Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Missile Defense Agency											DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*							
COST ($ in Millions)	**All Prior Years**	**FY 2012**	**FY 2013#**	**FY 2014 Base**	**FY 2014 OCO ##**	**FY 2014 Total**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**Cost To Complete**	**Total Cost**
Total Program Element	597.048	86.278	51.313	44.947	-	44.947	32.007	33.778	34.555	34.974	Continuing	Continuing
MD12: *Space Tracking and Surveillance System (STSS)*	597.048	85.224	48.708	42.587	-	42.587	30.450	32.047	32.607	33.039	Continuing	Continuing
MD40: *Program-Wide Support*	-	1.054	2.605	2.360	-	2.360	1.557	1.731	1.948	1.935	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

Note

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

A. Mission Description and Budget Item Justification

With the successful launch of two Space Tracking and Surveillance System Demonstration (STSS-D) Satellites in 2009, the agency has on-orbit capability to validate remote sensor and fire control integration to inform the design and operation of future Missile Defense Agency (MDA) space-layer capabilities, to characterize contribution of space data into the Ballistic Missile Defense System (BMDS) architecture, and to provide sensor measurements and background data supporting trade studies and analyses for future MDA space-layer options and Standard Missile-3 (SM-3) IIB development. Lessons learned from the two STSS-D satellites are guiding decisions on the development of a fiscally sustainable, continuously available, future operational constellation and ground communications/processing system.

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

STSS-D will emphasize continued research and development to address the more sophisticated threats the Agency expects to encounter in the far term. The greatest protection against missile defense threats of all ranges remains a highly available early missile tracking capability from space. Space sensors provide the most cost effective and operationally suitable means of providing global persistent surveillance and engagement, directly addressing the number one missile defense priority need for Combatant Commanders. STSS-D is a capability development activity for the demonstration of technologies to support development and capability delivery of future MDA space-layer options. In addition, the STSS-D satellites have demonstrated the ability of a space sensor to provide high precision, real time tracking of missiles and midcourse objects, thus enabling simultaneous regional, theater, and strategic missile defense systems to be cued to track well beyond their organic detection capability. Data from on-going STSS-D testing has validated the ability to track cold, midcourse objects from space and close the fire control loop with BMDS interceptors. During several Missile Defense Agency (MDA) Flight Tests, STSS-D has provided data in real-time that has met the Aegis Missile Defense Systems Quality of Service (QoS) data requirements for Remote Engagement Authorized (REA). Finally, STSS-D provides a new infrared sensor phenomenology for the

BMDS that will demonstrate the benefit of future MDA space-layer capabilities when combined with radars that will provide robustness against current and advanced countermeasures.

Missile Defense Agency (MDA) has developed, and is testing, two STSS-D satellites to demonstrate key functions of space sensors in support of future MDA space-layer options risk reduction. STSS-D Element Level testing is funded as part of a capabilities development program and reflected in the Program Element submission. Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components were tested early in development and this testing was necessary prior to conducting Ballistic Missile Defense (BMD) level testing. Key data from the STSS-D satellites efforts continue to provide lessons learned as MDA pursues longer term space sensor needs.
- Space sensors BMDS sensor coverage to a global level. The STSS-D has demonstrated the capability of satellites to track ballistic missiles and the ability to provide accurate tracking information to the Ballistic Missile Defense System (BMDS) battle manager to close the fire control loop with BMDS interceptors, thus extending the effective range of BMDS interceptors and other sensors.
- Space-based sensors are not limited by basing rights issues or deployment decisions, and will allow cost effective coverage of countries and large areas not accessible from ground based sensors.
- Space based visible and Infrared (IR) sensors will complement radars and contribute to a sensor architecture more robust to countermeasures
- Space-based sensors will enable near continuous threat observation and tracking from launch to intercept, covering threats by augmenting the coverage of the BMDS radars, and providing state vectors to Command and Control, Battle Management and Communications (C2BMC) to enable interceptor fire control via multiple BMDS assets (Aegis, Ground-based Midcourse Defense (GMD), Terminal High Altitude Area Defense (THAAD))

Goals for STSS-D
- Risk reduction for future Missile Defense Agency (MDA) space-layer architectures by demonstrating Aegis Launch on Remote in FY 2013
- Risk reduction for future MDA space-layer architectures by demonstrating the ability to cue or be cued
- Demonstrate C2BMC interfaces, sensor registration, communication chains and latencies to support future MDA space-layer concept of operations development

Near Field Infrared Experiment (NFIRE)
The NFIRE technology project was designed to collect near field phenomenology data for use in plume to hard body handover algorithms for boost phase interceptor programs. MDA used this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms. NFIRE is now focused on future MDA space-layer sensors risk reduction and other BMDS element development support by collecting background, clutter, and target signatures for modeling and algorithm development and validation. A secondary objective of the experiment has been to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment includes three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. The dedicated fly-by experiments have been accomplished. The NFIRE satellite also carries a Laser Communication Terminal, which has been and continues to be used to conduct communication experiments with the German Terra SAR-X satellite. These experiments test low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the BMDS. Data products are utilized by multiple programs to improve missile engagement performance.

