Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency											Date: February 2016	
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*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	708.951	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
MD12: *Space Tracking and Surveillance System (STSS)*	703.345	27.716	27.214	30.751	-	30.751	32.228	33.111	34.344	34.879	Continuing	Continuing
MD40: *Program-Wide Support*	5.606	1.814	1.391	1.378	-	1.378	1.641	1.773	1.859	1.942	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

Increase from FY 2016 to FY 2017 in MD12 reflects funding required for critical equipment replacements, implementation of cyber security requirements, restoring Configuration Management team to support continued operations, and more complex testing planned in FY 2017.

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. MDA uses STSS data to characterize contribution of space data into the 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. 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 collecting complex target signatures, interface definitions, communications architectures, and performance information 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 space-based capabilities including persistent tracking and integrated BMDS discrimination improvements.

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 real-time data that met the Aegis Ballistic Missile Defense Systems' Quality of Service requirements for “Remote Engagement Authorized.” Finally, STSS demonstrates the benefit of future MDA space-layer capabilities that, when combined with radars, will provide robust tracking and discrimination capabilities against current and advanced countermeasures.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency	Date: February 2016
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*

MDA developed and is using two STSS satellites to demonstrate key functions of space sensors to reduce risk for future BMDS 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.

This program element assumed funding responsibility from program element 0603895C for the Missile Defense Space Center (MDSC) efforts supporting STSS operations and sustainment beginning in FY 2016. The portion of the MDSC that supports the Spacebased Kill Assessment program remained in program element 0603895C. Funding burden was offset through realized STSS operational efficiencies. The MDSC provides a centralized collaboration and integration environment for BMDS sensor operations. The MDSC capabilities and infrastructure support flight tests, concept development, demonstrations, experiments, and algorithm development within a multi-security level, collaborative environment. As part of a collaborative environment, the MDSC also conducts studies and experiments with Air Force Space Command to optimize future MDA space-layer options to support Space Situational Awareness (SSA).

The Near Field Infrared Experiment (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 carried a Laser Communication Terminal, which was used to conduct communication experiments with the German Terra SAR-X satellite. These experiments tested low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the Ballistic Missile Defense System. NFIRE successfully completed all missions and data products were utilized by multiple Department of Defense programs to improve missile engagement performance. The NFIRE program executed an option for satellite End-of-Life in FY 2015 and initiated safe satellite de-orbit. The NFIRE satellite orbit was successfully lowered below human space flight region and deactivated on 5 August 2015. NFIRE reentered the atmosphere on 4 November 2015 over the Atlantic Ocean as officially reported by the Joint Space Operations Center (JSpOC), Joint Functional Component Command for Space (JFCC SPACE), United States Strategic Command.

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

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	31.331	31.632	17.917	-	17.917
Current President's Budget	29.530	28.605	32.129	-	32.129
Total Adjustments	-1.801	-3.027	14.212	-	14.212
• Congressional General Reductions	0.000	-0.027			
• Congressional Directed Reductions	0.000	-3.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.278	0.000			
• SBIR/STTR Transfer	-0.523	0.000			
• Other Adjustment	0.000	0.000	14.212	-	14.212

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Missile Defense Agency	Date: February 2016
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*

Change Summary Explanation

The FY 2015 adjustments reflect a reallocation of $0.523M for SBIR/STTR Transfer and a reallocation of $1.278M to PE 06039895C for Spacebased Kill Assessment development.

The FY 2017 adjustment reflects an increase to maintain the current level of Space Tracking and Surveillance System operations.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	703.345	27.716	27.214	30.751	-	30.751	32.228	33.111	34.344	34.879	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.

A. Mission Description and Budget Item Justification

Space Tracking and Surveillance System (STSS) satellites provide on-orbit assets with visible and infrared sensors in low earth orbit for testing with other BMDS elements, with a goal to demonstrate space-based capabilities including persistent tracking and integrated BMDS discrimination improvements. 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.

