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

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>
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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	1,043.739	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
MT04: <i>BMDS Test Program</i>	998.832	334.185	267.225	277.851	-	277.851	318.658	303.374	325.732	330.699	Continuing	Continuing
MC04: <i>Cyber Operations</i>	1.040	1.141	2.450	2.479	-	2.479	2.528	2.578	2.631	2.682	Continuing	Continuing
MD40: <i>Program Wide Support</i>	43.867	19.088	12.065	13.111	-	13.111	16.351	16.382	17.771	18.552	Continuing	Continuing

Program MDAP/MAIS Code: 362

Note

Increase of \$15.1 million from FY 2016 to FY 2017 is due to the addition of Integrated Master Test Plan flight test execution and logistics at Wake Island. In FY 2017, all Technology Maturation Initiatives (TMI) test costs to procure targets, BMDS level testing costs and costs related to the use of Aegis ships during these tests are budgeted for in Program Elements 0603915C, Ballistic Missile Defense Targets, 0603914C, Ballistic Missile Defense Test, and 0604878C, Aegis Ballistic Missile Defense Test. The transfer of costs in FY 2018 and out to the BMDS Targets and BMDS Test PEs will occur during the Program Budget Review 2018 build.

A. Mission Description and Budget Item Justification

MDA utilizes a disciplined system engineering process to develop and integrate the BMDS into an effective, layered defense against ballistic missiles of all ranges during all phases of flight. This process consists of the following steps: Plan, Define, Design, Build, Test and Verify, Assess, and Deliver BMDS Capability, followed by transfer of selected capabilities. The BMDS Test Program Element (PE) is responsible for testing that provides critical data to: determine validity of models and simulations used to verify and assess BMDS capabilities; validate that Elements and Components are properly designed, built, and integrated; and to provide confidence that the BMDS will perform as designed, and support system performance assessment for incremental capability delivery decisions. Results from the Test and Verify step provide feedback into the Plan, Define, and Design steps to identify areas for system improvements. Key to the systems engineering process is Modeling and Simulation (M&S), which reflects the integrated operational system's performance. Confidence in M&S is based on a comprehensive Verification, Validation, and Accreditation (VV&A) process. The BMDS Test Program, as documented in the IMTP, has a primary emphasis of increasing confidence in M&S, as well as providing the BMDS Operational Test Agency (OTA) Team with data to verify and assess BMDS capabilities and Critical Operational Issues. Lastly, as models are validated and accredited, MDA and the BMDS OTA Team will utilize these models to assess BMDS capabilities through a campaign of ground testing.

BMDS Test Program Functions include:

- Develop and implement MDA test policy, standards, tools, products, and processes to enable effective tests while balancing MDA and element programmatic needs
- Develop an IMTP that compiles all MDA test objectives, test schedules, and funding requirements from the year of execution through the Future Years Defense Program time period and beyond (through FY 2024).
- Provide, maintain, and develop common test resources and infrastructure required to execute tests in the MDA Test Program by leveraging element laboratories, ranges, executing agents, and functional expertise, as applicable
- Act as the single point of contact in MDA for all external ranges and common test resources

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- Collect, archive, and distribute all MDA test data/information
- Certify that test personnel are trained and equipped to conduct safe and effective tests
- Provide test personnel and support services to plan and execute tests
- Represent MDA as the single test authority to the test and evaluation community, international cooperative program representatives, and other organization representatives on test matters

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	366.302	274.323	298.390	-	298.390
Current President's Budget	354.414	281.740	293.441	-	293.441
Total Adjustments	-11.888	7.417	-4.949	-	-4.949
• Congressional General Reductions	0.000	-0.230			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	7.647			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-5.753	0.000			
• SBIR/STTR Transfer	-6.135	0.000			
• Other Adjustment	0.000	0.000	-4.949	-	-4.949

Change Summary Explanation

The FY 2017 decrease of \$4.9 million from PB 2016 reflects Agency-wide top line budget adjustments, including a transfer to MILCON for Wake Island test support facility.

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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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
MT04: <i>BMDS Test Program</i>	998.832	334.185	267.225	277.851	-	277.851	318.658	303.374	325.732	330.699	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

From FY 2015 forward, test support costs are captured in the Program Planning and Operations accomplishment. This change ensures the Flight & Ground Test accomplishments reflect the actions and costs captured in the Integrated Master Test Plan.

A. Mission Description and Budget Item Justification

The Test Program provides consolidated MDA capabilities and resources to support the management and execution of BMDS and Element-level testing.

The MDA Test Program is responsible for all BMDS testing and relies on BMDS Systems Engineering to provide the system test objectives that define the test architecture by developing, updating, coordinating, and assessing the IMTP. The MDA Test Program plans and executes BMDS test events and develops the necessary test policy, test plans, and test infrastructure to conduct an effective test program. The goals of this budget project are to sustain and improve a robust testing program and to enhance M&S efforts to provide, in conjunction with flight and ground testing, confidence to the Combatant Commanders that the missile defense system works.

Activities are grouped into five major areas: 1) Program Planning and Operations; 2) Flight Test; 3) Ground Test; 4) Test Resources; and 5) Engineering Test Analysis.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
Title: Program Planning and Operations	109.986	98.160	97.780
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments:			
- Developed, updated, coordinated and delivered the Integrated Master Test Plan (IMTP) including MDA Test Baseline development and management, which is coordinated with Missile Defense Agency (MDA) and External stakeholders and provides an affordable and executable test plan to meet Warfighter needs and National Security commitments.			
- Coordinated the IMTP Special Access Programs (SAP) Annex Appendix D with respect to changes to SAP Program Test Baseline and synchronized with the collateral IMTP.			
- Developed and implemented the BMDS Joint Engineering and Test IMTP Development document. This instruction revised the IMTP development process to improve technical rigor for engineering requirements, design, and resourcing activities; streamlined semiannual publication into a smaller annual document; and synchronized a 4-phased development process with the DoD budget cycle. Initiated process in a previous IMTP version.			

