Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency											Date: March 2014	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603893C / *Space Tracking and Surveillance System*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	621.913	45.420	40.347	31.346	-	31.346	33.697	34.542	35.317	36.316	Continuing	Continuing
MD12: *Space Tracking and Surveillance System (STSS)*	620.859	42.957	38.223	29.532	-	29.532	31.717	32.377	32.931	33.722	Continuing	Continuing
MD40: *Program-Wide Support*	1.054	2.463	2.124	1.814	-	1.814	1.980	2.165	2.386	2.594	Continuing	Continuing
MDAP/MAIS Code: 362												

The FY 2015 OCO Request will be submitted at a later date.

Note

N/A

A. Mission Description and Budget Item Justification

With the successful launch of two Space Tracking and Surveillance System Demonstration (STSS-D) satellites in 2009, the Agency has on-orbit capability to validate remote sensor and fire control integration to inform the design and operation of future Missile Defense Agency (MDA) space-layer capabilities, to characterize contribution of space data into the Ballistic Missile Defense System (BMDS) architecture, and to provide sensor measurements and background data supporting trade studies and analyses for future MDA space-layer options. Lessons learned from the two STSS-D satellites are guiding decisions on the development of a fiscally sustainable, continuously available, future operational constellation and ground communications/processing system.

STSS-D is providing risk reduction for future MDA space-layer options models, algorithms, sensors and spacecraft development by providing background and clutter scene characterization, complex target signatures, interface definition, communications architectures, and performance across acquisition, tracking, and discrimination. STSS-D is also providing definition to BMDS Concept of Operations, timelines and performance requirements for sensor cuing and weapons engagement such as Aegis Launch On/Engage On from remote space sensors.

STSS-D will emphasize continued research and development to address the more sophisticated threats the Agency expects to encounter in the far term. The greatest protection 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 Combatant Commanders. STSS-D is a capability development activity for the demonstration of technologies to support development and capability delivery of future MDA space-layer options. In addition, the STSS-D satellites have demonstrated 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 systems to be cued to track well beyond their organic detection capability. Data from on-going STSS-D testing has validated the ability to track cold, midcourse objects from space and close the fire control loop with BMDS interceptors. During several MDA flight tests, STSS-D has provided data in real-time that has met the Aegis Missile Defense Systems' Quality of Service (QoS) data requirements for Remote Engagement Authorized (REA). Finally, STSS-D provides a new infrared sensor phenomenology for the BMDS that will demonstrate the benefit of future MDA space-layer capabilities when combined with radars that will provide robustness against current and advanced countermeasures.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency	Date: March 2014
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603893C *I Space Tracking and Surveillance System*

The Missile Defense Agency has developed, and is testing, two STSS-D satellites to demonstrate key functions of space sensors in support of risk reduction for future MDA space-layer options. STSS-D Element Level testing is funded as part of a capabilities development program and reflected in the Program Element submission. Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components were tested early in development prior to conducting Ballistic Missile Defense (BMD) level testing. Key data from the STSS-D satellites efforts continue to provide lessons learned as MDA pursues longer term space sensor needs.
- STSS-D Satellites have demonstrated the capability of satellites to track ballistic missiles and the ability to provide accurate tracking information to the BMDS battle manager to close the fire control loop with BMDS interceptors, thus extending the effective range of BMDS interceptors and other sensors
- Space-based Ballistic Missile Defense System (BMDS) sensors will extend coverage to a global level
- 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.
- 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))

Goals for Space Tracking and Surveillance System Demonstration (STSS-D) Satellites
- Risk reduction for future Missile Defense Agency (MDA) space-layer architectures by demonstrating Aegis Engage on Remote
- Risk reduction for future MDA space-layer architectures by demonstrating the ability to cue or be cued
- Demonstrate C2BMC interfaces, sensor registration, communication chains and latencies to support future MDA space-layer concept of operations development

Near Field Infrared Experiment (NFIRE)
The NFIRE technology project was designed to collect near field phenomenology data for use in developing plume to hard body handover algorithms for boost phase interceptor programs. MDA used this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms. NFIRE is now focused on future MDA space-layer sensors risk reduction and other BMDS element development support by collecting background, clutter, and target signatures for modeling and algorithm development and validation. 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 includes three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. The dedicated fly-by experiments have been accomplished. The 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 BMDS. Data products are utilized by multiple programs to improve missile engagement performance.

Goals for NFIRE
- Provide a data collection capability from the Missile Defense Space Center (MDSC) against ground, air, space and ballistic missile targets of opportunity for MDA and other U.S. Government Agencies

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Missile Defense Agency	Date: March 2014
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603893C *I Space Tracking and Surveillance System*

- Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments per Project Agreement with the government of Germany

MD40 Program-Wide Support (PWS) consists of essential non-headquarters management costs in support of the MDA functions and activities across the entire BMDS.