Goals for NFIRE

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Missile Defense Agency	DATE: April 2013
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- Conduct multiple data collection missions from the Missile Defense Space Development Center (MDSDC) against ground, air, space and ballistic missile targets of opportunity
- Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments
- Provide data to validate models and simulations that are fundamental to developing the navigation, guidance and control, and endgame homing algorithms, as well as laser communication proof of concept

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

B. Program Change Summary ($ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	96.232	51.313	45.355	-	45.355
Current President's Budget	86.278	51.313	44.947	-	44.947
Total Adjustments	-9.954	0.000	-0.408	-	-0.408
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.751	0.000			
• SBIR/STTR Transfer	-6.203	0.000			
• Other Adjustment	0.000	0.000	-0.408	-	-0.408

Change Summary Explanation

The FY 2014 reduction reflects a realignment of Department of Defense priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency			DATE: April 2013
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COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	597.048	85.224	48.708	42.587	-	42.587	30.450	32.047	32.607	33.039	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

Note

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

A. Mission Description and Budget Item Justification

Space Tracking and Surveillance System Demonstration Satellites (STSS-D)

The STSS-D satellites provide two on-orbit satellite assets with visible and infrared sensors in low earth orbit for testing with other Ballistic Missile Defense Systems (BMDS) elements. These two satellites provide valuable risk reduction for acquisition, tracking, and discrimination functionality to include stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. The program is demonstrating the functions and interfaces required for space data delivery to the BMDS, validating the data quality necessary for interceptors to launch and/or engage on STSS-D sensor data. The two Demonstration Satellites are operated 24 hours a day, 7 days a week from the ground station processing center at the Missile Defense Space Development Center (MDSDC) with a government and contractor team. On-orbit, STSS-D satellites continue data collection and analyses in FY 2012 and beyond striving to view all available Targets of Opportunity (TOOs) to include participation with other BMDS target and flight tests that provide demonstration of the Missile Defense Agency (MDA) Space Layer capabilities and allow collection of future system risk reduction information.

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

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency		DATE: April 2013
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layer capability development and will enable meeting a Warfighter`s requirements to include tracking missile threats and objects of interest; provide post-launch sensor cueing; integrate, fuse and correlate sensor data; engage/re-engage ballistic missile threats; and provide system modeling tools.

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMDS level testing. The STSS-D Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission. The STSS-D satellites demonstrate key functions of space sensors. The MDA will continue planning for and conducting integrated BMDS intercept tests based on track data passed from the STSS Demonstration Satellites through C2BMC to Aegis, Ground-based Midcourse Defense (GMD), or other interceptors. The Advanced Space Operations Development includes activities to reduce risk for future space integration and exploitation demonstrating expected architectures, capabilities, Concept of Operations, timelines, etc.

Near Field Infrared Experiment (NFIRE)
Funding for On-Orbit Operations and cooperative tests are planned to continue pending a positive assessment of the NFIRE satellite`s health and utility. Participation is planned for tests in the Integrated Master Test Plan to include Standard Missile-3 (SM-3) intercept using Space Tracking and Surveillance System Demonstration Satellites (STSS-D) as a remote sensor.

The NFIRE satellite is operated from the Missile Defense Space Development Center (MDSDC) and continues to collect environmental background characterization (regional/seasonal atmospheric radiance variability, day-night, land-sea clutter, clouds, auroral measurements, etc) for future Missile Defense Agency (MDA) space-layer sensors and SM-3 IIB seeker development programs, 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. These 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 laser communication experiments will be conducted on a non-interference basis with other MDA missions. MDA will continue to assess the health/utility of the NFIRE satellite on an annual basis to determine whether to continue NFIRE operations and testing.