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Developed and coordinated the IMTP Decision Memorandum in support of the Program Objective Memorandum 17 (POM 17) submission to OSD. - Managed the approved test baseline by assessing all proposed changes to the Ballistic Missile Defense System (BMDS) Test Schedule and Test Configurations for each BMDS test event identified in the IMTP. - Executed ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, digital assessment, and international testing. - Served as the Tri-Chair of a working group with the BMDS Operational Test Agency (OTA) and the MDA Engineering Directorate (MDA/DE) to identify and resolve issues impacting the operational test communities' ability to assess the Operational Readiness of the BMDS. - Established authority and maintained configuration control of the test baseline via the Test Baseline Working Group. - Supported the Developmental Baseline Reviews and the annual BMDS Accountability Reviews to assess baseline execution risk, and verify BMDS components are consistent with the approved test baseline. - Executed duties as the Test & Evaluation Standing Committee (TESC) Executive Secretary. Provided strategic technical planning support for the TESC. - Developed and implemented test policy, standards, directives, and procedures for creating unified BMD test processes. - Executed Flight Test Design Analysis (FTDA) processes ensuring proper pre-mission analysis and test designs are safe and sufficient to meet test objectives. - Provided analytical capability for Flight and Ground test planning to include: test design feasibility assessments, truth data and sensor analysis, truth data requirements documentation and data packages; flight safety, telemetry link margin, collision avoidance, and pre- and post-test trajectory analyses. Developed, maintained, and integrated test tools to support pre- and post-test flight analysis and ground test design/analysis, truth data, and on-site Truth Quick-Look product development. - Chaired a working group to define Flight Test pre-mission analysis input products/models including chuff and Prime Item Development (PID) scenes for new targets. - Updated and maintained the classified Test Resource Mission Planning-Tool (Classified), TRMP-T(C) database. - Coordinated budget planning and execution activities as well as manpower activities. - Inspired professional excellence and a diverse and professional workforce. - Developed, maintained, and integrated test tools to support Truth Data Requirements Documents, Truth Data Packages, Integrated Data Management Plans (IDMPs), Data Handling Plans (DHPs), Information Assurance (IA) documentation, on-site truth-quick-look product development, and data planning and management; library operations; test planning and resource de-confliction; deployment process; infrastructure requirements process; test operations support; and pre- and post-test analysis. - Managed the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services. <p>FY 2016 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<p>The decrease of \$11.8 million from FY 2015 to FY 2016 is the result of Target Launch personnel moving to BMD Targets Program Element (0603915C).</p> <ul style="list-style-type: none"> -Develop, update, and coordinate the Integrated Master Test Plan (IMTP), including MDA Test Baseline development, management and affordability. -Serve as the MDA Test Interface/Liaison with the Director, Operational Test and Evaluation (DOT&E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD(DT&E)); the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD); and the Operational Test Agency (OTA). -Provide strategic technical planning support for the Test and Evaluation Standing Committee (TESC). -Provide the Director of Test analytical capability for Flight and Ground test planning to include: test design feasibility assessments; Truth analysis; flight safety, telemetry link margin, collision avoidance, pre- and post-test trajectory and truth sensor analysis; Truth data requirements documents and data packages, and Signatures Working Group activities. -Support Integration Synchronization Group (ISG) and the Program Change Board (PCB), establish authority and maintain configuration control of the test baseline via the Test Baseline Working Group. -Update and maintain the classified Test Resources Mission Planning Tool (TRMP-T) data base. -Develop, maintain, and integrate test tools to support Truth Data Requirements Documents, Truth Data Packages, on-site Truth Quick-Look product development, pre- and post-test analysis test planning, and resource de-confliction; Integrated Data Management Plans (IDMPs), Data Handling Plans (DHPs), Information Assurance (IA) documentation, data planning and management, library operations, deployment process; infrastructure requirements process; and test operations support. -Manage the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services. -Utilize the Program Integration Center for analytical needs in support of Flight and Ground Test Activities. <p>FY 2017 Plans: The decrease of \$380 Thousand from FY 2016 to FY 2017 is the result of the realization of planned efficiencies.</p> <ul style="list-style-type: none"> - Develop, update, and coordinate the IMTP, including MDA Test Baseline development, management and affordability. - Execute Flight Test Design Analysis ensuring test designs are safe and sufficient to meet test objectives. - Execute ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, digital assessment, and international testing. - Update and maintain the classified Test Resources Mission Planning Tool (TRMP-T) data base to include integration of MDA and external stakeholders to synchronize common data products across stakeholder domains. - Coordinate budget planning and execution activities as well as manpower activities for test planning. - Provide strategic technical planning support for the Test and Evaluation Standing Committee (TESC). 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Serve as the MDA Test Interface/Liaison with the Director, Operational Test and Evaluation (DOT&E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD (DT&E)); the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD); and the BMDS Operational Test Agency (OTA). - Establish authority and maintain configuration control of the test baseline. - Review BMDS component programs' content on a quarterly basis to ensure consistency with the approved IMTP. - Serve as a voting member of the Failure Review, Analysis, and Corrective Action System (FRACAS) board to establish requirements for identifying, tracking, reporting, modifying, and closing BMDS Discrepancy Reports (BDRs). - Provide the Director for Test analytical capability for Flight and Ground test planning to include: test design feasibility assessments; Truth analysis; flight safety, telemetry link margin, collision avoidance, pre- and post-test trajectory and truth sensor analysis; Truth data requirements documents and data packages, and Signatures Working Group activities. - Develop, maintain, and integrate test tools to support flight and ground test design/analysis, Truth Data Requirements Documents, Truth Data Packages, on-site Truth Quick-Look product development, test planning and resource de-confliction, and pre- and post-test analysis. - Develop, maintain, and integrate test tools to support Truth Data Requirements Documents, Truth Data Packages, on-site Truth Quick-Look product development, pre- and post-test analysis test planning, and resource de-confliction; Integrated Data Management Plans (IDMPs), Data Handling Plans (DHPs), Information Assurance (IA) documentation, data planning and management, library operations, deployment process; infrastructure requirements process; and test operations support. - Manage the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services. - Utilize the Program Integration Center for analytical needs in support of Flight and Ground Test Activities. 				
<p>Title: Flight Test</p> <p align="right">Articles:</p> <p>Description: The Flight Test Execution program solely reflects the Integrated Master Test Plan (IMTP) cost model.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Successfully conducted BMDS Flight Tests FTX-20, FTM-25, FTX-19, SCD CTV-01, Aegis Multi-Mission Warfare (4 intercept tests), and DST-3 (3 intercept tests). -- Completed test planning for two operational tests (FTO-02 E1 and FTO-02 E2). -- A campaign of operational flight tests, a demonstration of MDA's European Phased Adaptive Approach (EPAA) for Missile Defense Phase 2 architecture. This campaign demonstrated system functionality of Aegis Ashore, AN/TPY-2 in the forward based mode supported by a command and control architecture consisting of Space Based Infrared System/Defense Support Program (SBIRS/DSP) and C2BMC. Additionally, uniformed personnel operated the system under operationally realistic conditions. 		54.665 -	2.697 -	23.686 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<p>-- Planned to conduct FTO-02 Event 1 (E1), a demonstration the of Agency's integrated regional/theater ballistic missile defense using an operationally realistic scenario where uniformed personnel normally assigned to the Aegis BMD systems in a real-world situation will execute the test. FTO-02 E1 will demonstrate system functionality of Aegis BMD (Aegis-at-Sea) and will be supported by a sensor command and control architecture consisting of SBIRS and a C2BMC suite. FTO-02 E1 execution will support the EPAA Phase 2 and will be the first operational test of Aegis Ashore with Aegis Baseline (BL) 9.B1 (BMD) 5.0 Capability Upgrade (CU)) and SM-3 Blk IB Threat Upgrade (TU) engagement of an air-launched MRBM target.