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 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.

The Missile Defense Space Center (MDSC) provides capabilities and infrastructure to support the BMDS as the single location for MDA elements to conduct space operations. It provides a multi-level security environment for sensor data management and integration across space and terrestrial sensor data activities. MDSC experiments leverage DoD (Defense Support Program, Space Based Infrared System) and national security space capabilities. MDSC activities support analysis, demonstration and integration of space sensor capabilities into developmental and operational MDA elements. MDSC enables the development of advanced technology and algorithms including fusion of multiple sensor types (radar, overhead persistent infrared, electro-optical and other emerging sensor technologies). It also supports mission integration of space-based missile tracking, sensor and weapons cueing via Command and Control, Battle Management and Communications, features and

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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)*

discrimination, kill and impact point assessments into the BMDS and other non-MDA mission areas, including Space Situational Awareness, technical intelligence, and battle space characterization. This effort is a continuation of work previously performed in program element 0603895C that supported the STSS program.

The Near Field Infrared Experiment (NFIRE) satellite operated from the MDSC and was capable of collecting environmental background characterization (regional/ seasonal atmospheric radiance variability, day-night, land-sea clutter, clouds, auroral measurements, etc.) for future 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 carried a Laser Communication Terminal to conduct communication experiments with the German Terra SAR-X satellite. Communications experiments tested low earth orbit satellite-to-ground and satellite-to-satellite laser communications capabilities for potential incorporation into the BMDS. The NFIRE program executed an option for satellite End-of-Life in FY 2015 and initiated safe satellite de-orbit. The NFIRE satellite orbit was successfully lowered below human space flight region and deactivated on 5 August 2015. NFIRE reentered the atmosphere on 4 November 2015 over the Atlantic Ocean as officially reported by the Joint Space Operations Center (JSpOC), Joint Functional Component Command for Space (JFCC SPACE), United States Strategic Command.

