Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency											Date: February 2015	
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 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	667.333	41.618	31.331	31.632	-	31.632	17.917	23.937	28.789	30.344	Continuing	Continuing
MD12: *Space Tracking and Surveillance System (STSS)*	663.816	39.529	29.517	30.241	-	30.241	17.070	22.711	27.255	28.700	Continuing	Continuing
MD40: *Program-Wide Support*	3.517	2.089	1.814	1.391	-	1.391	0.847	1.226	1.534	1.644	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

N/A

A. Mission Description and Budget Item Justification

With the successful launch of two Space Tracking and Surveillance System (STSS) 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 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 in support of sensor development and discrimination improvements for Homeland Defense. Lessons learned from the two STSS satellites are guiding decisions on the development of a fiscally sustainable, continuously available, future operational constellation and ground communications/processing system.

STSS is providing risk reduction for future MDA space-layer options models, algorithms, sensors and spacecraft development by providing complex target signatures, interface definition, communications architectures, and performance across threat object acquisition, tracking, and discrimination. STSS also informs the BMDS Concept of Operations, timelines and performance requirements for remote space sensor cuing for ballistic missile engagements, expanding battle space for weapon systems such as Aegis BMD. The goal for STSS satellites is to demonstrate spacebased capabilities including persistent tracking and integrated BMDS discrimination improvements for Homeland Defense.

Early missile tracking capability from space provides a 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 will emphasize continued research and development to address the more sophisticated threats the Agency expects in the far term by demonstrating technologies that support development and capability delivery of future MDA space-layer options. The STSS satellites 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 systems to be cued to track well beyond their organic detection capability. Data from on-going STSS 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 has provided data in real-time that met the Aegis Missile Defense Systems' Quality of Service data requirements for Remote Engagement Authorized. Finally, STSS provides the means to demonstrate the benefit of future MDA space-layer capabilities which, when combined with radars, will provide robustness against current and advanced countermeasures.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency	Date: February 2015
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 developed, and is using two STSS satellites to demonstrate key functions of space sensors to reduce risk for future MDA space-layer options. STSS testing is funded as part of a capabilities development program and reflected in the Program Element submission. The wealth of data and lessons learned from the STSS satellites efforts continue to provide insights as MDA pursues longer term space sensor needs.

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. The NFIRE satellite 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. Data products are utilized by multiple programs to improve missile engagement performance. The NFIRE program has an option to execute satellite End-of-Life plans by the end of FY 2015 and initiate safe satellite de-orbit.

MD40 Program-Wide Support (PWS) consists of essential non-headquarters management efforts providing integrated and efficient support to the MDA functions and activities across the entire Ballistic Missile Defense System (BMDS).

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	40.347	31.346	33.697	-	33.697
Current President's Budget	41.618	31.331	31.632	-	31.632
Total Adjustments	1.271	-0.015	-2.065	-	-2.065
• Congressional General Reductions	-	-0.015			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.905	-			
• SBIR/STTR Transfer	-0.634	-			
• Other Adjustment	-	-	-2.065	-	-2.065

Change Summary Explanation

FY 2015 change reflects Public Law 113-235, FY2015 Omnibus; Consolidated and Further Continuing Appropriations Act.

The FY 2016 reduction of $2.065 reflects a realignment of Department of Defense priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	663.816	39.529	29.517	30.241	-	30.241	17.070	22.711	27.255	28.700	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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.

In FY 2017 - FY 2020, the STSS PE was decreased by $30.903 million to realign funds in support of the Spacebased Kill Assessment to PE 0603895C MD33.

A. Mission Description and Budget Item Justification

Space Tracking and Surveillance System (STSS) Satellites

The goal for STSS satellites is to demonstrate spacebased capabilities including persistent tracking and integrated Ballistic Missile Defense System (BMDS) discrimination improvements for Homeland Defense. The STSS satellites provide two on-orbit assets with visible and infrared sensors in low earth orbit for testing with other BMDS elements. These two satellites provide valuable risk reduction for threat object 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 sensor data. The two satellites are operated from the ground station processing center at the Missile Defense Space Center (MDSC) by a government and contractor team. The STSS satellites demonstrate MDA space-layer capabilities and reduce risk for future systems by viewing high-value Targets of Opportunity and participating in BMDS flight tests in FY 2015 and beyond.