</p> <p>--FTO-02 E1 was a "no test" due to a target extraction failure that prevented target ignition. The test was re-planned as FTO-02 E1a and is planned for execution in FY16 due to a failure review board (FRB) for the IRBM target.</p> <p>--FTT-18 was delayed for execution in FY 2016.</p> <p>- Planned to conduct FTO-02 Event 2 (E2), a demonstration of the Agency's integrated regional missile defenses using an operationally realistic scenario where uniformed personnel normally assigned to the Aegis BMD and THAAD systems in a real-world situation will execute the test. FTO-02 E2 will demonstrate system functionality of Aegis BMD (Aegis-at-Sea), and THAAD supported by a sensor command and control architecture consisting of SBIRS/DSP and a C2BMC suite.</p> <p>- FTO-02 E2 was initially delayed due to weather from 4QFY15 into 1QFY16, but then was characterized as a "no test" due to a target extraction deployment malfunction. The test was re-planned as FTO-02 E2a and successfully executed on 1 November 2015.</p> <p>- Completed test planning for BMDS Flight Test events as shown in Exhibit R-4 Schedule, including FTO-02 E1a, FTO-02 E2a, FTT-18, AST-15, and ASD-15.</p> <p>- Developed flight test training requirements for Test Directors and other console operators.</p> <p>- Coordinated and maintained execution support requirements with all stakeholders.</p> <p>- Identified mission risks, and implemented mitigation practices as required to ensure safe & successful test outcomes.</p> <p>- Provided Failure Response Team and ensured implementation of response plan. Captured lessons learned for process improvement.</p> <p>- Trained test personnel and maintained training records for all test personnel.</p> <p>- Trained and resourced System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all four test event phases for System and Element flight test.</p> <p>FY 2016 Plans: The decrease of \$51.9 million from FY 2015 to FY 2016 is the result of funding transferred to the BMD Targets Program Element 06038915C, for Target Launch Operations.</p> <p>- Completed planning and successfully executed Aegis BMD At-Sea Demonstration (ASD)-15 during 1QFY 2016. A complex and realistic multinational events focused on improving our Maritime Integrated Air and Missile Defense capability.</p>			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Completed planning and successfully executed FTO-02 Event 2 alpha (E2a) during 1QFY 2016. FTO-02 E2a demonstrated system functionality of air and missile defense of Aegis BMD (Aegis-at-Sea) and THAAD supported by a sensor command and control architecture consisting of SBIRS/DSP and a C2BMC suite. It was an operational test of the regional/theater architecture. - Completed planning and successfully executed FTO-02 Event 1 alpha (E1a) during 1QFY 2016. FTO-02 E1a demonstrated system functionality of Aegis Ashore supported by a sensor command and control architecture consisting of SBIRS and a C2BMC suite. This test included the successful execution of a Controlled Test Vehicle (AA CTV-02) performance test of the SM-3 IB Threat Upgrade (TU) missile. FTO-02 E1a execution supports the EPAA Phase 2 and was the first operational test of Aegis Ashore Baseline (BL) 9.B1 5.0 Capability Upgrade (CU) and SM-3 Blk IB TU engagement of an air-launched MRBM target. - Completed planning and successfully executed SM-3 Cooperative Development (SCD) with Japan, Controlled Test Vehicle (CTV)-02, an Aegis BMD BL 9.C2 (5.1) and a SM-3 Blk IIA missile performance test (Missile Only) during 1QFY 2016. - Complete planning for successful execution of SM CTV-01/-02, an Aegis BMD using 3.6.3 controlled test vehicle (CTV) performance test (Interceptor only) firing of a SM-3 Blk IB TU missile supporting SM-3 Blk IB production decision. - Complete planning for successful execution of FTT-18, a THAAD (TH) 2.7 demonstrating an engagement firing against an Intermediate Range Ballistic Missile (IRBM). FTT-18 was planned for execution in 1QFY16. However, due to range and resource availability, the mission was not executed. Options are under review to reschedule this test in the FY 2017/2018 timeframe. - Complete planning for successful execution of GM CTV-02+, a Ground-Based Midcourse Defense (GMD) 3-stage CE-II interceptor characterization test with an air-launched Intermediate Range Ballistic Missile (IRBM) with countermeasures. - Complete planning for successful execution of FTX-21, an Aegis BMD BL 9.C1 (5.0 CU) SM-6 Dual I missile simulated engagement of a Medium Range Ballistic Missile (MRBM). - Complete planning for successful execution of SFTM-01, the first Aegis BMD BL 9.C2 (5.1) SM-3 Blk IIA missile engagement of a Medium Range Ballistic Missile (MRBM). - Complete planning and defer execution of FTM-27 until 1QFY 2017, the first Aegis BMD BL 9.C1 (5.0 CU) SM-6 salvo (2) missile engagement of a Medium Range Ballistic Missile (MRBM). - Complete planning for successful execution of SFTM-02, the second Aegis BMD BL 9.C2 (5.1) SM-3 Blk IIA missile engagement of a Medium Range Ballistic Missile (MRBM). - Complete planning for 1Q FY 2017 execution of FTG-15, a Ground-Based Midcourse Defense (GMD) 3-stage Consolidated Booster Avionics Upgrade/Capability 2 Enhancement-II CBAU/C2 CE-II Blk I EKV Ground-Based Interceptor engagement of the first Intercontinental Ballistic Missile (ICBM) range target with countermeasures - Complete planning and defer execution of FEV-01 until 4QFY 2017, a demonstration of Launch on Remote objective with Aegis BMD engaging a MRBM. - Complete planning and defer execution of FTT-15 until 2QFY 2017, a THAAD (TH) 3.0.0 endo-atmospheric engagement of a MRBM with countermeasures. - Develop flight test training requirements for Test Directors and other console operators. - Identify mission risks, and implement mitigation practices as required to ensure safe & successful test outcomes. 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Provide Failure Response Team and ensures implementation of response plan. Captures lessons learned for process improvement. - Train test personnel and track/maintain training records for all test personnel. - Complete test planning for BMDS Flight Test events as shown in Exhibit R-4 Schedule. - Identify and execute focused investments in the BMDS test infrastructure. - Conduct mission planning and range coordination activities; provide communications security equipment and management for BMDS Flight Test events as shown in Exhibit R-4 Schedule. - Train and resource System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all four test event phases for System and Element flight test and contingency operations. - Identify, monitor and develop burn down plans for target system mission risks for all FY 2016 BMDS missions as defined in the IMTP. <p>FY 2017 Plans: The increase of \$20.9 million from FY 2016 to FY 2017 is the result of identification of logistical support requirements to support testing at Wake Island.</p> <ul style="list-style-type: none"> - Complete planning for successful execution of FTG-15, a Ground-Based Midcourse Defense (GMD) 3-stage Consolidated Booster Avionics Upgrade/Capability 2 Enhancement-II CBAU/C2 CE-II Blk I EKV Ground-Based Interceptor engagement of an Intercontinental Ballistic Missile (ICBM). - Complete planning for successful execution of SFTM-02, an Aegis BMD BL 9.C2 (5.1) SM-3 Blk IIA missile engagement of a Medium Range Ballistic Missile (MRBM). - Complete planning for successful execution of FTM-27, the first Aegis BMD BL 9.C1 (5.0 CU) SM-6 salvo (2) missile engagement of a MRBM. - Complete planning and successfully execute FEV-01, a demonstration of Launch on Remote objective with Aegis BMD engaging a MRBM. - Complete planning and successfully execute FTT-18, a Terminal High Altitude Area Defense (THAAD) 2.7 demonstrating an engagement firing against an Intermediate Range Ballistic Missile (IRBM). - Complete planning and successfully execute FTT-15, a Terminal High Altitude Area Defense (THAAD) TH 3.0.0 endo-atmospheric engagement of a MRBM. - Complete planning and successfully execute FTX-24, an Aegis BL 9.C2 simulated engagement of a separating Short Range ballistic Missile (SRBM). - Complete planning for successful execution of FTM-24, Aegis BL 9.C1 SM-3 Blk IB Threat Upgrade (TU) engagement of a MRBM. 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Complete planning for successful execution of FTM-29 in 1QFY2018, an Aegis BL 9.C2 SM-3 BIK IIA engagement of an Intermediate Range Ballistic Missile (IRBM) using engage on remote with AN/TPY-2 (FBM). - Complete planning for successful execution of FTG-11 in 1QFY 2018, a salvo engagement of two Ground-Based Midcourse Defense (GMD) 3-stage Heritage GBIs with CE-I and CE-II EKV's against an ICBM. - Provide logistical support packages at Wake Island for FTG-15, FTM-29, and FTG-11. - Develop flight test training requirements for Test Directors and other console operators. - Identify mission risks, and implement mitigation practices as required to ensure safe & successful test outcomes. - Provide Failure Response Team and ensure implementation of response plan. Capture lessons learned for process improvement. - Train test personnel and track/maintain training records for all test personnel. - Complete test planning for BMDS Flight Test events as shown in Exhibit R-4 Schedule. - Identify and execute focused investments in the BMDS test infrastructure. - Conduct mission planning and range coordination activities; provide communications security equipment and management for BMDS Flight Test events as shown in Exhibit R-4 Schedule. - Train and resource System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all four test event phases for System and Element flight test and contingency operations. - Identify, monitor and develop burn down plans for target system mission risks for all FY 2017 BMDS missions as defined in the IMTP. 			
