12	TBD/TBD	Mt Lemmon Tuscon, AZ	0.000	0.000		0.054	Oct 2010	0.000		0.054	Continuing	Continuing	Continuing
Element/BMDS Integration and Test STSS Capability Based R&D-Test Support MD12	C/CPAF	NGAS Redondo Beach, CA	0.000	0.000		9.494	Jul 2011	0.000		9.494	Continuing	Continuing	Continuing
Element/BMDS Integration and Test Systems Engineering MD12	TBD/TBD	Aerospace Los Angeles AFB CA	0.000	0.000		5.832	Jul 2011	0.000		5.832	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		24.441		0.000		24.441			

Remarks

Element/BMDS Integration and Test

Funding goes to the Navy at Pt Mugu, CA for the planning and calibration testing using after-burning aircraft or other sources for the Demonstration Satellites. Aircraft are used to generate targets for the Acquisition sensor and Track sensor with Below The Horizon (BTH) backgrounds.
Funding for Ground Support for Acquisition Line-of-Sight (LOS) Calibration goes to the Air Force Research Laboratory (AFRL) to provide laser ground source to perform line-of-sight calibration of acquisition sensors on board the two Space Tracking and Surveillance System (STSS) Demonstration Satellites.
Funding for the STSS Demo Analysis Center maximizes return on investment to further the development of the future BMDS space layer. Costs covered include the purchase and maintenance of software tools for mission planning and simulation, data management and Overhead Persistent Infrared (OPIR) data analysis as well as test engineering and analysis support for BMDS testing and collection of scientific data for refinement of BMDS-relevant models.
The High Altitude Observatory-II assets are funded to capture data in all phases of the targets` flights with infrared sensors. The data is used to anchor results for which the performance of the Demonstration Satellites` sensor can be assessed.
BMDS Integration-Test Engineering and Resources funding covers (for FY 2011): test engineering to conduct pre-mission planning, execution, and post-mission analyses for testing events associated with STSS participation in BMDS flight tests.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
The STSS Capability Based R&D-Test Support funding covers costs associated with the STSS Prime Contractor providing planning, execution, analyses, and report support for program office directed STSS-related testing activities. Funding for Systems Engineering is allocated to Aerospace to provide independent test engineering to: assist in requirements definition, mission planning and tasking capability for BMDS missile flight tests and targets of opportunity; prepare test plans and engagement scripts, analyze mission results and prepare detailed reports; aid in issue resolution; support interface with design engineers to understand and develop operating and test procedures; and support interface with other government agencies.												

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		108.842		0.000		108.842			

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2011									■																			
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2011										■																		
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2011											■																	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2011												■																
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2012													■															
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2012														■														
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2012															■													
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2012																■												
STSS Demonstration Satellites On-Orbit Operations-1Q2011-4Q2011									■	■	■	■																
STSS Demonstration Satellites On-Orbit Operations-1Q2012-4Q2012													■	■	■	■												
STSS Demonstration Satellites On-Orbit Operations-1Q2013-4Q2013																	■	■	■	■								

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FTS-02 (STSS Demonstrator Flight Test)																					▮							
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2014-4Q2014																					▮	▮	▮	▮				
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2015-4Q2015																									▮	▮	▮	▮