The on-orbit sensors collect invaluable background, scene and target signatures to support future MDA space-layer and other weapon sensor development trade studies. STSS activities provide information for integration of space-based missile tracking (midcourse phase); remote sensor and weapons cueing via the Command and Control, Battle Management and Communications (C2BMC); features and discrimination; and hit/impact point assessments. STSS enables early capability assessment to address the Warfighter's need for highly available early missile tracking 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; 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; and providing near real-time object data to external users.

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

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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)*

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). The NFIRE program has an option to execute satellite End-of-Life plans by the end of FY 2015 and initiate safe satellite de-orbit.

Lessons learned and data gathered from the STSS demonstration satellites program and the NFIRE program 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 sensors.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016
Title: Demonstration Satellites	35.386	25.513	29.240
Articles:	-	-	-
Description: The Space Tracking and Surveillance System (STSS) demonstration satellites collect and deliver critical space and missile characterization data used to design and inform Ballistic Missile Defense System and space-layer future capabilities.			
FY 2014 Accomplishments: - Demonstrated sufficient track quality from STSS to support GMD Launch on Remote using STSS - Demonstrated sufficient track quality from STSS to support Aegis BMD Engage on Remote using STSS - Operationalized STSS as a contributing Space Situational Awareness sensor - Collected data to support discrimination algorithm development with STSS - Conducted missile tracking experiments as identified in the Ballistic Missile Defense System (BMDS) Level Testing - Testing with the STSS satellites continues the accomplishment of the Space Knowledge Points - Performed satellite functionality testing and calibration as part of the satellite operations			
FY 2015 Plans: - Testing with the STSS satellites continues to demonstrate critical space capabilities: -- Aegis Engage on STSS against lethal object -- Aegis Launch on/Engage on using STSS against multiple targets -- Aegis Launch on/Engage on using STSS 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			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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 2014	FY 2015	FY 2016
- Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing ***FY 2016 Plans:*** - Testing with the STSS satellites continues to demonstrate critical space capabilities that may include: -- Ability to support BMDS integrated discrimination for Homeland Defense -- Engage on STSS against lethal object -- Launch on/Engage on using STSS against multiple targets -- Launch on/Engage on using STSS against a raid -- Ability to support Hit/Kill assessment from space -- Ability to cue Ballistic Missile Defense System (BMDS) sensors from space -- Ability to integrate space into emerging fire control loops -- Demonstrate precision cue to BMDS sensors - 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 -- Provide Air Force Space Command Space Situational Awareness support			
Title: BMDS Level Testing ***Articles:*** ***Description:*** Space Tracking and Surveillance System (STSS) demonstration satellites and Near Field Infrared Experiment (NFIRE) satellites participate in the Ballistic Missile Defense System (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. ***FY 2014 Accomplishments:*** - Performed risk reduction for future Missile Defense Agency (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 - Conducted STSS 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	1.944 -	1.124 -	1.001 -

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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 2014	FY 2015	FY 2016
- Demonstrated STSS 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 - STSS satellites participated in the IMTP BMDS flight tests as described in the R4 ***FY 2015 Plans:*** - Risk reduction for future MDA space-layer to include OPIR Enterprise integration and demonstrations across OPIR cuing, Joint Tasking Operations, and data utility - Conduct STSS 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 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 participation in the Integrated Master Test Plan is described in the R4 ***FY 2016 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 Space Tracking and Surveillance System (STSS) demonstration satellites 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 providing precision tracking, cues, and discrimination support to future versions of Command and Control, Battle Management and Communications (C2BMC) and Ballistic Missile Defense System (BMDS) weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures. - Current STSS participation in the Integrated Master Test Plan: --GMD Homeland Defense Flight Test -- Tracking of advanced threats The reduction of $0.633 million from FY 2015 to FY 2016 is commensurate with the planned participation in BMDS-level flight tests.			
Title: Near Field Infrared Experiment (NFIRE)	2.199	2.880	-
Articles:	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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 2014	FY 2015	FY 2016
Description: NFIRE satellite is capable of providing critical space, earth phenomenology and missile characterization data for use in the BMDS. ***FY 2014 Accomplishments:*** -Provided greater than the required 95% operations availability of the NFIRE satellite ***FY 2015 Plans:*** -Provide 95% operations availability of the NFIRE satellite until satellite end-of-life is executed ***FY 2016 Plans:*** -Satellite end-of-life expected in FY 2015			
Accomplishments/Planned Programs Subtotals	39.529	29.517	30.241