B. Program Change Summary ($ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	51.313	44.947	32.007	-	32.007
Current President's Budget	45.420	40.347	31.346	-	31.346
Total Adjustments	-5.893	-4.600	-0.661	-	-0.661
• Congressional General Reductions	-0.067	-0.100			
• Congressional Directed Reductions	-	-4.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.101	-			
• SBIR/STTR Transfer	-0.614	-			
• Other Adjustment	-4.111	-	-0.661	-	-0.661

Change Summary Explanation

The FY 2015 reduction of $0.661 reflects a realignment of Department of Defense priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603893C / *Space Tracking and Surveillance System*	Project (Number/Name) MD12 / *Space Tracking and Surveillance System (STSS)*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	620.859	42.957	38.223	29.532	-	29.532	31.717	32.377	32.931	33.722	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

A. Mission Description and Budget Item Justification

Space Tracking and Surveillance System Demonstration (STSS-D) Satellites
The STSS-D satellites provide two on-orbit satellite assets with visible and infrared sensors in low earth orbit for testing with other Ballistic Missile Defense Systems (BMDS) elements. These two satellites 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 is demonstrating 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-D sensor data. The two satellites are operated 24 hours a day, 7 days a week from the ground station processing center at the Missile Defense Space Center (MDSC) with a government and contractor team. On-orbit, STSS-D satellites continue data collection and analyses in FY 2014 and beyond striving to view high-value Targets of Opportunity (TOOs) to include participation with other BMDS target and flight tests that provide demonstration of the Missile Defense Agency (MDA) space-layer capabilities and allow collection of future system risk reduction information.

The satellites are demonstrating key functions of missile tracking with space sensors in support of future MDA space-layer capabilities risk reduction. On-orbit sensor operations are collecting invaluable background, scene and target signatures to support future MDA space-layer and other weapon sensor development trade studies. STSS-D activities support future MDA space-layer capabilities development by integration of space-based missile tracking (midcourse phases); sensor and weapons cueing (such as Aegis and Terminal High Altitude Area Defense (THAAD)) via Command and Control, Battle Management and Communications (C2BMC); features and discrimination; and hit/impact point assessments into C2BMC. STSS-D risk reduction for future MDA space-layer options will enable early capability assessment of the Warfighter's need for a highly available early missile tracking capability from space providing an operationally suitable means of global persistent surveillance and engagement. Capabilities being assessed for future MDA space-layer capabilities include detecting and acquiring ballistic missiles; tracking ballistic missiles and their deployed objects; emerging threat detection and tracking; performing autonomous acquisition-to-track handover within a satellite; performing tracking handover to a satellite from a ground cue; performing uplink and downlink of mission, health, and status data both directly and via crosslink between two satellites; reporting ballistic missile and intercept event to close the fire-control loop; filtering reports to C2BMC; providing near real-time object data to external users; and providing a System Performance Evaluation Tool model. As such, the demonstration of these activities will support future MDA space-layer capability development and will enable meeting a Warfighter's requirements to include tracking missile threats and objects of interest; provide post-launch sensor cueing; integrate, fuse and correlate sensor data; engage/re-engage ballistic missile threats; and provide system modeling tools.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

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 BMDS level testing. The STSS-D Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission. The STSS-D satellites demonstrate key functions of space sensors. The MDA will continue planning for and conducting integrated BMDS intercept tests based on track data passed from the STSS-D satellites through C2BMC to Aegis, Ground-based Midcourse Defense (GMD), or other interceptors.

Near Field Infrared Experiment (NFIRE)

The NFIRE satellite is operated from the Missile Defense Space Center (MDSC) and is capable of collecting environmental background characterization (regional/ seasonal atmospheric radiance variability, day-night, land-sea clutter, clouds, auroral measurements, etc.) for future Missile Defense Agency (MDA) space-layer sensors, hyper-temporal short wave infrared data to support research and development of early launch detection and tracking capabilities, and earth limb radiance measurements to support improvement of environmental models. The NFIRE satellite also carries a Laser Communication Terminal to conduct communication experiments with the German Terra SAR-X satellite. Communications experiments test low earth orbit satellite-to-ground and satellite-to-satellite laser communications capabilities for potential incorporation into the Ballistic Missile Defense Systems (BMDS).