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Title: Demonstration Satellites	66.375	45.689	39.031
Articles:	0	0	0
Description: The Space Tracking and Surveillance System Demonstration (STSS-D) Satellites operate 24 hours a day, 7 days a week to collect and deliver critical space and missile characterization data used to design and inform BMDS and Space Layer future capabilities.			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
FY 2012 Accomplishments: - Conducted missile tracking experiments as identified in the test specific sections, Ballistic Missile Defense Systems (BMDS) Level Testing and Element Integration and Testing, that follow - FY 2012 testing of the STSS-D satellites continued the execution of the STSS-D-related Critical Engagement Conditions (CEC)/ Empirical Measurement Events (EME) -- Collected test data from CECs/EMEs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance - Conducted independent government validation of STSS-D satellites data in the STSS-S Demo Analysis Center ***FY 2013 Plans:*** - Testing includes Standard Missile-3 (SM-3) intercept using STSS-D as a remote sensor. - Conduct missile tracking experiments as identified in the test specific sections, Ballistic Missile Defense System (BMDS) Level Testing and Element Integration and Testing - FY 2013 testing of the STSS-D satellites continues the execution of the STSS-D-related CECs/EMEs -- Collection of test data from CECs/EMEs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance - Conduct independent government validation of STSS-D satellites data at the Missile Defense System Development Center (MDSDC) - Perform satellite functionality testing and calibration as part of the satellite operations - In FY 2013, testing begins to transition from dedicated, more costly, first-time efforts to missions collecting data to verify earlier results. These verifications further strengthen BMDS-related modeling and simulation as well as support development of future systems design and concept of operations. ***FY 2014 Plans:*** - Simulated Aegis (Hardware-in-the-Loop (HWIL)) Engage-on STSS-D test - Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing - FY 2014 testing of the STSS-D satellites continues the execution of the Space-related CECs/EMEs -- Collection of test data from CECs/EMEs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance - Conduct independent government validation of STSS-D satellites data at the Missile Defense Space Development Center (MDSDC) - Perform satellite functionality testing and calibration as part of the satellite operations			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Funding decrease from FY 2013 to FY 2014 is a result of continued transition from dedicated, more costly, first-time efforts to less costly missions collecting data to verify earlier results. These verifications further strengthen BMDS-related modeling and simulation as well as support development of future systems design and concept of operations.			
Title: BMDS Level Testing	12.972	3.019	2.556
Articles:	0	0	0
Description: STSS-D 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 2012 Accomplishments:*** - Demonstrated first simultaneous tracking of two targets with STSS-D during Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-12) -- Both STSS-D satellites accomplished acquisition sensor-to-track sensor handoff and tracked both the Medium and Short-Range Ballistic Missiles (SRBM) in stereo. Also, internally sent cues to both STSS-D satellites to acquire and track the SRBM in midcourse. -- At the same time, in shadow mode, transmitted data through the Enterprise Sensors Laboratory (ESL) and X-Lab to the Space and Naval Warfare Systems Command (SPAWAR) lab (Aegis 3.6.1) and accomplished Aegis Remote Engagement Authorized (REA) using STSS-D data. - Planned and executed STSS-D participation in BMDS flight tests. Collections from a variety of test targets and conditions enabled a statistically relevant database to be constructed to support future space system design. - Current STSS-D participation in the IMTP included the following BMDS flight tests with STSS-D striving to meet reasonable expectations to view these as well as seeking opportunities to participate in other IMTP events: -- Aegis Intercept Flight Test (FTM-16 E2a): Aegis 4.0.1 Standard Missile-3 (SM-3) Block IB intercept of a SRBM target with associated objects --- Demonstrate birth-to-death tracking of missile target from low earth orbit --- Collect data to analyze real-time sharing of track messages to the Ballistic Missile Defense System (BMDS) --- Simulate Aegis (Hardware-in-the-Loop) Launch-On STSS-D track -- Aegis Intercept Flight Test (FTM-18): Aegis 4.0.1 intercept of a Medium-Range Ballistic Missile (MRBM) target with a Standard Missile-3 (SM-3) Block IB --- Collection of Critical Engagement Conditions (CEC)/Empirical Measurement Events (EME) used in updating and verification, validation and accreditation of future space system modeling and simulation representations to be used to assess system performance			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
- Planned and participated in available Targets of Opportunity (TOOs) - Collected both STSS-D and Overhead Persistent Infrared (OPIR) data live during TOOs and Missile Defense Agency (MDA) flights tests, then play back OPIR data through the ESL and pass data to X-Lab. The X-Lab will then provide an OPIR system cue to the STSS-D track sensor, the STSS-D track sensor will then point to the target based solely on the OPIR cue. This will validate the STSS-D Cueing Campaign and demonstrate the viability of the Precision Tracking Space System (PTSS) Concept of Operations. - Conducted planning for integrated BMDS intercept test based on track data from the STSS-D satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis or other weapon systems - Continued STSS-D Demo Analysis Center participation in BMDS testing and collection of scientific data for refinement of BMDS-relevant models, demonstration and trade space determination for PTSS, and development support for Standard Missile-3 (SM-3) Blk IIB interceptor			
FY 2013 Plans: - Testing includes SM-3 intercept using STSS-D as a remote sensor. -- STSS-D will provide to an Aegis 3.6.x or 4.0.1 ship the Quality of Service data track that will initiate a Remote Engagement Authorized (REA) launch of a SM-3 Block IB against an actual Medium Range Ballistic Missile (MRBM) target - Plan and execute STSS participation in BMDS flight tests. Collection from a variety of test targets and conditions enable a statistically relevant database to be constructed to support future space system design. - Current STSS-D participation in the Integrated Master Test Plan (IMTP) is planned to include the following BMDS flight tests with STSS-D striving to meet reasonable expectations to view these as well as seeking opportunities to participate in other IMTP events: -- Aegis Simulated Intercept Flight Test (FTM-21 E1): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three Short-Range Ballistic Missiles (SRBMs) --- Collect data and analyze STSS-D capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene --- Simulate Aegis (Hardware-in-the-Loop) Engage-On STSS-D track --- Conduct post-test assessment to support STSS-D providing precision cue through post-test playback of recorded data --- Demonstrate STSS-D precision cue of radar in post-test playback of recorded data -- Aegis Simulated Intercept Flight Test (FTM-21 E2): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three Short-Range Ballistic Missiles (SRBM) --- Collect data and analyze Space Tracking and Surveillance System Demonstration (STSS-D) Satellites capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene --- Simulate Aegis (Hardware-in-the-Loop) Engage-On STSS-D track			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
--- Conduct post-test assessment to support STSS-D providing precision cue through post-test playback of recorded data --- Demonstrate STSS-D precision cue of radar in post-test playback of recorded data -- Aegis Intercept Flight Test (FTM-21 E3): Aegis 4.0.1 Standard Missile-3 (SM-3) Block IB salvo engagement of SRBM --- Collect data and analyze STSS-D capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene --- Simulate Aegis (Hardware-in-the-Loop) Engage-On STSS-D track --- Conduct post-test assessment to support STSS-D providing precision cue through post-test playback of recorded data --- Demonstrate STSS-D precision cue of radar in post-test playback of recorded data -- Aegis Intercept Flight Test (FTM-22 E2): Aegis 4.0.1 SM-3 Block IB engagement of a SRBM --- Collect data and analyze STSS capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, and Post Boost Detection -- Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTO-1): Ballistic Missile Defense System (BMDS) Operational Flight Test against SRBM and Medium-Range Ballistic Missile (MRBM) targets --- Collect data and analyze STSS-D capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene --- Fuse STSS-D Object Sighting Message and other sensors data in the Enterprise Sensors Laboratory and pass data to X-Lab using post-test playback of recorded data --- Simulate Aegis Launch-On STSS-D in shadow mode --- Demonstrate STSS-D ability to precision cue BMDS radars and receive system cues live during the event and post-test using playback of recorded data - Plan and participate in available Targets of Opportunity (TOOs) - Collect both STSS-D and Overhead Persistent Infrared (OPIR) data live during TOOs and Missile Defense Agency (MDA) Flight Tests, then play back			
FY 2014 Plans: - Continue efforts as listed under FY 2013 - Emphasis during 2014 will be to: -- Future MDA space-layer risk reduction to include Overhead Persistent Infrared (OPIR) Enterprise integration and demonstrations across Overhead Persistent Infrared (OPIR) cuing, Joint Tasking Operations, and data utility -- Conduct STSS-D data collections to support mission utility assessment across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities -- Demonstrate STSS-D providing precision tracking, cues, and discrimination support to future versions of Command and Control, Battle Management and Communications (C2BMC) and Ballistic Missile Defense System (BMDS) weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures.			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
-Funding decrease from FY 2013 to FY 2014 is a result of continued transition from dedicated, first time efforts to less costly missions collecting data to verify earlier results. These verifications further strengthen BMDS-related modeling and simulation, as well as support development of future systems design and concept of operations.			
Title: Near Field Infrared Experiment (NFIRE)	3.358	0.000	0.000
Articles:	0	0	0
Description: NFIRE satellite delivers critical space, earth phenomenology and missile characterization data for use in the BMDS. NFIRE conducts experiments for U.S. Government Agencies such as hyper temporal collections and participates in a Project Agreement with the government of Germany to conduct laser communications experiments. ***FY 2012 Accomplishments:*** - Continued On-Orbit Operations at the Missile Defense Space Development Center (MDSDC) to support data collection and analysis on targets of opportunity -- Conducted 29 data collects against a variety of earth limb conditions for future space based infra-red sensors - Conducted cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity -- Collected on-orbit data to continue building knowledge on boost phase phenomenology for characterization of launch emissions and vapor trails - Continued laser communication experiments to assess viability of the technology - Continued to support, as requested by Air Force Space Command (AFSPC) and other agencies, Space Situational Awareness -- Conducted 22 hypertemporal collects as part of two campaigns to assess availability of the technology - Assess satellite health/utility for potential future utilization ***FY 2013 Plans:*** Funding for On-Orbit Operations and cooperative tests are planned to continue pending a positive assessment of the Near Field Infrared Experiment (NFIRE) satellite's health and utility. Participation is planned for tests in the Integrated Master Test Plan to include Standard Missile-3 (SM-3) intercept using Space Tracking and Surveillance System Demonstration (STSS-D) Satellites as a remote sensor. ***FY 2014 Plans:*** In FY 2014, funding for limited On-Orbit Operations and cooperative tests is captured in the BMD Technology Program Element 0603175C in support of Missile Defense Agency (MDA) research and development (contingent on NFIRE end of life decisions/ outcomes).			
Title: Element Integration and Testing	2.519	0.000	0.000
Articles:	0	0	0