<p>Title: Ground Test</p> <p align="right">Articles:</p> <p>Description: The Ground Test Execution program solely reflects the Integrated Master Test Plan (IMTP) cost model.</p> <p>FY 2015 Accomplishments: Completed the following baselined Ground Tests reflected in the Integrated Master Test Plan (IMTP) cost model:</p> <ul style="list-style-type: none"> - GTD-04e Part 2 (BMDS Distributed Ground Test) - GTI-06 Part 1 (BMDS Integrated Ground Test) - GTI-06 Part 3 - FTO-02 Event 1 System Pre-mission Test (SPMT) - FTO-02 Event 2 SPMT - FTO-02 Event 1a SPMT <p>Supported the planning, integration and execution of the following Ground Test Events scheduled to complete in FY 2016:</p>	4.821 -	4.035 -	7.855 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
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<ul style="list-style-type: none"> - GTD-06 Part 1 - GTI-ISR (16) - GTI-06 Part 2 - CTV-02+ SPMT <p>Continued the following ongoing efforts listed under FY 2015 plans:</p> <ul style="list-style-type: none"> - Received GT-06 Campaign Re-plan approval in 1QFY2015 - Facilitated strategic planning of ground test campaigns in support of IMTP - Developed strategies for Ground Test International test execution - Updated IMTP cost model estimates with DOC for Non-MDA elements for inclusion in IMTP 17.0 - Provided input to MDA modeling and simulation development (e.g. Objective Simulation Framework) - Implemented Cyber testing in ground test events - Fostered the development of Cyber Test Plans and Strategies - Developed process improvement initiatives to include System Test Observation (STO), Executive Review Minutes, Lessons Learned and Test Execution Risk Management Standard Operating Procedures - Championed a GTI-07a Early Integration testing phase as a GTI-07a risk reduction initiative - Maintained and resourced a Ground Test Mission Director (MD) System Mission Manager (SMM) and Mission Test Director (MTD) manpower pool to lead Integrated Event Test Teams IAW BMDS Test CONOPs - Continued the development of training requirements for ground test MDs, SMMs and MTDs <p>FY 2016 Plans:</p> <p>The decrease of \$786 thousand from FY 2015 to FY 2016 is the result of a more efficient and stable Integrated Master Test Plan (IMTP) schedule.</p> <ul style="list-style-type: none"> - Complete the GT-06 campaign in support of the Technical Capability Declaration (TCD) of European Phased Adaptive Approach (EPAA) Phase II - Incorporate new cybersecurity testing requirements into the Ballistic Missile Defense System (BMDS) ground tests - Develop plan for implementation of cybersecurity testing objectives to include adversarial actors in the GT-07a campaign - Coordinate emerging requirements for ground test event planning, design, and execution - Support ground test strategic planning in development of the Integrated Master Test Plan - Work with international partners (to include NATO, Israel, etc.) to incorporate their testing requirements into the Department of Defense BMDS ground testing. Develop plans for mitigation of any Critical Program Information concerns as it relates to international testing. 			
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Complete hardware and software testing, truth drivers and framework integration, formal execution runs and/or official data collection in support of GTI-06 Part 2, GTI-ISR (Israeli) (16), GTD-06 Part 2 (BMDS Distributed Ground Test) and planning activities for GTI-07a and GTD-07a Part 1 - Maintain, train, and resource a Ground Test Mission Director, System Mission Manager, and Mission Test Director manpower pool to lead Integrated Event Test Teams IAW BMDS Test CONOPs - Execute BMDS Ground Tests as shown in Exhibit R-4 schedule - Ensure capabilities are tested within respective test venues <p>FY 2017 Plans: The increase of \$3.8 million from FY 2016 to FY 2017 is the result of increased ground test requirements, including SPMT.</p> <ul style="list-style-type: none"> - Continue to incorporate cybersecurity testing requirements into the BMDS ground tests. - Complete cybersecurity red team testing in GTI-07a (BMDS Integrated Ground Test) event. - Coordinate emerging requirements for ground test event planning, design, and execution. - Support ground test strategic planning in development of the IMTP. - Work with international partners (to include National Treaty Organization (NATO), Israel, etc.) to incorporate their testing requirements into the DoD BMDS ground testing. - Complete hardware and software testing, truth drivers and framework integration, formal execution runs and/or official data collection in support of GTI-07a and GTD-07a Part 1. Conduct planning activities for GTX-07b, GTI-07b, GTD-07b P2 and GTD-07b P1 - Maintain and resource a Ground Test Mission Director and System Mission Manager manpower pool to lead Integrated Event Test Teams in accordance with the BMDS Test CONOPs. - Execute BMDS Ground Tests as shown in Exhibit R-4 schedule. - Ensure capabilities are tested within appropriate test venues. 				
Title: Test Resources		137.769	135.496	120.725
		Articles:	-	-
Description: N/A				
FY 2015 Accomplishments:				
<ul style="list-style-type: none"> - Continued deferral of upgrades to the flight test instrumentation and development of hardware-in-the-loop (HWIL) equipment. - Continued deferral of tech refresh and upgrades to hardware-in-the-loop (HWIL) Labs and communication test assets - Continued deferral of non-critical maintenance and spares for hardware-in-the-loop (HWIL) Labs and communication test assets - Completed build-up of Wake Island infrastructure necessary to conduct FTO-02. 				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>o Completed communications network at Wake Island to support FTO-02 E2 (Wake Comm facility not built, but communication network established according to planned program)</p> <ul style="list-style-type: none"> - Performed Meck upgrades to support ICBM IMTP testing. All major Meck projects in support of ICBM IMTP testing have been completed. Several additional minor projects were identified and will be completed pending weather that allows safe travel to Meck and concrete to be poured. Remaining minor projects will not impact success of ICBM IMTP - Sea Based Systems (SBS) continued sustainment of test instrumentation ships, PACIFIC COLLECTOR and PACIFIC TRACKER, and associated telemetry and radar systems - SBS completion of the Mobile Launch Platform program termination and disposal of associated property to include ex-USS TRIPOLI and NARRAGANSETT - Procured, maintained, and managed test resource infrastructure and provided trained Test Resource Managers to integrate test resources into each test event for the Ballistic Missile Defense System (BMDS) Test Program. - Completed a Business Case Analysis to migrate Airborne Sensors to newer platforms - Took possession of the new 4.6M transportable C/X band antenna - Built and tested Sea Based Systems XTR-1 Main Radar Computer obsolescence replacement - Completed the Sea Based Systems XTR-1 Cooling System repair - Continued working on the XTR-1 operating system improvement (VxWorks to Linux) - Continued the Software and Hardware efforts to replace VxWorks-based subsystems with Linux-based subsystems - Continued to develop a BMDS SBIRS INC2 Test Support Capability (TSC) Lab at the MDIOC to support flight and distributed ground tests (GTDs/Fast Events) required for EPAA Phase II and deployment of 44 GBIs for homeland defense. - Developed a 2nd String BMDS SBIRS INC2 HWIL Lab at the Azusa, CA to support intergraded ground (GTI) test and System Per-Mission Tests (SPMT) required for EPAA Phase II and deployment of 44 GBIs for homeland defense. - Continued to work a Business Case Analysis (BCA) with DOI for a consolidated GT capability fostering operational improvements and potential relocation onto Redstone Arsenal. - Initiated Ground Test Working Groups (Continuous Integration Testing, Network System Upgrades) that assessed infrastructure improvements and potential new assets required to support the GT-07 and GT-08 Campaigns to address EPAA Phase 3. - Continued to support BMDS cybersecurity testing utilizing HWIL labs. - Continued deployment for Directorate of Test Support (DTSS) to provide cyber Host Based Security System (HBSS) for HWIL Labs and remote sites. - Continued to evolve the Advanced Research Center (ARC) ISTC-1/-2 asset based capabilities to enhance the facilitation and execution of BMDS Integration and Test increasing the volume of Development and Integration, Formal Event Early Integration, Fielded Asset Troubleshooting, and Formal Events. <p>FY 2016 Plans: The decrease of \$2.3 million from FY 2015 to FY 2016 results in continued realization of test efficiencies and upgrade deferrals.</p>			