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 2015	FY 2016	FY 2017
Title: Demonstration Satellites	26.068	27.214	30.751
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 the BMDS and space-layer future capabilities. Also funded are the facilities and activities required for safe STSS satellite operations and sustainment at the Missile Defense Space Center (MDSC). The two STSS satellites have operated past six years on orbit, exceeding the four year design life and continue to be viable MDA space assets.			
FY 2015 Accomplishments: - Executed 8400 collections in support of the Missile Defense, Space Situational Awareness, Technical Intelligence and Battlespace Awareness missions - Operated 24 hours a day/7 days a week with 99% availability - Collected data of the most complex scene to date during FTX-20 test event (Oct 2014) - Participated in multiple Air Force Global Strike Command Glory Trip events - Completed collects for Air Force Space Command's (AFSPC) Operational Assessment Panel allowing STSS data to support an AFSPC mission area - Completed Earth Limb Polar Vortex collections			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2015	FY 2016	FY 2017
- Collection of scientific data for refinement of BMDS-relevant models, demonstration and trade space determination for a potential follow-on BMDS space layer			
FY 2016 Plans:			
- Perform risk reduction for future MDA tracking and surveillance initiatives and Overhead Persistent Infra-red (OPIR) Enterprise integration and demonstrations across OPIR cueing, Joint Tasking Operations, and data utility			
- Conduct 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			
- Continue STSS participation in the Integrated Master Test Plan events			
- 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			
- Conduct testing with the STSS satellites to continue to demonstrate critical space capabilities that may include:			
-- Ability to support BMDS integrated discrimination efforts			
-- 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 BMDS sensors from space			
-- Ability to integrate space into emerging fire control loops			
-- Ability to provide 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			
- Provide Air Force Space Command Space Situational Awareness support			
- MDSC efforts related to STSS include			
-- Support Hardware-in-the Loop (HWIL) Engage-On STSS satellites tests and fulfill Overhead Persistent Infrared (OPIR) requests for STSS data based on satellite availability			
-- Conduct analysis of space radiation environment and its influence on MDA space system performance			
-- Conduct analysis of space based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid future tracking and discrimination architectures			
-- Support concept studies and analysis for alternative sensor payload configurations (e.g. hosted payloads)			
-- Sustain MDSC resources for all participant activities to include, but not be limited to, data, voice, and/or video communications, to include support to MDA Cyber Security directives			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2015	FY 2016	FY 2017
-- Document the requirements definition and perform tracking, design, implementation, and verification necessary for the MDSC facility - Implement emerging cyber security requirements ***FY 2017 Plans:*** Increase from FY 2016 to FY 2017 is due to the following: - Planned critical equipment replacements and service level agreements - STSS ground system is aging necessitating more complex methods to implement current cyber security requirements - Test and Analysis and Configuration Management efforts were significantly reduced to meet FY 2016 funding constraints. FY 2017 funding request restores this effort to pre-FY 2016 levels to pace the required workload. - FY 2017 planned testing entails more major test events than FY 2016. These tests also have higher complexity than events planned in FY2016 requiring more pre-test planning and post-test data analysis. - Perform risk reduction for future MDA tracking and surveillance initiatives and Overhead Persistent Infra-red (OPIR) Enterprise integration and demonstrations across OPIR cueing, 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 - Continue STSS participation in the Integrated Master Test Plan events - 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 - Continue demonstration of critical space capabilities, including: -- 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 assessment from space -- Ability to cue BMDS sensors from space -- Demonstrate precision cue to BMDS sensors - Perform satellite functionality testing and calibration as part of satellite operations - MDSC efforts related to STSS include -- Conduct missile tracking experiments as identified in the test specific sections -- Provide Air Force Space Command Space Situational Awareness support			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2015	FY 2016	FY 2017
-- Support Hardware-in-the Loop (HWIL) Engage-On STSS satellites tests and fulfill Overhead Persistent Infrared (OPIR) requests for STSS data based on satellite availability -- Conduct analysis of space radiation environment and its influence on MDA space system performance -- Conduct analysis of space based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid future tracking and discrimination architectures -- Support concept studies and analysis for alternative sensor payload configurations (e.g. hosted payloads) -- Sustain MDSC resources for all participant activities to include, but not be limited to, data, voice, and/or video communications, to include support to MDA Cyber Security directives -- Document the requirements definition and perform tracking, design, implementation, and verification necessary for the MDSC facility -- Implement emerging cyber security requirements			
Title: BMDS Level Testing	0.978	0.000	0.000
Articles:	-	-	-
Description: Space Tracking and Surveillance System (STSS) demonstration satellites participate in the BMDS Integrated Master Test Plan (IMTP) events 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 2015 Accomplishments:*** - Conducted risk reduction for future MDA space-layer to include OPIR Enterprise integration and demonstrations across 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 - Demonstrated 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. - Supported STSS participation in the Integrated Master Test Plan is described in the R4 ***FY 2016 Plans:*** Beginning in FY 2016, the BMDS Level Testing effort is captured in the Demonstration Satellites accomplishment. This effort is now fully integrated and un-severable from standard satellite operations performed by the prime contractor. Funding will also go towards emerging cyber security requirements. ***FY 2017 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2015	FY 2016	FY 2017
N/A			
Title: Near Field Infrared Experiment (NFIRE)	0.670	0.000	0.000
Articles:	-	-	-
Description: NFIRE provided critical space, earth phenomenology and missile characterization data for use in the BMDS. ***FY 2015 Accomplishments:*** - Concluded a highly successful 7+ year International Laser Communication partnership with Germany - NFIRE continued to contribute to the Agency and DoD mission interested as it exceeded its design life by 6+ years - Executed 89 space-to-space laser communication tests with the German Terra SAR-X satellite - Safely executed orbit lowering of NIFRE below manned space flight region into disposal orbit - Pioneered the satellite decommission process for the Agency - Decommissioned the NFIRE satellite and ended the NFIRE project ***FY 2016 Plans:*** -NFIRE reentered the atmosphere on 4 November 2015 over the Atlantic Ocean as officially reported by the Joint Space Operations Center (JSpOC), Joint Functional Component Command for Space (JFCC SPACE), United States Strategic Command ***FY 2017 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	27.716	27.214	30.751

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603895C: *Ballistic Missile Defense System Space Programs*	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and*	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Control, Battle Management & Communication											
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Space Tracking and Surveillance System (STSS) demonstration satellites program follows MDAs 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 BMDS.