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,064.445	873.923	1,284.891	-	1,284.891	936.425	803.392	903.539	912.890	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	340.391	270.901	233.588	-	233.588	228.437	142.363	140.740	141.733	Continuing	Continuing
• 0603895C: *Ballistic Missile Defense System Space Programs*	6.412	6.389	23.289	-	23.289	21.433	16.108	11.933	11.952	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	342.695	366.302	274.323	-	274.323	298.390	345.333	330.404	350.747	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	501.170	455.068	513.256	-	513.256	585.727	484.242	442.202	460.945	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The Space Tracking and Surveillance System (STSS) demonstration satellites program follows the Missile Defense Agency`s (MDA) capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS 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 Ballistic Missile Defense System (BMDS).

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency		Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	522.117	28.431		17.416	Oct 2014	16.600	Oct 2015	-		16.600	Continuing	Continuing	Continuing
Demonstration Satellites - STSS Support to Missile Defense Space Center (MDSC)	SS/CPAF	NGIS : Schriever AFB, CO	16.317	1.059		0.942	Oct 2014	3.190	Oct 2015	-		3.190	Continuing	Continuing	Continuing
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace : Los Angeles CA, Schriever AFB CO	50.045	1.538		0.761	Oct 2014	1.340	Oct 2015	-		1.340	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Prime Contract	SS/CPAF	Orbital Sciences Corporation : AZ	0.654	1.036		1.569	Oct 2014	-		-		-	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Various	C/Various	Various : Various	0.772	1.163		1.311	Oct 2014	-		-		-	Continuing	Continuing	Continuing
		Subtotal	589.905	33.227		21.999		21.130		-		21.130	-	-	-

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.

FY 2015 Demonstration Satellites - Capability Based R&D amount decreased since PB 2015 due to change in priorities.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Contract Support Services (CSS)	C/Various	MDA : AL, CO	14.955	1.986		2.616	Oct 2014	3.657	Oct 2015	-		3.657	Continuing	Continuing	Continuing
Demonstration Satellites - IT User Services	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	-		0.601	Oct 2014	-		-		-	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - MDA Civilian	Allot	MDA : Schriever AFB, CO	7.810	1.418		1.822	Oct 2014	3.479	Oct 2015	-		3.479	Continuing	Continuing	Continuing
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC : Schriever AFB, CO	10.712	0.383		0.480	Oct 2014	0.439	Oct 2015	-		0.439	Continuing	Continuing	Continuing
Demonstration Satellites - Program Mission Support	Various	Various : Various	21.095	0.571		0.473	Oct 2014	0.535	Oct 2015	-		0.535	Continuing	Continuing	Continuing
Demonstration Satellites - UARC	C/CPFF	Utah University, Space Dynamics Laboratory : AL, AK, CA, CO, HI, MA, UT, VA	0.000	-		0.402	Oct 2014	-		-		-	-	0.402	0.402
		Subtotal	54.572	4.358		6.394		8.110		-		8.110	-	-	-

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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	19.339	1.944		1.124	Oct 2014	1.001		-		1.001	Continuing	Continuing	Continuing
		Subtotal	19.339	1.944		1.124		1.001		-		1.001	-	-	-

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-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency			Date: February 2015
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)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Remarks

N/A

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	663.816	39.529		29.517		30.241		-		30.241	-	-	-

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 2016 Missile Defense Agency		Date: February 2015
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)*