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Procure, maintain, and manage test resource infrastructure and provide trained Test Resource Managers to integrate test resources into each test event for the Ballistic Missile Defense System (BMDS) Test Program. - Establish and maintain Agency test policies and test functional area organizational accountability, contracts, and budgets. - Ground Test Resource Managers (TRMs) continue to complement test execution teams by managing the scheduling, funding, and management of ground test resource assets. - Support all MDA-sponsored BMDS ground testing conducted in FY 2016 with an adequate complement of hardware-in-the-loop (HWIL) and communication test assets. - Maintain and improve MDA-unique ground test facilities to support Ballistic Missile Defense System (BMDS) level ground tests. Use Value Engineering principles to reduce Huntsville and COS infrastructure costs while increasing efficiencies, - Maintain and extend the Directorate of Test Support System (DTSS) classified Computer Network Defense Service Provider (CNDSP) to support network cyber security defense for ground test network systems. Continue to define cybersecurity investments, risks and benefits used to reduce vulnerabilities and protect critical administrative and test data. - Maintain the Missile Defense Agency (MDA) unique range facilities and mobile sensors, communication, data processing and dissemination infrastructure to support a broad spectrum of test requirements including metric tracking, target characterization, and multi-spectral imagery of BMDS phenomena. - Continue sustainment of the flight test infrastructure at the Missile Defense Integrated Operations Center (MDIOC). - Maintain accreditation for the Transportable Telemetry Systems (TTS), Pacific Collector Range Safety System (PCRSS), and the Flight Test Communications Network (FTCN). - Maintain a dedicated cybersecurity program to maintain accreditation of the DTR flight test instrumentation - Maintain Sea Based Systems (SBS), including test instrumentation ships, Pacific Collector and Pacific Tracker, and associated telemetry and radar systems - Finalize Advanced Research Center (ARC) study for operational improvements and potential relocation onto Redstone Arsenal. - Implement findings from the Ground Test Continuous Integration (CI) strategy for improvements and potential new assets required to support the GT-07 and GT-08 Campaigns to address EPAA Phase 3. - Discontinued MLP & Narragansett use in FY 2015. - MLP & Narragansett have been in the previous Integrated Master Test Plan (IMTP) for one mission during the Five-Year Defense Plan (FYDP): however, that requirement was removed in a previous IMTP schedule. - Initiate the Sea Based Systems X-Band Transportable Radar-1(XTR-1) Cooling System replacement. - Replace obsolete International Marine/Maritime Satellite (INMARSAT) with Swift Broadband solution on Pacific Collector. - Replace Catamaran vessels that are required for Meck Island Operations and Maintenance (O&M) and mission support. - Continue study for migration of Airborne Sensors airframes to newer platforms. <p>FY 2017 Plans:</p>			