Functions and operations of the Missile Defense Space Center (MDSC) were financed through a 10-year MDSC Joint National Integration Center Research and Development Contract Services Contract. The sole-source contractor, Northrop Grumman Information Systems, was responsible for integrating Research, Development, Test and Evaluation, operations support, and resource and infrastructure management for the MDSC, providing customer support, while achieving efficiencies through approaches that exceed customer requirements. This effort is a continuation of work previously performed in program element 0603895C.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency		Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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	550.548	18.578		17.095	Oct 2015	19.101	Oct 2016	-		19.101	Continuing	Continuing	Continuing
Demonstration Satellites - STSS Support to Missile Defense Space Center (MDSC)	SS/CPAF	NGIS : Schriever AFB, CO	17.376	1.212		3.039	Oct 2015	3.763	Nov 2016	-		3.763	Continuing	Continuing	Continuing
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace : Los Angeles CA, Schriever AFB CO	51.583	0.693		0.357	Oct 2015	0.263	Nov 2016	-		0.263	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Prime Contract	SS/CPAF	Orbital Sciences Corporation : AZ	1.690	0.147		0.000		0.000		-		0.000	0	1.837	1.837
Near Field Infrared Experiment (NFIRE) - Various	C/Various	Various : Various	1.935	0.523		0.000		0.000		-		0.000	0	2.458	2.458
		Subtotal	623.132	21.153		20.491		23.127		-		23.127	-	-	-

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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Contract Support Services (CSS)	C/Various	MDA : AL, CO	16.941	2.262		2.897	Oct 2015	3.106	Nov 2016	-		3.106	Continuing	Continuing	Continuing
Demonstration Satellites - IT User Services	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.551		0.506	Oct 2015	0.439	Oct 2016	-		0.439	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - MDA Civilian	Allot	MDA : Schriever AFB, CO	9.228	1.557		2.410	Oct 2015	3.146	Oct 2016	-		3.146	Continuing	Continuing	Continuing
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC : Schriever AFB, CO	11.095	0.451		0.315	Oct 2015	0.316	Oct 2016	-		0.316	Continuing	Continuing	Continuing
Demonstration Satellites - Program Mission Support	Various	Various : Various	21.666	0.399		0.229	Oct 2015	0.250	Oct 2016	-		0.250	Continuing	Continuing	Continuing
Demonstration Satellites - UARC	C/CPFF	Utah University, Space Dynamics Laboratory : AL, AK, CA, CO, HI, MA, UT, VA	0.000	0.365		0.366	Nov 2015	0.367	Nov 2016	-		0.367	Continuing	Continuing	Continuing
		Subtotal	58.930	5.585		6.723		7.624		-		7.624	-	-	-

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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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	21.283	0.978		0.000		0.000		-		0.000	0	22.261	0
		Subtotal	21.283	0.978		0.000		0.000		-		0.000	0.000	22.261	0.000

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.