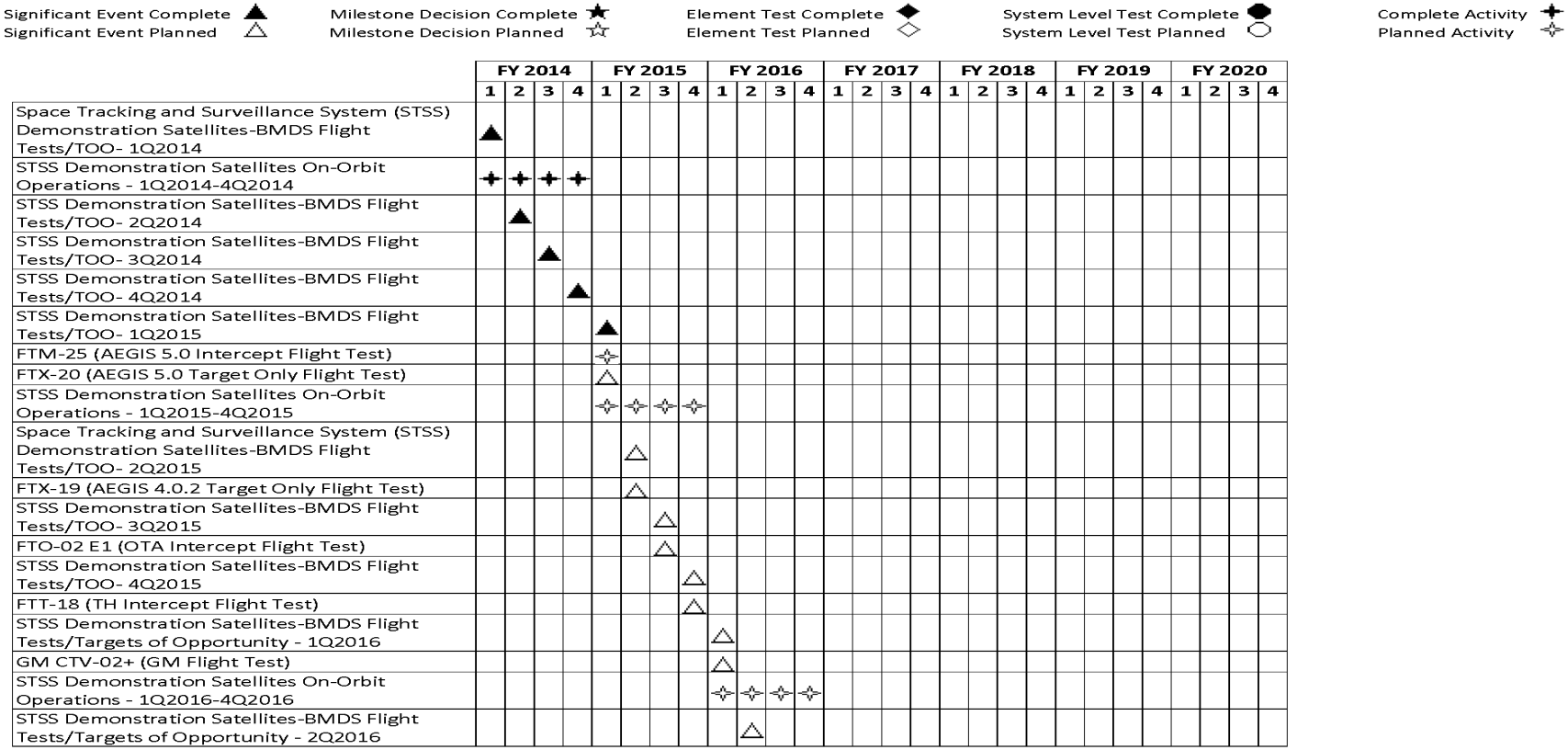

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

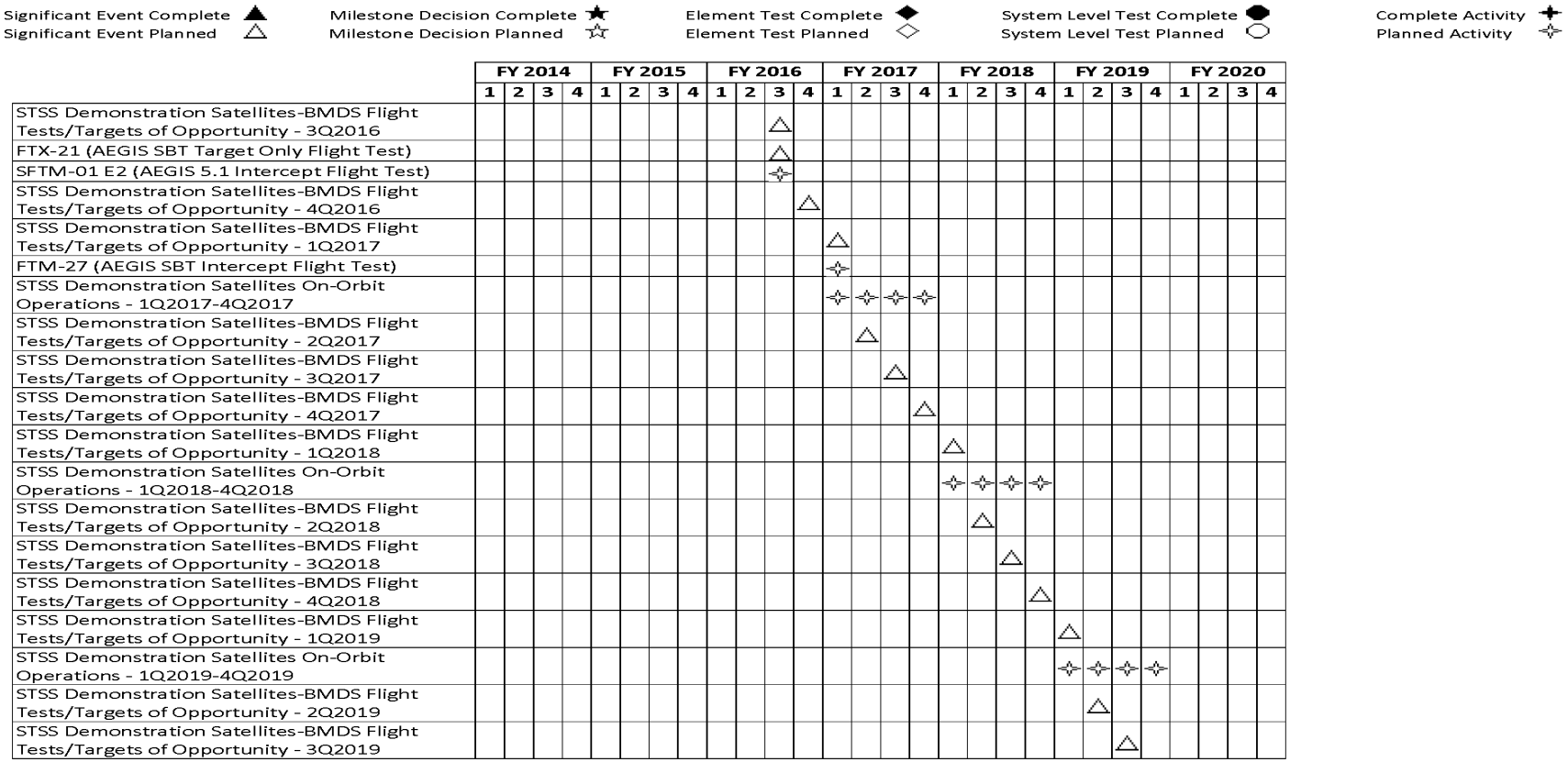

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

Significant Event Complete ▲ Significant Event Planned △ | Milestone Decision Complete ★ Milestone Decision Planned ☆ | Element Test Complete ◆ Element Test Planned ◇ | System Level Test Complete ⬢ System Level Test Planned ⬡ | Complete Activity ✦ Planned Activity ✧

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2019																								△				
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2020																									△			
STSS Demonstration Satellites On-Orbit Operations - 1Q2020-4Q2020																									✧	✧	✧	✧
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2020																										△		
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2020																											△	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020																												△