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Description: STSS-D satellites provide real world data to BMDS Element components to support their software and hardware integration and testing into the Ballistic Missile Defense System (BMDS). ***FY 2012 Accomplishments:*** - Conducted planning and execution of Missile Surrogate Testing (Resident Space Objects) - Conducted periodic acquisition/calibration of Demonstration Satellites with ground laser source ***FY 2013 Plans:*** In FY 2013, funding and activity associated with performing satellite functionality testing and calibration is captured above under Demonstration Satellites and conducted as part of satellite operations. ***FY 2014 Plans:*** N/A			
Title: Advanced Space Operations Development	0.000	0.000	1.000
Articles:	0	0	0
Description: Risk reduction activities for future space integration and exploitation demonstrating expected architectures, capabilities, Concept of Operations, timelines, etc. ***FY 2012 Accomplishments:*** N/A ***FY 2013 Plans:*** N/A ***FY 2014 Plans:*** - Develop and refine operational concepts for Missile Defense Agency space systems, sensors, data, services, and networks - Demonstrate connectivity/integration of space sensor layer data for Ballistic Missile Defense System (BMDS) and external users (Space Situational Awareness) - Conduct experiments to test and anchor space systems algorithm validity for BMDS - Demonstrate integration of BMDS space capabilities with other defense and national security systems			
Accomplishments/Planned Programs Subtotals	85.224	48.708	42.587

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	67.921	79.975	309.203		309.203	212.715	220.185	220.732	220.373	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	222.696	347.012	315.183		315.183	340.899	334.705	341.811	278.313	Continuing	Continuing
• 0603888C: *Ballistic Missile Defense Test & Targets*	88.162	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	88.162
• 0603895C: *Ballistic Missile Defense System Space Programs*	7.940	6.912	6.515		6.515	6.522	7.128	7.289	7.378	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	356.900	366.552	418.355		418.355	433.470	454.452	461.991	451.947	Continuing	Continuing
• 0603902C: *Next Generation Aegis Missile (Standard Missile-3 Block IIB (SM-3 IIB))*	28.456	224.077	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	58.970	63.043	52.131		52.131	59.893	52.005	61.751	53.511	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	484.838	454.400	375.866		375.866	436.063	378.063	400.157	451.776	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	497.550	435.747	495.257		495.257	516.092	406.611	481.527	463.660	Continuing	Continuing
• 0604883C: *Precision Tracking Space System*	75.097	297.375	0.000		0.000	0.000	0.000	0.000	0.000	0.000	372.472
• 0604886C: *Advanced Remote Sensor Technology (ARST)*	0.000	58.742	0.000		0.000	0.000	0.000	0.000	0.000	0.000	58.742