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
<p>The decrease of \$14.8 million from FY 2016 to FY 2017 results in deferral of ABS obsolete airframe replacements to FY 2018.</p> <ul style="list-style-type: none"> - Procure, maintain, and manage test resource infrastructure and provide trained Test Resource Managers to integrate test resources into each test event for the BMDS Test Program. - Establish and maintain Agency test policies and test functional area organizational accountability, contracts, and budgets. - Maintain a dedicated cybersecurity program to maintain accreditation of the DTR flight test instrumentation and ground test hardware and software. - Continue sustainment of the flight test infrastructure at the Missile Defense Integrated Operations Center (MDIOC). - Maintain accreditation for the Transportable Telemetry Systems (TTS), Pacific Collector Range Safety System (PCRSS), Early Launch Tracking System (ELTS), Orion Voice Switching and Conferencing System, X-Band Tracking Radar (XTR), and the Flight Test Communications Network. - Maintain the MDA unique range facilities and mobile sensors, communication, data processing and dissemination infrastructure to support a broad spectrum of test requirements including metric tracking, target characterization, and multi-spectral imagery of BMDS phenomena. - Maintain MDA-unique ground test facilities to support BMDS ground tests, including basic ground test control as well as some element representations. - Continue Operations and Maintenance of the Test Support System (TSS), located across the BMDS architecture to support MDA's mission critical and situational awareness flight test requirements for the acquisition, processing, distribution and display of telemetry data, Global Positioning System (GPS) data and radar-based Time Space Position Information, as well as mission/clock status and Audio Visual communications. - Maintain Sea Based Systems, including test instrumentation ships, Pacific Collector and Pacific Tracker, and associated telemetry, (TTS 1-2), range safety, radar systems (XTR-1), and communication instrumentation. - Continue deferral for migration of some Airborne Sensors airframes to newer platforms. Phased operations and maintenance approach beginning in FY 2017. - Continue deferral of required maintenance of airborne sensor platforms. - Conduct Sustainment Restoration and Moderation (SRM) on BMDS support facilities on Kwajalein and Meck Island. - Conduct facility upgrades and renovation as needed to meet test specific requirement to support BMDS test schedule, to include On-Condition Cyclic Maintenance on PVT Sorenson to ensure transportation needs for FTO-03. - Evaluate the condition of the Meck Island temporary housing for removal or storage for future test events. - Reconstitute the COMM01 shelter and integrate with existing transportable 4.9M antenna. - Conduct the tech refresh for the MDIOC Orion voice communication switch and intercom panels. - Maintain land-based Telemetry Systems, including TTS-3 thru 5. - Continue deferral of Transportable Telemetry System receiver obsolescence and IA upgrades. - Continue deferral of TTS mission control room replacement on Pacific Tracker. 			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Continue deferral of C-band upgrade for TTS 1, 2, 3 and 5. - Continue deferral of permanent installation of Cast Glance data relay system on the Pacific Collector. - Defer weather system support and O&M on the Pacific Collector. - Perform limited PCRSS operation and maintenance (O&M) to include spares management, hardware repair, and training to maintain system readiness. - Execute a UMC project to construct a Flight Test Communications Facility. - Execute several mission support facility modernization projects, including work on mission critical Missile Assembly Buildings and test equipment storage facilities. - Assess currently degraded lodging capability on Wake Island and develop path forward to modernize/procure/construct housing. - Assist in performing Wake upgrades to support 14 test events across the IMTP. - Defer PCRSS critical overhauls or major maintenance work. - Utilize Ground Test Resource Managers to complement test execution teams by managing the scheduling, funding, and management of ground test resource assets. - Support all MDA-sponsored BMDS ground testing conducted in FY 2017 with the full complement of hardware-in-the-loop (HWIL) and communication test assets. - Maintain the Directorate of Test Support System classified Computer Network Defense Service Provider to support network cyber security defense for Test Directorate's ground test network systems. - Continue sustainment of the ground test infrastructure at the MDIOC. - Support planning for operational improvements and potential relocation of the Advanced Research Center (ARC) onto Redstone Arsenal. - Implement actions from the GTPIP strategy for improvements and potential new assets required to support the GT-07 and GT-08 Campaigns to address European Phased Adaptive Approach (EPAA) Phase 3. - Conduct re-compete of the ARC contract with a potential award in FY 2018. - Continue to provide Technical and Managerial expertise to support MDA Element Developmental Test Technology activities. 				
Title: Engineering and Test Analysis		26.944	26.837	27.805
		Articles:	-	-
Description: N/A				
FY 2015 Accomplishments:				
Provided engineering support for planning, execution, and analysis of the test events listed in the Integrated Master Test Plan (IMTP): <ul style="list-style-type: none"> - Designed test architecture, defined target requirements, and generated appropriate scenarios for ground and flight tests. 				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Defined test objectives and assessment criteria for all System level test events to anchor Modeling and Simulation (M&S) and address data collection requirements. - Performed System-level and interoperability analysis. - Participated in major test reviews. - Generated BMDS test observations and coordinated associated BMDS Discrepancy Reports (BDR) within the Failure Reporting, Analysis, and Corrective Action System (FRACAS). - Produced the threat data required to enable BMDS ground tests, flight tests and performance assessment. - Utilized models and simulations (M&S) for pre-test assessment and post-test review, as well as M&S updates. - Provided Systems Engineering and Integration (SE&I) test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements. - Analyzed test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data. - Developed and documented long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration - Developed and provided capability upgrades to test analysis tools in concert with the BMDS evolution (e.g., Modular Analysis and Reporting Suite (MARS), Assessment Parameter Extraction (APEX) to enhance analysis capability and efficiency. - Populated the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments. - Provided engineering analysis process software to include System Coordination and Observation Reporting Environment (SCORE), Software Change Analysis Review Environment (SCARE), File Manager (FileMan), ManPower Loading (MPL) - Developed and provided infrastructure, software, and associated MDA/IA compliance for the Rapid Scenario Prototype (RASP) capability - Developed and optimized candidate ground test scenarios and produced the associated scenario data packages - Developed and established hardware-in-the-loop (HWIL) M&S integration test cases for ground and flight tests (pre-post mission). - Provided modeling and technical analysis support during Combatant Command (COCOM) wargames and exercises. - Developed, delivered, and presented the Quick Look Brief (QLB), Executive Quick Look Brief (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR). - Developed and established Hardware-in-the-loop (HWIL) M&S Integration Test Cases for flight and ground tests. - Conducted M&S HWIL Integration Bench Mark testing for ground tests by integrating the BMDS HWIL M&S framework with MDA and non-MDA Elements into the test event BMDS architecture. - Integrated, tested, functionally qualified, and delivered end-to-end BMDS simulations supporting ground test missions. <p>FY 2016 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>Provide engineering support for planning, execution, and analysis of the test events listed in the Integrated Master Test Plan (IMTP):</p> <ul style="list-style-type: none"> - Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests. - Define test objectives and evaluation criteria via the Integrated Master Assessment Plans and Flight Test Strategic Plan for all System level test events to anchor Modeling and Simulation (M&S) and address data collection requirements. - Perform System-level and interoperability analysis. - Develop inputs to the Test Analysis Report. - Participate in major test reviews, analysis team meetings, and mission planning events. - Generate BMDS test observations and coordinate associated BMDS Discrepancy Reports (BDR) within the Failure Reporting, Analysis, and Corrective Action System (FRACAS). - Produce the threat data required to enable BMDS ground tests, flight tests and performance assessment. - Utilize models and simulations (M&S) for pre-test assessment and post-test review, as well as M&S updates. - Provide Systems Engineering and Integration (SE&I) test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements. - Analyze test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data. - Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration. - Develop and provide capability upgrades to test analysis tools in concert with the BMDS evolution (e.g., Modular Analysis and Reporting Suite (MARS)) to enhance analysis capability and efficiency. - Populate the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments. - Provide engineering analysis process software to include System Coordination and Observation Reporting Environment (SCORE), Software Change Analysis Review Environment (SCARE), File Manager (FileMan), ManPower Loading (MPL). - Develop and provide infrastructure, software, and associated MDA/IA compliance for the RAPid Scenario Prototype (RASP) capability. - Develop and optimize candidate ground test scenarios and produce the associated scenario data packages. - Develop and establish hardware-in-the-loop (HWIL) M&S integration test cases for ground and flight tests (pre-post mission). - Provide modeling and technical analysis support during Combatant Command (COCOM) wargames and exercises. - Develop, deliver, and present the Quick Look Brief (QLB), Mission Data Review (MDR), and Executive MDR (EMDR). - Conduct M&S HWIL Integration Bench Mark testing for ground tests by integrating the BMDS HWIL M&S framework with MDA and non-MDA Elements into the test event BMDS architecture. - Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
<p>FY 2016 reduction reflects partial workload transfer to Enabling PE 0603890C, Budget Project MT23 (Enabling Test).</p> <p>FY 2017 Plans:</p> <p>Provide engineering support for planning, execution, and analysis of the test events listed in the IMTP:</p> <ul style="list-style-type: none"> - Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests. - Define test objectives and evaluation criteria via the Integrated Master Assessment Plans and Flight Test Strategic Plan for all System level test events to assess System performance, anchor M&S and address data collection requirements. - Assess the feasibility of Flight Test Design Analysis results to meet test objectives, and provide inputs to Approved Test Configuration packages. - Perform System-level and interoperability analyses. - Lead test requirements and analysis reviews, and participate in major test reviews, analysis team meetings, and mission planning events. - Utilize M&S for pre-test assessment and post-test review; update M&S with flight and ground test data. - Provide Systems Engineering and Integration requirements and test configuration management; risk assessment and management; anomaly/deficiency review, assessment and closure; and data collection and analysis supporting BMDS hardware/software reliability improvements. - Analyze test results to identify data collection shortfalls so that objectives can be reallocated to future events to provide required verification and model validation data. - Coordinate with BMDS Operational Test Agency to address OTA issue sheets allocated to test events. - Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration. - Provide engineering analysis process software to include System Coordination and Observation Reporting Environment (SCORE), Software Change Analysis Review Environment (SCARE), File Manager (FileMan), and ManPower Loading (MPL). - Develop and provide infrastructure, software, and associated MDA/IA compliance for the RApid Scenario Prototype (RASP) capability. - Develop and optimize candidate ground test scenarios and produce the associated scenario data packages. - Develop operational overlay scenarios to support flight test planning and design. - Develop and establish hardware-in-the-loop (HWIL) M&S integration test cases for ground and flight tests (pre-post mission). - Provide modeling and technical analysis support during Combatant Command wargames and exercises. - Integrate non-MDA element models and simulations for participation in IMTP events. - Develop, deliver, and present the Quick Look Brief (QLB), Mission Data Review (MDR), and Executive MDR (EMDR). - Conduct M&S HWIL Integration Benchmark testing for ground tests by integrating the BMDS HWIL M&S framework with MDA and non-MDA Elements into the test event BMDS architecture. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Missile Defense Agency		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017
- Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions.			
Accomplishments/Planned Programs Subtotals	334.185	267.225	277.851