Effort will continue in Demonstration Satellites accomplishment beginning in FY 2016

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency		Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Remarks

N/A

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	703.345	27.716		27.214		30.751		-		30.751	-	-	-

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 2017 Missile Defense Agency		Date: February 2016
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)*

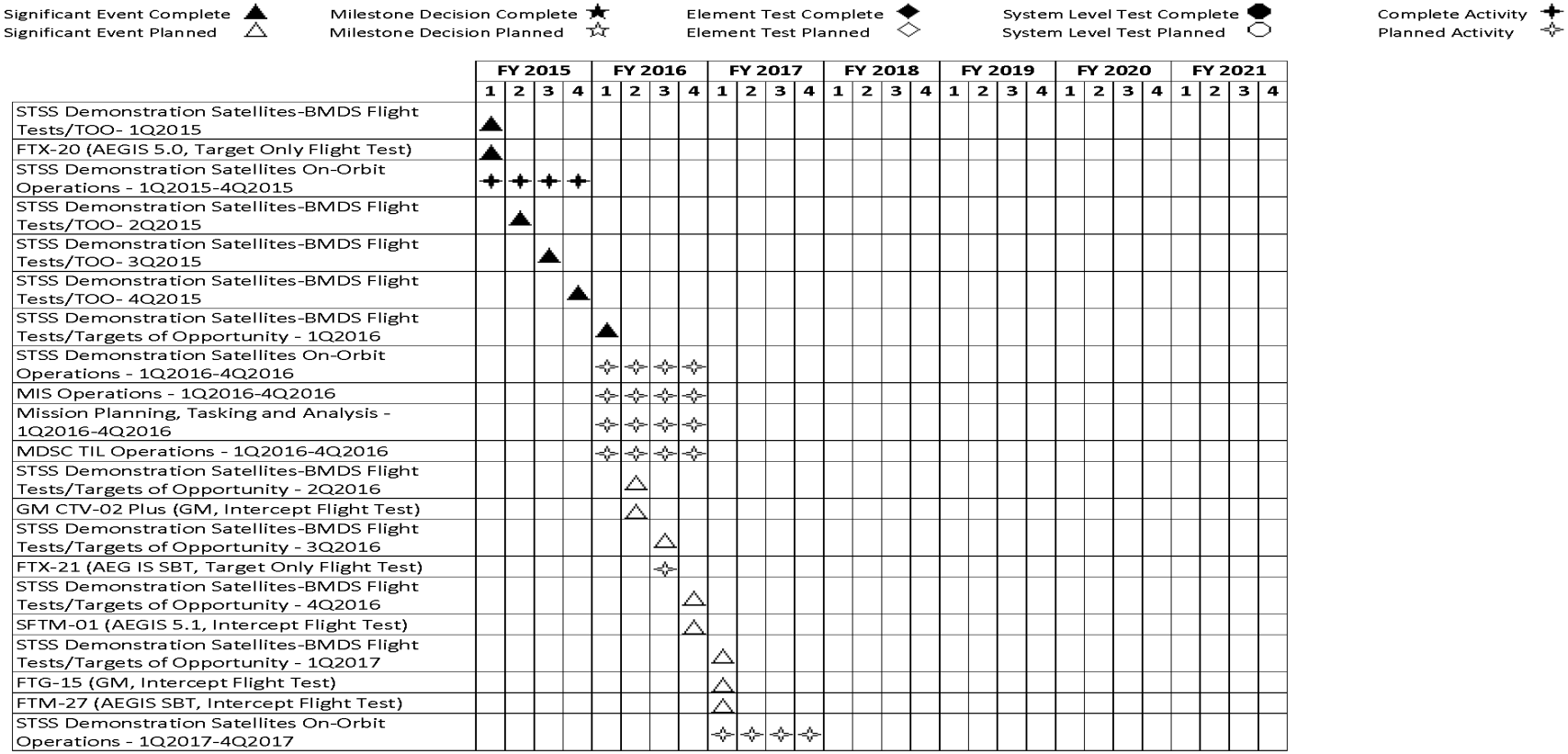