Lessons learned and data gathered from the Space Tracking and Surveillance System Demonstration (STSS-D) satellites program and the NFIRE program will continue to provide valuable information for future MDA space-layer modeling and simulation activities in assessing the capability of a low earth orbit constellation to complement sensor coverage and missile detection and tracking capabilities provided by Overhead Persistent Infrared (OPIR) sensors.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Demonstration Satellites	39.112	31.756	23.345
Articles:	-	-	-
Description: The Space Tracking and Surveillance System Demonstration (STSS-D) satellites operate 24 hours a day, 7 days a week to collect and deliver critical space and missile characterization data used to design and inform Ballistic Missile Defense System and space-layer future capabilities.			
FY 2013 Accomplishments: - Demonstrated Aegis Launch on Remote using a Standard Missile-3 (SM-3) intercept test which resulted in the first ever intercept of a ballistic missile target using STSS-D as a remote sensor (FTM-20) - Conducted missile tracking experiments as identified in the test specific sections, Ballistic Missile Defense System (BMDS) Level Testing and Element Integration and Testing - FY 2013 testing of the STSS-D satellites continued the execution of the STSS-D-related Knowledge Point (KP) data collects - Collected data during BMDS Integrated Master Test Plan (IMTP) events for KPs - Conducted independent government verification of STSS-D data at the Missile Defense System Development Center (MDSDC)			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
- Performed satellite functionality testing and calibration as part of the satellite operations - Transitioned testing from dedicated, more costly, first-time efforts to missions collecting data to verify earlier results. These verifications further strengthened BMDS-related modeling and simulation as well as supported development of future systems design and concept of operations. ***FY 2014 Plans:*** - Demonstrate GMD Fire Control Launch on Remote using STSS-D. - Demonstrate Aegis Engage on Remote using STSS-D. - Demonstrate Space Situational Awareness using STSS-D - Collect data to support discrimination with STSS-D in studies - Collect data to support Hit/Kill assessment with STSS-D - Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing - Testing with the STSS-D satellites continues the accomplishment of the Space KP - Perform satellite functionality testing and calibration as part of the satellite operations ***FY 2015 Plans:*** - Testing with the STSS-D satellites continues to demonstrate critical space capabilities: -- Aegis Engage on Space Tracking and Surveillance System Demonstration Satellites against lethal object -- Aegis Launch on/Engage on using STSS-D against multiple targets -- Aegis Launch on/Engage on using STSS-D against a raid -- Ability to support Hit/Kill assessment from space -- Ability to support Discrimination -- Ability to support Space Situational Awareness mission from space -- Ability to cue Ballistic Missile Defense System (BMDS) sensors from space -- Ability to integrate space into emerging fire control loops - Perform satellite functionality testing and calibration as part of the satellite operations - Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing			
Title: BMDS Level Testing	2.419	1.914	1.634
Articles:	-	-	-
Description: Space Tracking and Surveillance System Demonstration (STSS-D) Satellites and Near Field Infrared Experiment (NFIRE) satellites participate in the BMDS Integrated Master Test Plan (IMTP) events to collect Critical Engagement Conditions (CEC)/Empirical Measurement Events (EME) to verify, validate, and accredit modeling and simulation representations used for assessing system performance and prove the capability of space based sensors contributions to the BMDS mission.			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
FY 2013 Accomplishments: - Planned and executed STSS-D participation in BMDS flight tests, which collected from a variety of test targets and conditions enabled a statistically relevant database to be constructed to support future space system design. Testing included: -- Aegis Simulated Intercept Flight Test (FTM-20): STSS-D provided to an Aegis4.0.2 ship the Quality of Service data track that initiated a Remote Engagement Authorized (REA) launch of a SM-3 Block IA against a Medium Range Ballistic Missile (MRBM) target -- Ground Based Midcourse Flight Test (FTG-07) -- Flight Test Operational (FTO-01) - Planned and participated in high-value Targets of Opportunity (TOOs) - Collected both STSS-D and NFIRE data during TOOs and provided the data to external agencies for analysis			
FY 2014 Plans: - Risk reduction for future MDA space-layer to include Overhead Persistent Infrared (OPIR) Enterprise integration and demonstrations across Overhead Persistent Infrared (OPIR) cuing, Joint Tasking Operations, and data utility - Conduct STSS-D data collections to support joint OPIR mission utility assessments across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities - Demonstrate STSS-D providing precision tracking, cues, and discrimination support to future versions of Command and Control, Battle Management and Communications (C2BMC) and BMDS weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures. - Space Tracking and Surveillance System Demonstration (STSS-D) satellites participation in the Integrated Master Test Plan (IMTP) to include the following BMDS flight tests with STSS-D striving to meet reasonable expectations to view these as well as seeking opportunities to participate in other IMTP events: -- Aegis Simulated Intercept Flight Test (FTX-18) -- Ground-based Midcourse Defense Intercept Flight Test (FTG-06b)			
FY 2015 Plans: - Risk reduction for future Missile Defense Agency (MDA) space-layer to include OPIR Enterprise integration and demonstrations across OPIR cuing, Joint Tasking Operations, and data utility - Conduct STSS-D data collections to support joint OPIR mission utility assessments across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
- Demonstrate STSS-D providing precision tracking, cues, and discrimination support to future versions of C2BMC and BMDS weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures. - Current STSS-D participation in the Integrated Master Test Plan: -- Aegis Flight Test (FTX-20) -- Aegis Flight Test (FTM-25) -- Aegis Flight Test (FTM-26) -- Aegis Intercept Flight Test (FTX-19) -- Ground-based Midcourse Defense Intercept Flight Test (FTG-09) -- Aegis Flight Test, Standard Missile (FTM-24) -- OTA Intercept Flight Test (FTO-02 E1) -- Aegis Flight Test (FTX-21) -- OTA Intercept Flight Test (FTO-02 E1) -- Aegis Flight Test (FTX-21)			
Title: Near Field Infrared Experiment (NFIRE) ***Articles:*** ***Description:*** NFIRE satellite is capable of providing critical space, earth phenomenology and missile characterization data for use in the BMDS. ***FY 2013 Accomplishments:*** - NFIRE successfully executed Environmental/Civil collections, Missile Defense/Warning collections, Technical Intel/Battle Space Awareness collections, and Space Situational Awareness collections. ***FY 2014 Plans:*** -Provide 95% operations availability of the Near Field Infrared Experiment (NFIRE) satellite ***FY 2015 Plans:*** -Provide 95% operations availability of the NFIRE satellite	1.426 -	4.553 -	4.553 -
Accomplishments/Planned Programs Subtotals	42.957	38.223	29.532