Remarks

D. Acquisition Strategy

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

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Missile Defense Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Capability Based R&D	SS/CPAF	NGAS:Redondo Beach, CA	444.353	49.736		35.491	Oct 2012	31.069	Oct 2013	-		31.069	Continuing	Continuing	Continuing
Demonstration Satellites - STSS Support to Missile Defense Space Development Center (MDSDC)	C/CPAF	MDIOC:CO	4.990	9.970		0.000		1.187	Oct 2013	-		1.187	Continuing	Continuing	Continuing
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace:Los Angeles AFB CA, Schriever AFB CO	43.614	2.308		3.429	Oct 2012	2.188	Oct 2013	-		2.188	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Mission Planning/Data Reduction	MIPR	MIT/LL:MA	3.294	0.408		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Prime Contract	SS/CPAF	Orbital Sciences Corporation:AZ	8.391	2.950		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Space Operations Development - Advanced Space Operations Development	Various	Various:Various	0.000	0.000		0.000		1.000	Oct 2013	-		1.000	Continuing	Continuing	Continuing
		Subtotal	504.642	65.372		38.920		35.444		0.000		35.444			

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	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - Contract Support Services (CSS)	C/BPA	MDA:AL	11.184	1.305		1.328	Oct 2012	1.245	Oct 2013	-		1.245	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Missile Defense Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites - MDA Civilian	Allot	MDA:AL	5.044	1.233		2.314	Oct 2012	1.732	Oct 2013	-		1.732	Continuing	Continuing	Continuing
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC:CA	9.547	0.607		2.400	Oct 2012	1.201	Oct 2013	-		1.201	Continuing	Continuing	Continuing
Demonstration Satellites - Program Mission Support	Various	SMC:CA	18.832	1.216		0.727	Oct 2012	0.409	Oct 2013	-		0.409	Continuing	Continuing	Continuing
		Subtotal	44.607	4.361		6.769		4.587		0.000		4.587			

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	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 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	9.603	7.317		3.019	Oct 2012	2.556	Oct 2013	-		2.556	Continuing	Continuing	Continuing
BMDS Level Testing - STSS Demo Analysis Center (SDAC) - Government Verification & Validation (V&V)	MIPR	Various:Various	1.845	0.287		0.000		0.000		-		0.000	0.000	2.132	3.254
BMDS Level Testing - Systems Engineering	FFRDC	Aerospace:Los Angeles AFB CA	16.142	5.368		0.000		0.000		-		0.000	0.000	21.510	21.464
Element Integration and Testing - Ground Support for Acquisition Line-of-Sight Calibration	MIPR	AFRL:Kirtland AFB NM	1.963	0.103		0.000		0.000		-		0.000	0.000	2.066	1.963

Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Element Integration and Testing - STSS Capability Based R&D-Test Support	SS/CPAF	NGAS:Redondo Beach, CA	18.246	2.416		0.000		0.000		-		0.000	0.000	20.662	20.642
		Subtotal	47.799	15.491		3.019		2.556		0.000		2.556			

Remarks

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

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000

Remarks

N/A

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	597.048	85.224		48.708		42.587		0.000		42.587			

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 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