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

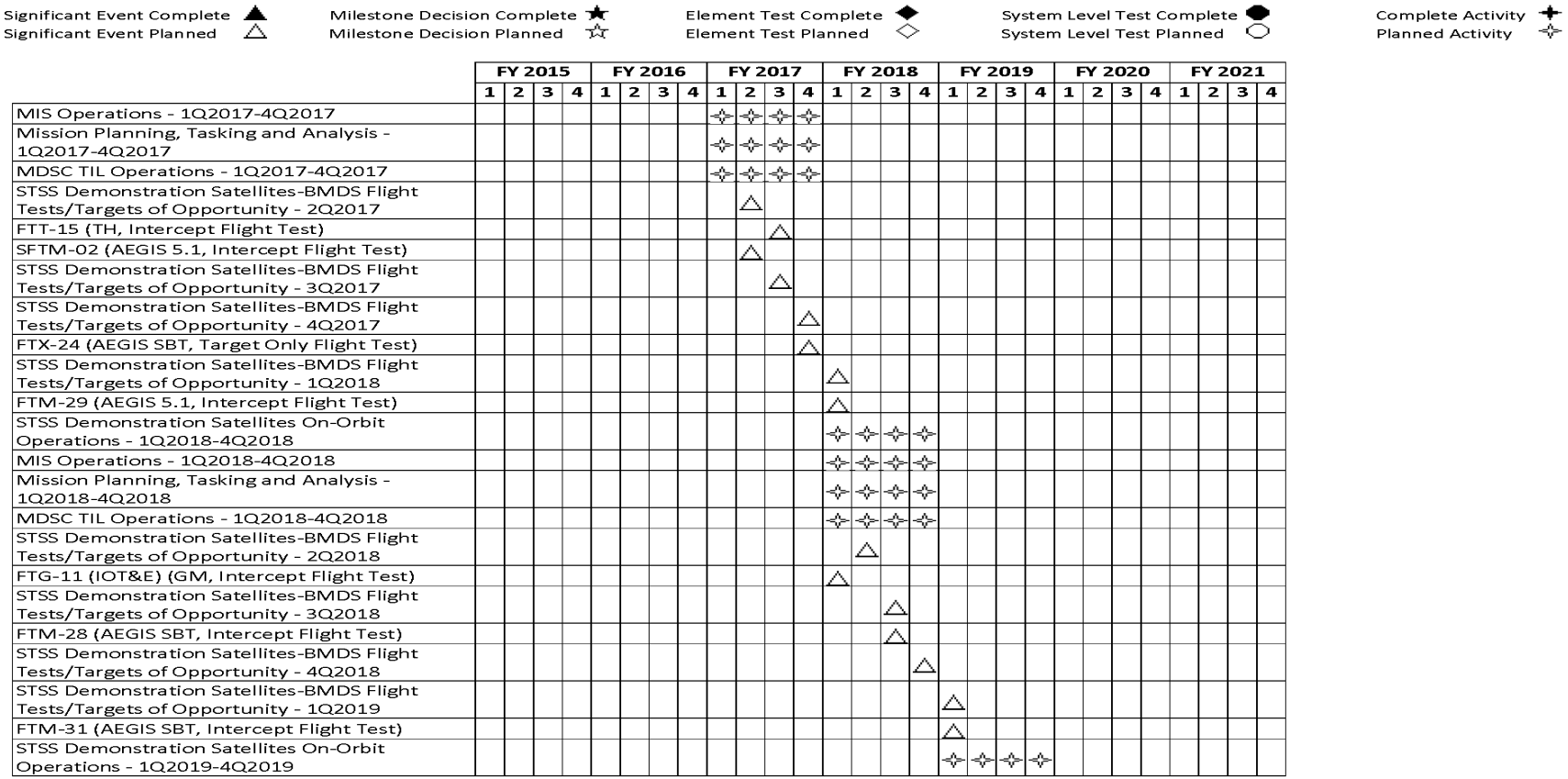

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

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

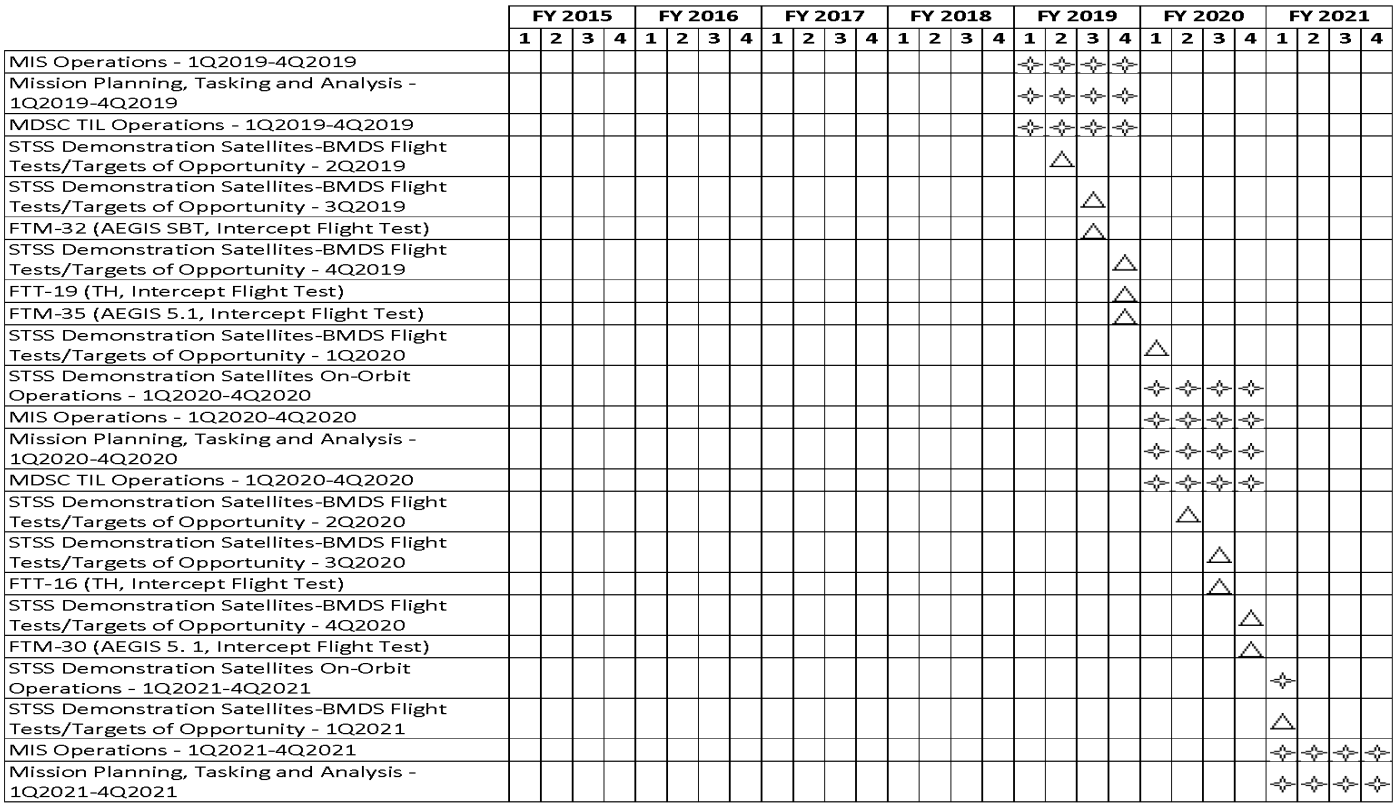

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603893C / *Space Tracking and Surveillance System*	**Project (Number/Name)** MD12 / *Space Tracking and Surveillance System (STSS)*

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 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
MDSC TIL Operations - 1Q2021-4Q2021																									✧	✧	✧	✧
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2021																										△		
FTX-26 (SN, Target Only Flight Test)																											△	
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)																											△	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2021																											△	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2021																												△