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	69.438	9.321	38.800	-	38.800	76.400	52.000	112.800	178.000	-	536.759
• 0603884C: *Ballistic Missile Defense Sensors*	306.896	366.590	392.893	-	392.893	462.030	448.763	403.272	368.125	Continuing	Continuing
• 0603895C: *Ballistic Missile Defense System Space Programs*	5.977	6.515	6.389	-	6.389	7.112	7.290	7.454	7.665	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	344.431	405.319	443.484	-	443.484	456.182	462.525	452.937	465.638	Continuing	Continuing
• 0603902C: *Next Generation Aegis Missile (Standard Missile-3 Block IIB (SM-3 IIB))*	58.952	-	-	-	-	-	-	-	-	-	58.952
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	61.684	52.095	58.530	-	58.530	51.738	61.594	53.885	55.414	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	438.114	337.993	386.482	-	386.482	340.811	369.920	417.712	413.194	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	438.523	491.170	485.294	-	485.294	419.537	512.098	426.085	429.822	Continuing	Continuing
• 0604883C: *Precision Tracking Space System*	204.666	-	-	-	-	-	-	-	-	-	204.666
• 0604886C: *Advanced Remote Sensor Technology (ARST)*	15.596	-	-	-	-	-	-	-	-	-	15.596

Remarks

D. Acquisition Strategy

The Space Tracking and Surveillance System Demonstration (STSS-D) satellites program follows the Missile Defense Agency`s (MDA) capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS-D 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. This contract implements MDA`s capability-based acquisition strategy by using existing satellite hardware as a low risk opportunity, building upon the lessons learned from previous development efforts, and establishing a series of planned enhancements to bring added capability to the BMDS.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Capability Based R&D	SS/CPAF	NGAS : Redondo Beach, CA, Schriever AFB, CO	494.089	28.028		24.021	Oct 2013	20.506	Oct 2014	-		20.506	Continuing	Continuing	Continuing
Demonstration Satellites - STSS Support to Missile Defense Space Center (MDSC)	SS/CPAF	NGIS : Schriever AFB, CO	14.960	1.357		0.770	Oct 2013	0.132	Oct 2014	-		0.132	Continuing	Continuing	Continuing
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace : Los Angeles CA, Schriever AFB CO	45.922	4.123		1.248	Oct 2013	1.346	Oct 2014	-		1.346	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Prime Contract	SS/CPAF	Orbital Sciences Corporation : AZ	0.000	0.654		1.705	Jul 2014	-		-		-	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Various	C/Various	Various : Various	0.000	0.772		2.848	Jan 2014	-		-		-	Continuing	Continuing	Continuing
		Subtotal	554.971	34.934		30.592		21.984		-		21.984	-	-	-

Remarks

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Contract Support Services (CSS)	C/Various	MDA : AL, CO	12.489	2.466		2.995	Oct 2013	3.111	Oct 2014	-		3.111	Continuing	Continuing	Continuing
Demonstration Satellites - MDA Civilian	Allot	MDA : Schriever AFB, CO	6.277	1.533		1.692	Oct 2013	1.764	Oct 2014	-		1.764	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603893C / *Space Tracking and Surveillance System*	Project (Number/Name) MD12 / *Space Tracking and Surveillance System (STSS)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC : Schriever AFB, CO	10.154	0.558		0.451	Oct 2013	0.469	Oct 2014	-		0.469	Continuing	Continuing	Continuing
Demonstration Satellites - Program Mission Support	Various	Various : Various	20.048	1.047		0.579	Oct 2013	0.570	Oct 2014	-		0.570	Continuing	Continuing	Continuing
		Subtotal	48.968	5.604		5.717		5.914		-		5.914	-	-	-

Remarks

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing - BMDS Integration-Test Engineering and Resources	SS/CPAF	NGAS : Redondo Beach, CA	16.920	2.419		1.914	Oct 2013	1.634	Oct 2014	-		1.634	Continuing	Continuing	Continuing
		Subtotal	16.920	2.419		1.914		1.634		-		1.634	-	-	-