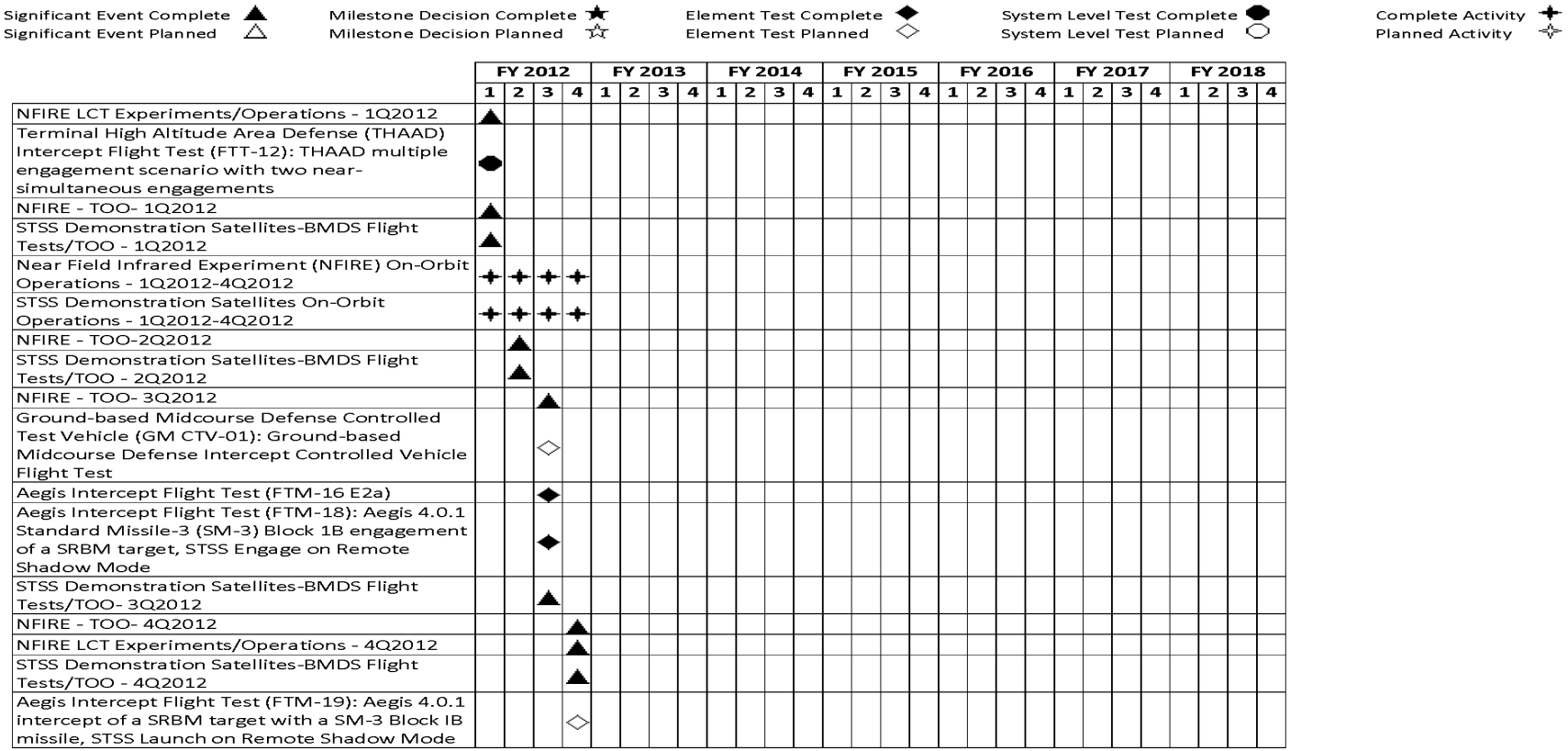
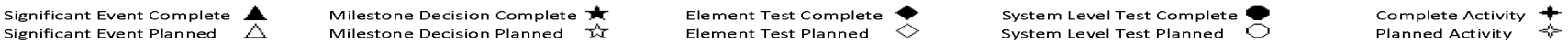


Exhibit R-4, RDT&E Schedule Profile: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** 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 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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
Ground-based Midcourse Defense Intercept Flight Test (FTG-06b): Ground-based Midcourse Defense intercept of IRBM target based on results from FTG-06a				⬭																								
Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTI-01): BMDS Developmental Flight Test against SRBM and MRBM targets					⬬																							
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2013					▲																							
STSS Demonstration Satellites On-Orbit Operations - 1Q2013-4Q2013					✧	✧	✧	✧																				
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2013						△																						
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2013							△																					
Aegis Intercept Flight Test (FTM-22E2): Aegis 4.0.1 Standard Missile-3 (SM-3) Block IB intercept of a SRBM							◇																					
Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTO-01): BMDS Operational Flight Test against Short-Range and Medium-Range Ballistic Missile (MRBM) targets							⬭																					
Aegis Simulated Intercept Flight Test (FTM-21E2): Aegis 4.0.1 (two ships) Standard Missile-3 (SM-3) Block IB simulated engagement using digital engagement coordination of three SRBMs							◇																					
Aegis Intercept Flight Test (FTM-21E3): Aegis 4.0.1 SM-3 Block IB salvo engagement of Short Range Ballistic Missile (SRBM)							◇																					
Aegis Simulated Intercept Flight Test (FTM-21E1): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three SRBMs							◇																					

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*



	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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/TOO- 4Q2013								△																				
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2014									△																			
Aegis Flight Test (SCDPTV-01): Demonstrate safe launch and egress from canister and VLS of SM-3 Blk IIA									△																			
Aegis Simulated Intercept Flight Test (FTX-20): Aegis 4.0.1 SM-3 Block IB simulated engagement of an advanced technology MRBM									△																			
STSS Demonstration Satellites On-Orbit Operations - 1Q2014-4Q2014									✧	✧	✧	✧																
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2014										△																		
Aegis Simulated Intercept Flight Test (FTX-18): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three SRBMs										△																		
Aegis Intercept Flight Test (FTX-19): Aegis 4.0.1 SM-3 Block IB salvo engagement of SRBM										△																		
Ground-based Midcourse Defense Controlled Test Vehicle (GM CTV-02): GM 3-stage GBI with CE-II EKV demonstration flight test										△																		
Aegis Flight Test (FTM-23): Aegis BMD 5.0 SM-3 Blk IB engagement of a MRBM with remote engagements authorized											△																	
Aegis Intercept Flight Test (FTM-23): Aegis 5.0 intercept of MRBM target with SM-3 Block IB missile											△																	
Aegis Ashore Flight Test (AA CTV-01)											△																	
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2014											△																	
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2014												△																