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
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing

Remarks

D. Acquisition Strategy

The BMDS Test Program acquisition strategy is consistent with the MDA capabilities-based acquisition strategy that emphasizes testing, evolutionary acquisition, and knowledge-based funding. Test directs a team of various internal staff (government and scientific, engineering and technical assistance support), executing agents (including DoD agencies, Service Organizations, Laboratories and Program Offices, Federally Funded Research and Development Center (FFRDC), and other MDA programs to execute the various diverse efforts within the BMDS test program through competition. When a specific effort/activity being conducted, acquired, or maintained requires the use of an executing agent, respective headquarter regulations are used to conform the acquisition strategy.

The MDA Integrated Master Test Plan establishes and documents the test requirements for the BMDS with the specific focus on collecting the data needed for the Verification, Validation, and Accreditation (VV&A) of the BMDS Models and Simulations. This paradigm uses critical factor analysis to drive test design, planning, and execution for accrediting M&S, which is used to validate and assess system performance. With this test approach, MDA will establish confidence that the M&S used to evaluate the BMDS represent real world behavior, thereby enabling simulation-based performance assessment to verify system functionality.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Remarks
N/A

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Planning and Operations - IMTP Planning and Data Management Tools	C/FP	None : AL	58.399	29.813		21.012		21.099	Oct 2016	-		21.099	Continuing	Continuing	Continuing
Program Planning and Operations - Lab Analysis Infrastructure	MIPR	MIT-LL/Aerospace : AL/CA/MA	41.034	6.014		8.071		7.053	Oct 2016	-		7.053	Continuing	Continuing	Continuing
Program Planning and Operations - Operational Test Agency	MIPR	ATEC/Aberdeen Proving Grounds : MD	42.110	12.876		12.498		12.536	Oct 2016	-		12.536	Continuing	Continuing	Continuing
Program Planning and Operations - Support to Flight Testing	C/CPAF	Northrop Grumman/ Lockheed Martin : AL/CO	15.576	13.595		12.116		12.009	Oct 2016	-		12.009	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
0400 / 4				PE 0603914C / Ballistic Missile Defense Test				MT04 / BMDS Test Program							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Planning and Operations - Support to Ground Testing	C/CPAF	MDIOC/JRDC/ Northrop Grumman : AL/CO/VA/DC	4.889	5.189		5.039		5.011	Oct 2016	-		5.011	Continuing	Continuing	Continuing
Program Planning and Operations - Support to Test Resources	C/CPAF	None : MiDAESS/AL	11.121	4.833		4.066		4.176	Oct 2016	-		4.176	Continuing	Continuing	Continuing
Program Planning and Operations - Test Functional Management Office	C/CPFF	None : MDA/ MiDAESS/AL/VA/ CO/MA	209.076	37.666		35.358		35.896	Oct 2016	-		35.896	Continuing	Continuing	Continuing
Flight Test - IMTP Flight Testing	MIPR	Air & Missile Def Command/AFGSC/ H'ville Operations Support Center/ NAWC/NRL/Ronald Reagan Test Site /SPAWAR/ Vandenberg AFB/ White Sands Missile Range/AMRDEC/ NSWC/PMRF/611th CES/611th ASUS/ AEDC : AL/CA/CO/ HI	155.041	54.665		2.697		23.686	Oct 2016	-		23.686	Continuing	Continuing	Continuing
Ground Test - IMTP Ground Testing	MIPR	Aviation & Missile Research & Development/LTPO/ Space & Naval Warfare Command : AL/CO/CA	35.764	4.821		4.035	Oct 2015	7.855	Oct 2016	-		7.855	Continuing	Continuing	Continuing
Test Resources - Airborne Optics Mobile Assets	C/IDIQ	None : L3/JHU/APL/ TX/MD/AZ/TN	55.913	15.496		14.900		15.355	Oct 2016	-		15.355	Continuing	Continuing	Continuing
Test Resources - Core Ground Test Communication Support	MIPR	Space and Naval Warfare Command : AL/CA	12.645	3.127		3.127		3.127	Oct 2016	-		3.127	0	22.026	0

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
0400 / 4				PE 0603914C / Ballistic Missile Defense Test				MT04 / BMDS Test Program							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Resources - Core Ground Test Labs and HWILS	C/IDIQ	None : Colsa/AMRDEC/AL/MD/FL/CA/OH/CO	86.749	28.032		26.444		25.457	Oct 2016	-		25.457	Continuing	Continuing	Continuing
Test Resources - Enhanced GT Capability Assets	C/IDIQ	None : Colsa/Boeing/NG/AL/CO/FL/MD/HI	12.395	7.353		7.280		7.590	Oct 2016	-		7.590	Continuing	Continuing	Continuing
Test Resources - Facilities Sustainment, Restoration & Modernization	MIPR	SMDC/Northrup Grumman/Colsa : AL/CO/NM	3.798	3.800		4.186		4.144	Oct 2016	-		4.144	Continuing	Continuing	Continuing
Test Resources - Flight Test Instrumentation	C/IDIQ	ASI/WSMR : Gray Research/NRL/NAWC/CA/MD/NCR/NM/AL/MA	53.834	16.637		12.013		12.743	Oct 2016	-		12.743	Continuing	Continuing	Continuing
Test Resources - Flight Test Ranges	C/IDIQ	SMDC/SNL/PMRF : NAWC/WSMR/AMRDEC/NG/AK/AL/CA/HI/NM/CO	45.987	12.287		10.557		8.991	Oct 2016	-		8.991	Continuing	Continuing	Continuing
Test Resources - Sea Based Mobile Assets	MIPR	None : MARAD/NAWC/Hanscom AFB/AL/CA/MD/NCR/NM/MA	44.480	11.536		12.065		12.313	Oct 2016	-		12.313	Continuing	Continuing	Continuing
Test Resources - Support to Test Resources	MIPR	None : MIDAESS/AL	58.908	33.901		38.951		31.005	Oct 2016	-		31.005	Continuing	Continuing	Continuing
Test Resources - Target ILS	MIPR	None : NSA/NAVSPECWARCOM/PMRF/RTC/SNL/YPG AL/CA/HI/NM	5.500	5.600		5.973		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - CSS Support	C/CPFF	Torch Technologies : AL	6.311	6.120		6.000		6.217	Nov 2016	-		6.217	Continuing	Continuing	Continuing
Engineering and Test Analysis - FFRDA/UARC 2	MIPR	Aerospace : CA	0.000	0.000		0.755		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Test Analysis - FFRDC/UARC	MIPR	MITRE : VA	3.187	1.596		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering and Test Analysis - Industry Support	C/CPAF	Boeing : AL	14.538	2.931		2.569		2.409	Nov 2016	-		2.409	Continuing	Continuing	Continuing
Engineering and Test Analysis - OGA Support	MIPR	AMRDEC : AL	21.577	16.297		17.513		16.618	Nov 2016	-		16.618	Continuing	Continuing	Continuing
Engineering and Test Analysis - OGA Support - NME	MIPR	LTPO : AL	0.000	0.000		0.000		2.561	Nov 2016	-		2.561	Continuing	Continuing	Continuing
Subtotal			998.832	334.185		267.225		277.851		-		277.851	-	-	-

Remarks
N/A

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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	998.832	334.185	267.225	277.851	-	277.851	-	-	-