Remarks

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Remarks

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*	

	Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	620.859	42.957		38.223		29.532		-		29.532	-	-	-

Remarks

Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

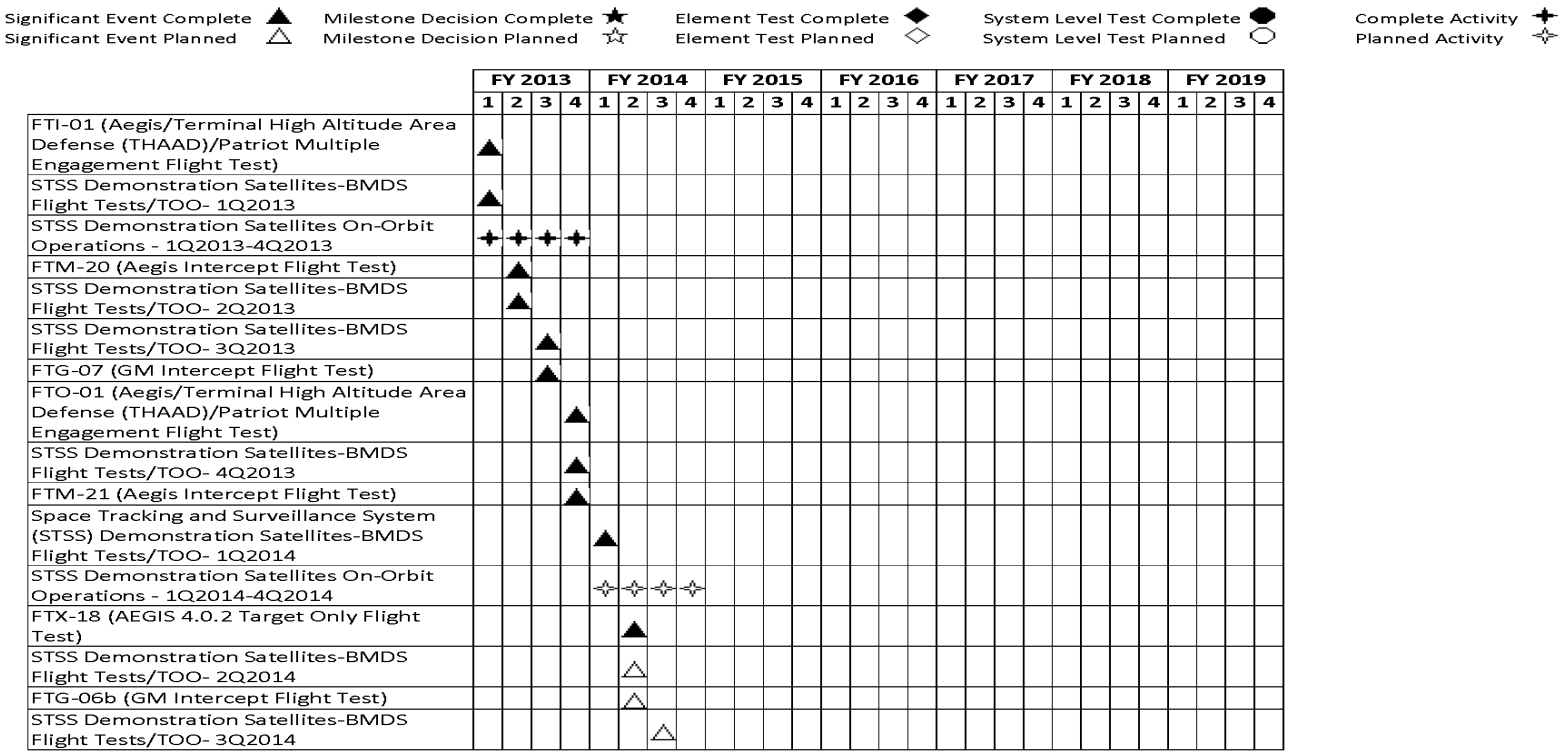

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

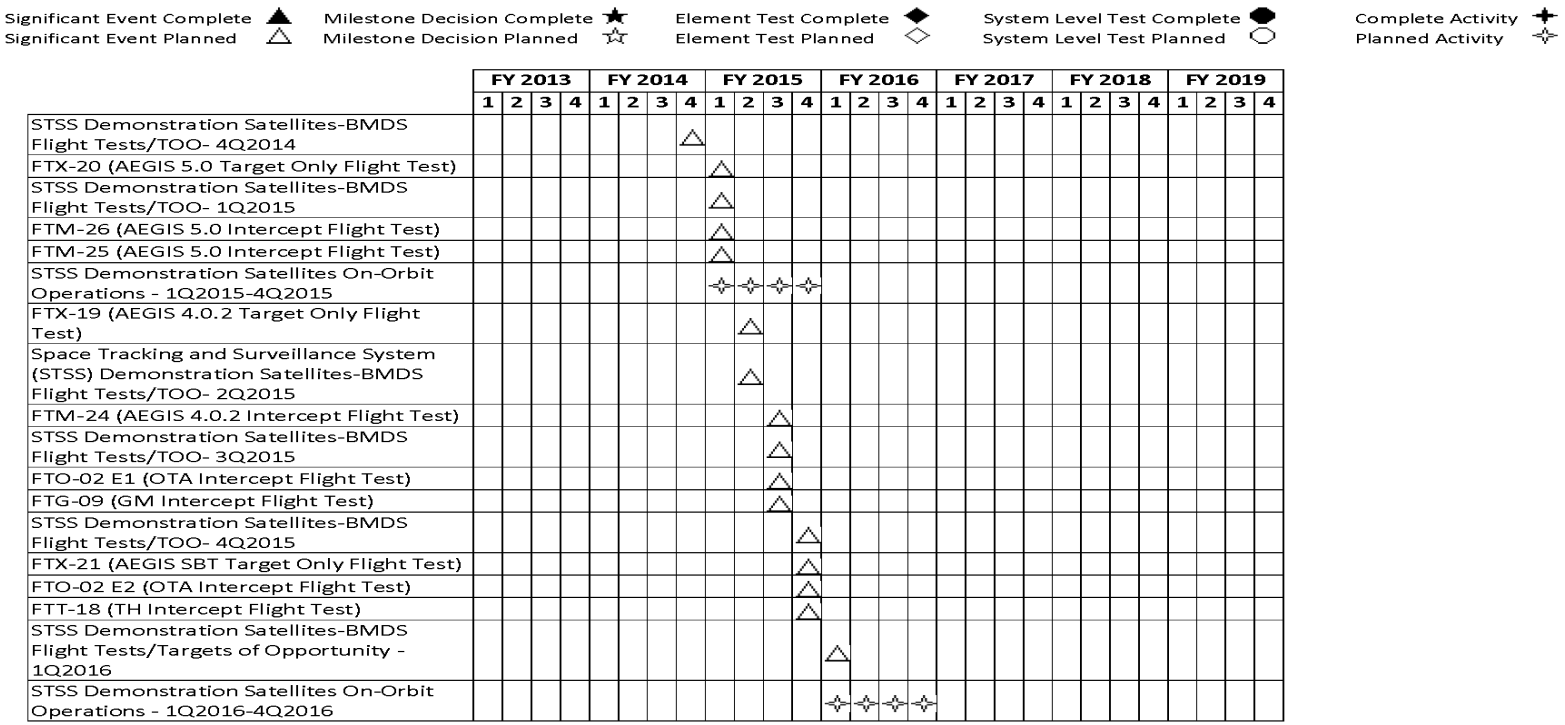

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

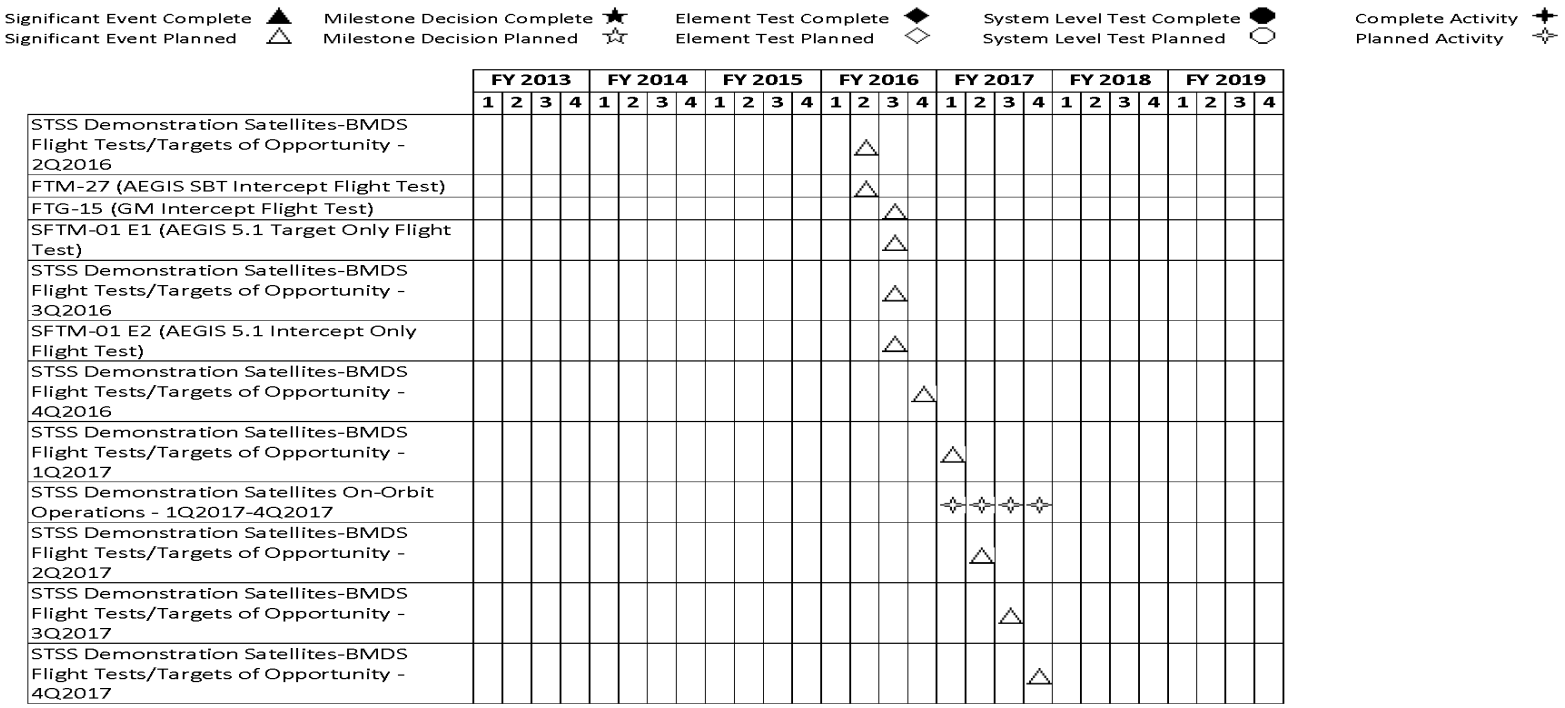

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

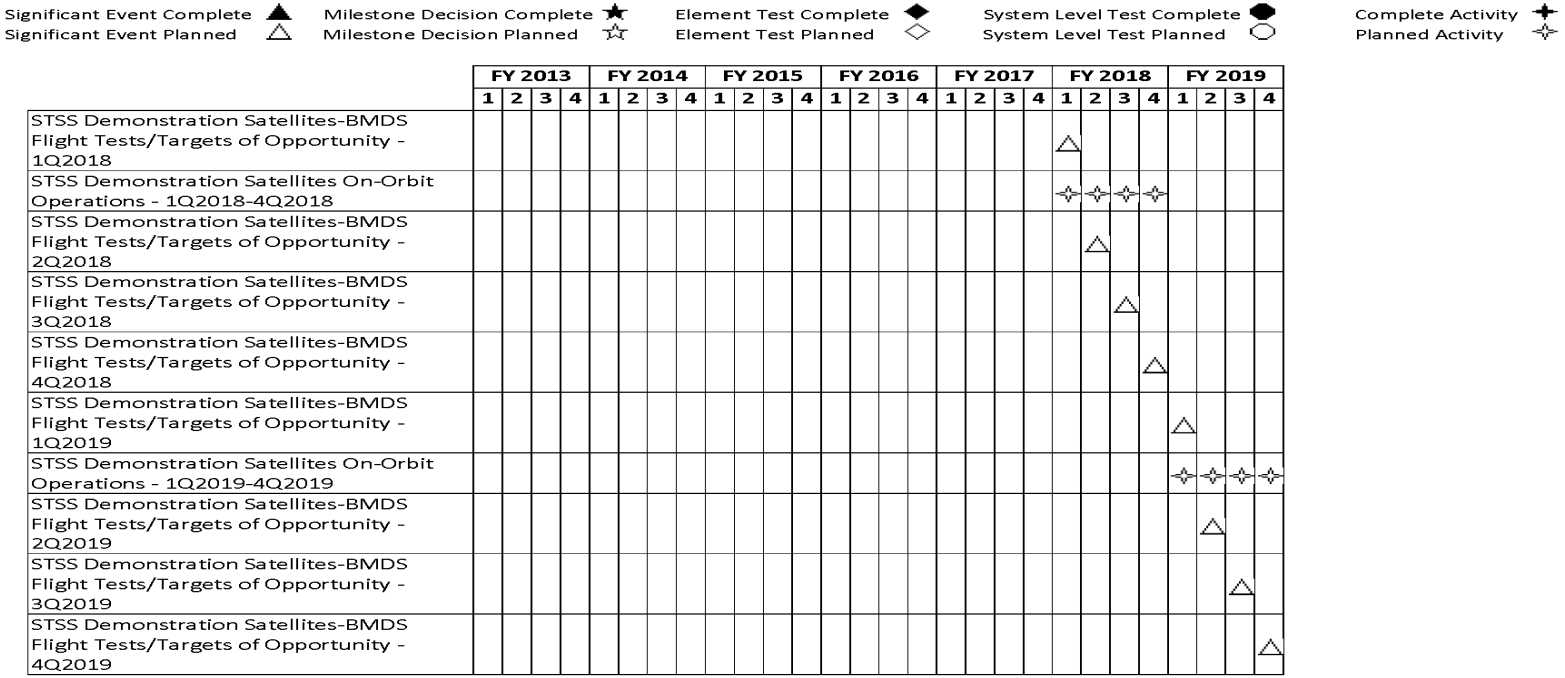

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FTI-01 (Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test)	1	2013	1	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2013	1	2013	1	2013
STSS Demonstration Satellites On-Orbit Operations - 1Q2013-4Q2013	1	2013	4	2013
FTM-20 (Aegis Intercept Flight Test)	2	2013	2	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2013	2	2013	2	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2013	3	2013	3	2013
FTG-07 (GM Intercept Flight Test)	3	2013	3	2013
FTO-01 (Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test)	4	2013	4	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2013	4	2013	4	2013
FTM-21 (Aegis Intercept Flight Test)	4	2013	4	2013
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2014	1	2014	1	2014
STSS Demonstration Satellites On-Orbit Operations - 1Q2014-4Q2014	1	2014	4	2014
FTX-18 (AEGIS 4.0.2 Target Only Flight Test)	2	2014	2	2014
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2014	2	2014	2	2014
FTG-06b (GM Intercept Flight Test)	2	2014	2	2014
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2014	3	2014	3	2014