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** 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 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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
Ground-based Midcourse Defense Intercept Flight Test (FTG-09): GM 3-stage GBI with CE-II EKV engagement of an IRBM with countermeasures												△																
Aegis Flight Test, Standard Missile (FTM-24): Aegis BMD 4.0.1 SM-3 Blk IB engagement of an MRBM												△																
Aegis Flight Test (FTM-25): Aegis BMD 5.0 CU SM-3 Blk IB multiple simultaneous engagement of two SRBMs in a raid scenario													△															
Aegis Flight Test (FTX-21): Aegis BMD 5.0 CU SBT-1 simulated engagement of a MRBM													△															
Aegis Ashore Intercept Test Flight (AA FTM-02)													△															
Aegis Flight Test (FTM-26): Aegis BMD 5.0 CU SM-3 Blk IB engagement of a SRBM with countermeasures													△															
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015													△															
Aegis Ashore Intercept Flight Test (AA FTM-01)													△															
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015													✧	✧	✧	✧												
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015														△														
Aegis SM-3 Cooperative Development Flight Test (SCDCTV-01): Aegis BMD 5.1 SM-3 Blk IIA controlled test vehicle performance test														△														
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015															△													
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-11a): THAAD exo-atmospheric engagement of a complex separating SRBM															△													
Ground-based Midcourse Defense Flight Test (FTX-22): GM simulated engagement of an IRBM with countermeasures (Cobra Dane)															△													

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** 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 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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
Aegis Flight Test (FTM-27): Aegis BMD 5.0 CU SBT-1 salvo engagement of a MRBM															△													
Ground-based Midcourse Defense Intercept Flight Test (FTG-11 Salvo): GM 3-stage GBI EKV CE-I/II salvo engagement of an ICBM																△												
Aegis/THAAD/Patriot Multiple Engagement Flight Test (FTO-02): BMDS operational flight test engagement of SRBM, MRBM, and IRBM threats using regional/theater BMDS architecture																△												
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015																△												
Aegis SM-3 Cooperative Development Flight Test (SCDCTV-02): Aegis BMD 5.1 SM-3 Blk IIA controlled test vehicle performance test																△												
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2016																	△											
STSS Demonstration Satellites Operations - 1Q2016-4Q2016																	✧	✧	✧	✧								
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2016																		△										
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016																			△									
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016																				△								
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017																					△							
STSS Demonstration Satellites Operations - 1Q2017-4Q2017																					✧	✧	✧	✧				
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017																						△						
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2017																							△					
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2017																								△				
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018																									△			

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** 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 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	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 Operations - 1Q2018-4Q2018																									✧	✧	✧	✧
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2018																										△		
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2018																											△	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2018																												△

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Events	Quarter	Year	Quarter	Year
NFIRE LCT Experiments/Operations - 1Q2012	1	2012	1	2012
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-12): THAAD multiple engagement scenario with two near-simultaneous engagements	1	2012	1	2012
NFIRE - TOO- 1Q2012	1	2012	1	2012
STSS Demonstration Satellites-BMDS Flight Tests/TOO - 1Q2012	1	2012	1	2012
Near Field Infrared Experiment (NFIRE) On-Orbit Operations - 1Q2012-4Q2012	1	2012	4	2012
STSS Demonstration Satellites On-Orbit Operations - 1Q2012-4Q2012	1	2012	4	2012
NFIRE - TOO-2Q2012	2	2012	2	2012
STSS Demonstration Satellites-BMDS Flight Tests/TOO - 2Q2012	2	2012	2	2012
NFIRE - TOO- 3Q2012	3	2012	3	2012
Ground-based Midcourse Defense Controlled Test Vehicle (GM CTV-01): Ground-based Midcourse Defense Intercept Controlled Vehicle Flight Test	3	2012	3	2012
Aegis Intercept Flight Test (FTM-16 E2a)	3	2012	3	2012
Aegis Intercept Flight Test (FTM-18): Aegis 4.0.1 Standard Missile-3 (SM-3) Block 1B engagement of a SRBM target, STSS Engage on Remote Shadow Mode	3	2012	3	2012
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2012	3	2012	3	2012
NFIRE - TOO- 4Q2012	4	2012	4	2012
NFIRE LCT Experiments/Operations - 4Q2012	4	2012	4	2012
STSS Demonstration Satellites-BMDS Flight Tests/TOO - 4Q2012	4	2012	4	2012
Aegis Intercept Flight Test (FTM-19): Aegis 4.0.1 intercept of a SRBM target with a SM-3 Block IB missile, STSS Launch on Remote Shadow Mode	4	2012	4	2012
Ground-based Midcourse Defense Intercept Flight Test (FTG-06b): Ground-based Midcourse Defense intercept of IRBM target based on results from FTG-06a	4	2012	4	2012

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *Space Tracking and Surveillance System*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTI-01): BMDS Developmental Flight Test against SRBM and MRBM targets	1	2013	1	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2013	1	2013	1	2013
STSS Demonstration Satellites On-Orbit Operations - 1Q2013-4Q2013	1	2013	4	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2013	2	2013	2	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2013	3	2013	3	2013
Aegis Intercept Flight Test (FTM-22E2): Aegis 4.0.1 Standard Missile-3 (SM-3) Block IB intercept of a SRBM	3	2013	3	2013
Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTO-01): BMDS Operational Flight Test against Short-Range and Medium-Range Ballistic Missile (MRBM) targets	3	2013	3	2013
Aegis Simulated Intercept Flight Test (FTM-21E2): Aegis 4.0.1 (two ships) Standard Missile-3 (SM-3) Block IB simulated engagement using digital engagement coordination of three SRBMs	3	2013	3	2013
Aegis Intercept Flight Test (FTM-21E3): Aegis 4.0.1 SM-3 Block IB salvo engagement of Short Range Ballistic Missile (SRBM)	3	2013	3	2013
Aegis Simulated Intercept Flight Test (FTM-21E1): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three SRBMs	3	2013	3	2013
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2013	4	2013	4	2013
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2014	1	2014	1	2014
Aegis Flight Test (SCDPTV-01): Demonstrate safe launch and egress from canister and VLS of SM-3 Blk IIA	1	2014	1	2014
Aegis Simulated Intercept Flight Test (FTX-20): Aegis 4.0.1 SM-3 Block IB simulated engagement of an advanced technology MRBM	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