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
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 2016 Missile Defense Agency		DATE: February 2015
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 04: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and 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/TOO- 1Q2014	1	2014	1	2014
STSS Demonstration Satellites On-Orbit Operations - 1Q2014-4Q2014	1	2014	4	2014
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2014	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
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	1	2015	1	2015
FTM-25 (AEGIS 5.0 Intercept Flight Test)	1	2015	1	2015
FTX-20 (AEGIS 5.0 Target Only Flight Test)	1	2015	1	2015
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	1	2015	4	2015
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
FTX-19 (AEGIS 4.0.2 Target Only Flight Test)	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
FTO-02 E1 (OTA Intercept Flight Test)	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	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
GM CTV-02+ (GM Flight Test)	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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016	3	2016	3	2016
FTX-21 (AEGIS SBT Target Only Flight Test)	3	2016	3	2016
SFTM-01 E2 (AEGIS 5.1 Intercept 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
FTM-27 (AEGIS SBT Intercept Flight Test)	1	2017	1	2017

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
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 2016 Missile Defense Agency		DATE: February 2015
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 04: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
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
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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2020	1	2020	1	2020
STSS Demonstration Satellites On-Orbit Operations - 1Q2020-4Q2020	1	2020	4	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2020	2	2020	2	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2020	3	2020	3	2020

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
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 2016 Missile Defense Agency		DATE: February 2015
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 04: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency		Date: February 2015
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**
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
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2014	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
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	1	2015	1	2015
FTM-25 (AEGIS 5.0 Intercept Flight Test)	1	2015	1	2015
FTX-20 (AEGIS 5.0 Target Only Flight Test)	1	2015	1	2015
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	1	2015	4	2015
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
FTX-19 (AEGIS 4.0.2 Target Only Flight Test)	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
FTO-02 E1 (OTA Intercept Flight Test)	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	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
GM CTV-02+ (GM Flight Test)	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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016	3	2016	3	2016
FTX-21 (AEGIS SBT Target Only Flight Test)	3	2016	3	2016

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency		Date: February 2015
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**
SFTM-01 E2 (AEGIS 5.1 Intercept 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
FTM-27 (AEGIS SBT Intercept Flight Test)	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
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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2020	1	2020	1	2020
STSS Demonstration Satellites On-Orbit Operations - 1Q2020-4Q2020	1	2020	4	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2020	2	2020	2	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2020	3	2020	3	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020	4	2020	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	3.517	2.089	1.814	1.391	-	1.391	0.847	1.226	1.534	1.644	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015 and FY 2016, Program Wide Support reflects a proportional change as a result of decreases to the Space Tracking and Surveillance System program. 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

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 Services, and Federally Funded Research and Development Center (FFRDC) support. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; 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. Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes:0305103C Cyber Security Initiative, 0603274C Special Program, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016
Title: Program Wide Support	2.089	1.814	1.391
Articles:	-	-	-
Description: N/A			
FY 2014 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2015 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2016 Plans: See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	2.089	1.814	1.391

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
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 2016 Missile Defense Agency			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	0.259		0.205	Jul 2015	-		-		-	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	1.062	-		-		-		-		-	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Northrop Grumman : CO	2.455	1.830		1.609	Jan 2015	1.391	Jan 2016	-		1.391	Continuing	Continuing	Continuing
		Subtotal	3.517	2.089		1.814		1.391		-		1.391	-	-	-

Remarks

N/A

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.517	2.089		1.814		1.391		-		1.391	-	-	-

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
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*

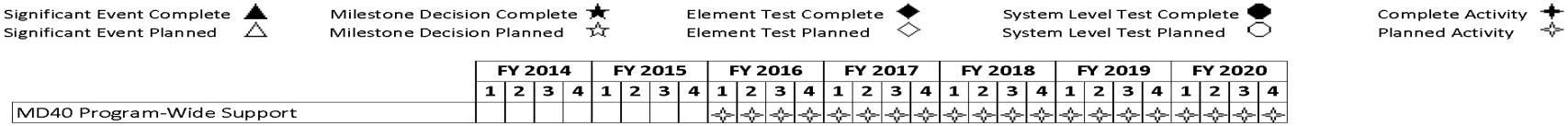

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD40 / *Program-Wide Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MD40 Program-Wide Support	1	2016	4	2020