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2014	4	2014	4	2014
FTX-20 (AEGIS 5.0 Target Only Flight Test)	1	2015	1	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	1	2015	1	2015
FTM-26 (AEGIS 5.0 Intercept Flight Test)	1	2015	1	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FTM-25 (AEGIS 5.0 Intercept Flight Test)	1	2015	1	2015
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	1	2015	4	2015
FTX-19 (AEGIS 4.0.2 Target Only Flight Test)	2	2015	2	2015
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
FTM-24 (AEGIS 4.0.2 Intercept Flight Test)	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
FTO-02 E1 (OTA Intercept Flight Test)	3	2015	3	2015
FTG-09 (GM Intercept Flight Test)	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	4	2015	4	2015
FTX-21 (AEGIS SBT Target Only Flight Test)	4	2015	4	2015
FTO-02 E2 (OTA Intercept Flight Test)	4	2015	4	2015
FTT-18 (TH Intercept Flight Test)	4	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2016	1	2016	1	2016
STSS Demonstration Satellites On-Orbit Operations - 1Q2016-4Q2016	1	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2016	2	2016	2	2016
FTM-27 (AEGIS SBT Intercept Flight Test)	2	2016	2	2016
FTG-15 (GM Intercept Flight Test)	3	2016	3	2016
SFTM-01 E1 (AEGIS 5.1 Target Only Flight Test)	3	2016	3	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016	3	2016	3	2016
SFTM-01 E2 (AEGIS 5.1 Intercept Only Flight Test)	3	2016	3	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016	4	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017	1	2017	1	2017
STSS Demonstration Satellites On-Orbit Operations - 1Q2017-4Q2017	1	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017	2	2017	2	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2017	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2017	4	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018	1	2018	1	2018