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	Quarter	Year	Quarter	Year
Aegis Simulated Intercept Flight Test (FTX-18): Aegis 4.0.1 (two ships) SM-3 Block IB simulated engagement using digital engagement coordination of three SRBMs	2	2014	2	2014
Aegis Intercept Flight Test (FTX-19): Aegis 4.0.1 SM-3 Block IB salvo engagement of SRBM	2	2014	2	2014
Ground-based Midcourse Defense Controlled Test Vehicle (GM CTV-02): GM 3-stage GBI with CE-II EKV demonstration flight test	2	2014	2	2014
Aegis Flight Test (FTM-23): Aegis BMD 5.0 SM-3 Blk IB engagement of a MRBM with remote engagements authorized	3	2014	3	2014
Aegis Intercept Flight Test (FTM-23): Aegis 5.0 intercept of MRBM target with SM-3 Block IB missile	3	2014	3	2014
Aegis Ashore Flight Test (AA CTV-01)	3	2014	3	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
Ground-based Midcourse Defense Intercept Flight Test (FTG-09): GM 3-stage GBI with CE-II EKV engagement of an IRBM with countermeasures	4	2014	4	2014
Aegis Flight Test, Standard Missile (FTM-24): Aegis BMD 4.0.1 SM-3 Blk IB engagement of an MRBM	4	2014	4	2014
Aegis Flight Test (FTM-25): Aegis BMD 5.0 CU SM-3 Blk IB multiple simultaneous engagement of two SRBMs in a raid scenario	1	2015	1	2015
Aegis Flight Test (FTX-21): Aegis BMD 5.0 CU SBT-1 simulated engagement of a MRBM	1	2015	1	2015
Aegis Ashore Intercept Test Flight (AA FTM-02)	1	2015	1	2015
Aegis Flight Test (FTM-26): Aegis BMD 5.0 CU SM-3 Blk IB engagement of a SRBM with countermeasures	1	2015	1	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	1	2015	1	2015
Aegis Ashore Intercept Flight Test (AA FTM-01)	1	2015	1	2015
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	1	2015	4	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	Quarter	Year	Quarter	Year
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
Aegis SM-3 Cooperative Development Flight Test (SCDCTV-01): Aegis BMD 5.1 SM-3 Blk IIA controlled test vehicle performance test	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-11a): THAAD exo-atmospheric engagement of a complex separating SRBM	3	2015	3	2015
Ground-based Midcourse Defense Flight Test (FTX-22): GM simulated engagement of an IRBM with countermeasures (Cobra Dane)	3	2015	3	2015
Aegis Flight Test (FTM-27): Aegis BMD 5.0 CU SBT-1 salvo engagement of a MRBM	3	2015	3	2015
Ground-based Midcourse Defense Intercept Flight Test (FTG-11 Salvo): GM 3-stage GBI EKV CE-I/II salvo engagement of an ICBM	4	2015	4	2015
Aegis/THAAD/Patriot Multiple Engagement Flight Test (FTO-02): BMDS operational flight test engagement of SRBM, MRBM, and IRBM threats using regional/theater BMDS architecture	4	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	4	2015	4	2015
Aegis SM-3 Cooperative Development Flight Test (SCDCTV-02): Aegis BMD 5.1 SM-3 Blk IIA controlled test vehicle performance test	4	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2016	1	2016	1	2016
STSS Demonstration Satellites 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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016	4	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017	1	2017	1	2017
STSS Demonstration Satellites Operations - 1Q2017-4Q2017	1	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017	2	2017	2	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2017	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2017	4	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018	1	2018	1	2018
STSS Demonstration Satellites 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

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD40: *Program-Wide Support*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	-	1.054	2.605	2.360	-	2.360	1.557	1.731	1.948	1.935	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

Note

N/A

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Title: Program Wide Support	1.054	2.605	2.360
Articles:	0	0	0
Description: N/A			
FY 2012 Accomplishments: See paragraph A: Mission Description and Budget Item Justification			
FY 2013 Plans: See paragraph A: Mission Description and Budget Item Justification			
FY 2014 Plans: See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	1.054	2.605	2.360

Exhibit R-2A, RDT&E Project Justification: PB 2014 Missile Defense Agency		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT 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 2014 Missile Defense Agency			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *Space Tracking and Surveillance System*	PROJECT MD40: *Program-Wide Support*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 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	0.000		0.767	Mar 2013	0.516	Mar 2014	-		0.516	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	0.000	1.054		1.821	Mar 2013	1.827	Mar 2014	-		1.827	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPAF	Northrop Grumman:CO	0.000	0.000		0.017	Mar 2013	0.017	Mar 2014	-		0.017	Continuing	Continuing	Continuing
		Subtotal	0.000	1.054		2.605		2.360		0.000		2.360			

Remarks

N/A

	All Prior Years	FY 2012 Cost	FY 2012 Award Date	FY 2013 Cost	FY 2013 Award Date	FY 2014 Base Cost	FY 2014 Base Award Date	FY 2014 OCO Cost	FY 2014 OCO Award Date	FY 2014 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	1.054		2.605		2.360		0.000		2.360			

Remarks

N/A