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2011	1	2011	1	2011
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2011	2	2011	2	2011
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2011	3	2011	3	2011
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2011	4	2011	4	2011
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2012	1	2012	1	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2012	2	2012	2	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2012	3	2012	3	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2012	4	2012	4	2012
STSS Demonstration Satellites On-Orbit Operations-1Q2011-4Q2011	1	2011	4	2011
STSS Demonstration Satellites On-Orbit Operations-1Q2012-4Q2012	1	2012	4	2012
STSS Demonstration Satellites On-Orbit Operations-1Q2013-4Q2013	1	2013	4	2013
FTS-02 (STSS Demonstrator Flight Test)	1	2014	1	2014
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2014-4Q2014	1	2014	4	2014
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2015-4Q2015	1	2015	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT ZX40: *Program-Wide Support*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
ZX40: *Program-Wide Support*	6.488	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	6.488
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common non-headquarters support functions across the entire program. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Other costs included provide facility capabilities for MDA Executing Agent locations (with the exception of Federal Office Building 2), such as physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuations on a limited number of foreign contracts.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Civilian Salaries and Support	6.488	0.000	0.000	0.000	0.000
See Description Below					
FY 2009 Accomplishments: See Section A: Mission Description and Budget Item Justification ;					
FY 2010 Plans: NA					
FY 2011 Base Plans: NA					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT *ZX40: Program-Wide Support*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: NA					
Accomplishments/Planned Programs Subtotals	6.488	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314
• 0603882C: *Ballistic Missile Defense Mid-Course Segment*	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922
• 0603883C: *Ballistic Missile Defense Boost Defense Segment*	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: *Ballistic Missile Defense Sensors*	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: *Ballistic Missile Defense System Interceptor*	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: *Ballistic Missile Defense Test and Targets*	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: *Ballistic Missile Defense Enabling Programs*	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
• 0603891C: *SPECIAL PROGRAMS - MDA*	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: *BMD AEGIS*	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT *ZX40: Program-Wide Support*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603894C: *MULTIPLE KILL VEHICLE*	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: *BMD SYSTEM SPACE PROGRAM*	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: *BMD C2BMC*	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603897C: *BMD HERCULES*	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 0603898C: *BMD JOINT WARFIGHTER SUPPORT*	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186
• 0603901C: *DIRECTED ENERGY RESEARCH*	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221
• 0603904C: *MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)*	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: *REGARDING TRENCH*	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
• 0603907C: *SEA BASED X-BAND RADAR (SBX)*	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285
• 0603908C: *BMD EUROPEAN INTERCEPTOR SITE*	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: *BMD EUROPEAN MIDCOURSE RADAR*	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: *BMD EUROPEAN CAPABILITY*	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: *BMD European Comm Support*	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
• 0603913C: *ISRAELI COOPERATIVE*	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545
• 0604880C: *LAND-BASED SM-3*	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT *ZX40: Program-Wide Support*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0604881C: *Aegis SM-3 BLOCK IIA CO-DEVELOPMENT*											
• 0604883C: *PRECISION TRACKING SPACE SYSTEM*	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: *AIRBORNE INFRARED (ABIR)*	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: *Small Business Innovative Research BMDO*	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: *Pentagon Reservation*	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337
• 0901598C: *Management Headquarters-MDA*	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

NA

E. Performance Metrics

NA

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD40: *Program-Wide Support*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	0.000	0.000	3.836	0.000	3.836	3.762	2.093	1.938	1.591	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11.

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common non-headquarters support functions across the entire program. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Other costs included provide facility capabilities for MDA Executing Agent locations (with the exception of Federal Office Building 2), such as physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuations on a limited number of foreign contracts.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Civilian Salaries and Support	0.000	0.000	3.836	0.000	3.836
See Description Below					
FY 2009 Accomplishments: NA					
FY 2010 Plans: NA					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD40: *Program-Wide Support*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: NA *FY 2011 OCO Plans:* NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	3.836	0.000	3.836

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314
• 0603882C: *Ballistic Missile Defense Mid-Course Segment*	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922
• 0603883C: *Ballistic Missile Defense Boost Defense Segment*	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: *Ballistic Missile Defense Sensors*	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: *Ballistic Missile Defense System Interceptor*	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: *Ballistic Missile Defense Test and Targets*	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: *Ballistic Missile Defense Enabling Programs*	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD40: *Program-Wide Support*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603891C: *SPECIAL PROGRAMS - MDA*	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: *BMD AEGIS*	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919
• 0603894C: *MULTIPLE KILL VEHICLE*	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: *BMD SYSTEM SPACE PROGRAM*	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: *BMD C2BMC*	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603897C: *BMD HERCULES*	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 0603898C: *BMD JOINT WARFIGHTER SUPPORT*	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186
• 0603901C: *DIRECTED ENERGY RESEARCH*	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221
• 0603904C: *MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)*	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: *REGARDING TRENCH*	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
• 0603907C: *SEA BASED X-BAND RADAR (SBX)*	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285
• 0603908C: *BMD EUROPEAN INTERCEPTOR SITE*	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: *BMD EUROPEAN MIDCOURSE RADAR*	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: *BMD EUROPEAN CAPABILITY*	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: *BMD European Comm Support*	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD40: *Program-Wide Support*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603913C: *ISRAELI COOPERATIVE*											
• 0604880C: *LAND-BASED SM-3*	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428
• 0604881C: *Aegis SM-3 BLOCK IIA CO-DEVELOPMENT*	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387
• 0604883C: *PRECISION TRACKING SPACE SYSTEM*	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: *AIRBORNE INFRARED (ABIR)*	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: *Small Business Innovative Research BMDO*	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: *Pentagon Reservation*	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337
• 0901598C: *Management Headquarters-MDA*	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

MDA will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System (BMDS) mission. The objectives are to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs enterprise-wide. A&AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.

E. Performance Metrics

NA