STSS Demonstration Satellites On-Orbit Operations - 1Q2018-4Q2018	1	2018	4	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2018	2	2018	2	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2018	3	2018	3	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2018	4	2018	4	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2019	1	2019	1	2019
STSS Demonstration Satellites On-Orbit Operations - 1Q2019-4Q2019	1	2019	4	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2019	2	2019	2	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2019	3	2019	3	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2019	4	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603893C / *Space Tracking and Surveillance System*	Project (Number/Name) MD40 / *Program-Wide Support*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	1.054	2.463	2.124	1.814	-	1.814	1.980	2.165	2.386	2.594	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

N/A

A. Mission Description and Budget Item Justification

Program-Wide Support (PWS) contains non-headquarters management costs in support of Missile Defense Agency (MDA) functions and activities across the entire Ballistic Missile Defense System (BMDS). It Includes Government Civilians, Contract Support Service, and Federally Funded Research and Development Center (FFRDC) providing integrity and oversight of the BMDS as well as, supporting MDA in enabling the development and evaluation of technologies that will respond to the changing threat. In addition, includes Global Deployment personnel and support performing deployment site preparation and activation. Other costs included provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and agency training, office and equipment leases, utilities, data and unified communications support, supplies and maintenance, materiel and readiness and central property management of equipment, and similar operating expenses. Also includes legal settlements. In keeping with congressional intent, Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the total MDA budget.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Program Wide Support	2.463	2.124	1.814
Articles:	-	-	-
Description: N/A			
FY 2013 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2014 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2015 Plans: See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	2.463	2.124	1.814

Exhibit R-2A, RDT&E Project Justification: PB 2015 Missile Defense Agency		Date: March 2014
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD40 / *Program-Wide Support*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Missile Defense Agency			Date: March 2014
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603893C / *Space Tracking and Surveillance System*	Project (Number/Name) MD40 / *Program-Wide Support*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO,	0.000	-		0.035	Mar 2014	-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/ AL/CO/CA/HI/MD/ VA/NJ/NY/OCONUS	1.054	0.008		2.089	Mar 2014	1.814	Mar 2015	-		1.814	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPAF	Northrop Grumman : CO	0.000	2.455		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	1.054	2.463		2.124		1.814		-		1.814	-	-	-

Remarks

N/A

	Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.054	2.463		2.124		1.814		-		1.814	-	-	-

Remarks

N/A