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
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**
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	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
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	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
MIS Operations - 1Q2016-4Q2016	1	2016	4	2016
Mission Planning, Tasking and Analysis - 1Q2016-4Q2016	1	2016	4	2016
MDSC TIL Operations - 1Q2016-4Q2016	1	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2016	2	2016	2	2016
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016	3	2016	3	2016
FTX-21 (AEG IS SBT, Target Only Flight Test)	3	2016	3	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016	4	2016	4	2016
SFTM-01 (AEGIS 5.1, Intercept Flight Test)	4	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017	1	2017	1	2017
FTG-15 (GM, Intercept Flight Test)	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
MIS Operations - 1Q2017-4Q2017	1	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
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**
Mission Planning, Tasking and Analysis - 1Q2017-4Q2017	1	2017	4	2017
MDSC TIL Operations - 1Q2017-4Q2017	1	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017	2	2017	2	2017
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	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
FTX-24 (AEGIS SBT, Target Only Flight Test)	4	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018	1	2018	1	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
STSS Demonstration Satellites On-Orbit Operations - 1Q2018-4Q2018	1	2018	4	2018
MIS Operations - 1Q2018-4Q2018	1	2018	4	2018
Mission Planning, Tasking and Analysis - 1Q2018-4Q2018	1	2018	4	2018
MDSC TIL Operations - 1Q2018-4Q2018	1	2018	4	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2018	2	2018	2	2018
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2018	3	2018	3	2018
FTM-28 (AEGIS SBT, Intercept Flight Test)	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
FTM-31 (AEGIS SBT, Intercept Flight Test)	1	2019	1	2019
STSS Demonstration Satellites On-Orbit Operations - 1Q2019-4Q2019	1	2019	4	2019
MIS Operations - 1Q2019-4Q2019	1	2019	4	2019
Mission Planning, Tasking and Analysis - 1Q2019-4Q2019	1	2019	4	2019
MDSC TIL Operations - 1Q2019-4Q2019	1	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
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 - 2Q2019	2	2019	2	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2019	3	2019	3	2019
FTM-32 (AEGIS SBT, Intercept Flight Test)	3	2019	3	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2019	4	2019	4	2019
FTT-19 (TH, Intercept Flight Test)	4	2019	4	2019
FTM-35 (AEGIS 5.1, Intercept Flight Test)	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
MIS Operations - 1Q2020-4Q2020	1	2020	4	2020
Mission Planning, Tasking and Analysis - 1Q2020-4Q2020	1	2020	4	2020
MDSC TIL 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
FTT-16 (TH, Intercept Flight Test)	3	2020	3	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020	4	2020	4	2020
FTM-30 (AEGIS 5. 1, Intercept Flight Test)	4	2020	4	2020
STSS Demonstration Satellites On-Orbit Operations - 1Q2021-4Q2021	1	2021	1	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2021	1	2021	1	2021
MIS Operations - 1Q2021-4Q2021	1	2021	4	2021
Mission Planning, Tasking and Analysis - 1Q2021-4Q2021	1	2021	4	2021
MDSC TIL Operations - 1Q2021-4Q2021	1	2021	4	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2021	2	2021	2	2021
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)	3	2021	3	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2021	3	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
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 - 4Q2021	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	5.606	1.814	1.391	1.378	-	1.378	1.641	1.773	1.859	1.942	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes 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 and Military Interdepartmental Purchase Requests on the R-3.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. 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, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS 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 Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
Title: Program Wide Support	1.814	1.391	1.378
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2016 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2017 Plans: - See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	1.814	1.391	1.378

Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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 2017 Missile Defense Agency			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO,	0.259	0.128		0.000		0.030	Jul 2017	-		0.030	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	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Northrop Grumman : CO	4.285	1.686		1.391	Jan 2016	1.348	Aug 2017	-		1.348	Continuing	Continuing	Continuing
		Subtotal	5.606	1.814		1.391		1.378		-		1.378	-	-	-

Remarks

N/A

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.606	1.814		1.391		1.378		-		1.378	-	-	-

Remarks

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency		Date: February 2016
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*

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 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
MD40 Program-Wide Support					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Missile Defense Agency		Date: February 2016
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