Remarks
N/A

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity +
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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
FTX-20 (AEGIS 5.0, Target Only Flight Test)	▲																											
FTM-25 (AEGIS 5.0, Intercept Flight Test)	+																											
Israeli Cooperative Intercept Flight Test - FY 2015	+	+	+	+																								
FTX-19 (AEGIS 4 .0.2, Target Only Flight Test)		▲																										
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)			▲																									
Warfighter TP 04e (BMDS Ground Test)			+																									
GTI-06 Part 1 (BMDS Ground Test)			+																									
MMW E3 (AEGIS 5.0, Intercept Flight Test)				▲																								
MMW E4 (AEGIS 5.0, Intercept Flight Test)				▲																								
MMW E1 (AEGIS 5.0, Intercept Flight Test)				▲																								
GTI-06 Part 3 (BMDS Ground Test)				+																								
MMW E2 (AEGIS 5.0, Intercept Flight Test)				+																								
FTO-02 E1a (OTA, Intercept Flight Test)				+	+																							
FTO-02 E2a (OTA, Intercept Flight Test)				+	+																							
FTP-10 (P8-4) (LTPO, Intercept Flight Test)				▲																								
GTD-06 Part 1 (BMDS Ground Test)				+																								
AA CTV-02 (FTO-02 E1a CTV) AEGIS AA, Intercept Only Flight Test)				▲																								
ASD-15 (Intercept Flight Test)				+																								
FTP-14 E1 (P82A) (LTPO, Intercept Flight Test)				+																								
FTP-14 E2 (P82B) (LTPO, Intercept Flight Test)				+																								
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)				▲																								
Israeli Cooperative Intercept Flight Test (14A) - FY 2016					◆	◆	◆	◆																				
Israeli Cooperative Intercept Flight Test - FY 2016					◆	◆	◆	◆																				
FTP-09 (P8-3) (LTPO, Intercept Flight Test)					△																							
GM CTV-02 Plus (GM, Intercept Flight Test)					△																							
SM CTV-01 (AEGIS 3.6.1, Intercept Only Flight Test)					△																							
SM CTV-02 (AEGIS 3.6.1, Intercept Only Flight Test)					△																							

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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
FTX-21 (AEG IS SBT, Target Only Flight Test)							✦																					
GTI-06 Part 2 (BMDS Ground Test)							✦																					
GTI-ISR (16) (BMDS Ground Test)							✦																					
SFTM-01 (AEGIS 5.1, Intercept Flight Test)							△																					
GTD-06 Part 2 (BMDS Ground Test)							✦																					
FTG-15 (GM, Intercept Flight Test)								△																				
FTM-27 (AEGIS SBT, Intercept Flight Test)								△																				
Israeli Cooperative Intercept Flight Test - FY 2017									✦	✦	✦	✦																
SFTM-02 (AEGIS 5.1, Intercept Flight Test)										△																		
Warfighter TP 06 (BMDS Ground Test)										✦																		
FTT-18 (TH, Intercept Flight Test)											△																	
FTT-15 (TH, Intercept Flight Test)											△																	
FTP-11 (P8-OT2) (LTPO, Intercept Flight Test)											△																	
FTP-12 (P8-OT3) (LTPO, Intercept Flight Test)											△																	
FTP-13 (P8-OT4) (LTPO, Intercept Flight Test)											△																	
GTI-07a (BMDS Ground Test)												✦																
FTM-24 (AEGIS 5.0, Intercept Flight Test)												△																
FTX-24 (AEGIS SBT, Target Only Flight Test)												△																
GTD-07a (BMDS Ground Test)												✦																
FEV-01 (FTM-DST 1) (AEGIS 5.0, Intercept Flight Test)												△																
FTG-11 (IOT&E) (GM, Intercept Flight Test)													△															
FTM-29 (AEGIS 5.1, Intercept Flight Test)													△															
Warfighter TP 07a (BMDS Ground Test)													✦															
GTX-07b (BMDS Ground Test)													✦															
Israeli Cooperative Intercept Flight Test - FY 2018														✦	✦	✦	✦											
FTM-28 (AEGIS SBT, Intercept Flight Test)															△													
FTO-03 E1 (OTA, Intercept Flight Test)															△													
GM CTV-03 (GM, Non-Intercept Flight Test)															△													
GTI-07b (BMDS Ground Test)															✦	✦												
FTM-31 (AEGIS SBT, Intercept Flight Test)																												
FTM-33 (AEGIS SBT, Intercept Flight Test)																												

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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 0603914C / *Ballistic Missile Defense Test*

Project (Number/Name)
MT04 / *BMDS Test Program*

Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity ✦
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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
FTO-03 E2 (OTA, Intercept Flight Test)																												
GTD-07b Part 1 (BMDS Ground Test)																												
GTI-ISR (18) (BMDS Ground Test)																												
Israeli Cooperative Intercept Flight Test - FY 2019																												
GTD-07b Part 2 (BMDS Ground Test)																												
FTG-17 (DT/OT) (GM, Intercept Flight Test)																												
FTM-32 (AEGIS SBT, Intercept Flight Test)																												
Warfighter TP 07b (BMDS Ground Test)																												
GTX-08 Part 1 (BMDS Ground Test)																												
FTX-22 (SN, Target Only Flight Test)																												
FTT-19 (TH, Intercept Flight Test)																												
FTX-23 (AEGIS 5.1, Target Only Flight Test)																												
FTM-35 (AEGIS 5.1, Intercept Flight Test)																												
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)																												
GTX-08 Part 2 (BMDS Ground Test)																												
Israeli Cooperative Intercept Flight Test - FY 2020																												
FTG-18 (GM, Intercept Flight Test)																												
FTT-16 (TH, Intercept Flight Test)																												
FTX-25 (SN, Target Only Flight Test)																												
GTI-08 (BMDS Ground Test)																												
FTM-30 (AEGIS 5.1, Intercept Flight Test)																												
GTD-08 Part 1 (BMDS Ground Test)																												
GTD-08 Part 2 (BMDS Ground Test)																												
Israeli Cooperative Intercept Flight Test - FY 2021																												
Warfighter TP 08 (BMDS Ground Test)																												
FTX-26 (SN, Target Only Flight Test)																												
FTO-04 (OTA, Intercept Flight Test)																												
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)																												
FTM-38 (AEGIS 5.0, Intercept Flight Test)																												

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity +
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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				
FTT-21 (TH, Intercept Flight Test)																																
GTX-09 (BMDS Ground Test)																																△

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTX-20 (AEGIS 5.0, Target Only Flight Test)	1	2015	1	2015
FTM-25 (AEGIS 5.0, Intercept Flight Test)	1	2015	1	2015
Israeli Cooperative Intercept Flight Test - FY 2015	1	2015	4	2015
FTX-19 (AEGIS 4 .0.2, Target Only Flight Test)	2	2015	2	2015
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)	3	2015	3	2015
Warfighter TP 04e (BMDS Ground Test)	3	2015	3	2015
GTI-06 Part 1 (BMDS Ground Test)	3	2015	3	2015
MMW E3 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
MMW E4 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
MMW E1 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
MMW E2 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
FT0-02 E1a (OTA, Intercept Flight Test)	4	2015	1	2016
FT0-02 E2a (OTA, Intercept Flight Test)	4	2015	1	2016
FTP-10 (P8-4) (LTPO, Intercept Flight Test)	1	2016	1	2016
GTD-06 Part 1 (BMDS Ground Test)	1	2016	1	2016
AA CTV-02 (FT0-02 E1a CTV) AEGIS AA, Intercept Only Flight Test)	1	2016	1	2016
ASD-15 (Intercept Flight Test)	1	2016	1	2016
FTP-14 E1 (P82A) (LTPO, Intercept Flight Test)	1	2016	1	2016
FTP-14 E2 (P82B) (LTPO, Intercept Flight Test)	1	2016	1	2016
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)	1	2016	1	2016
Israeli Cooperative Intercept Flight Test (14A) - FY 2016	1	2016	4	2016

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Israeli Cooperative Intercept Flight Test - FY 2016	1	2016	4	2016
FTP-09 (P8-3) (LTPO, Intercept Flight Test)	2	2016	2	2016
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
SM CTV-01 (AEGIS 3.6.1, Intercept Only Flight Test)	2	2016	2	2016
SM CTV-02 (AEGIS 3.6.1, Intercept Only Flight Test)	2	2016	2	2016
FTX-21 (AEG IS SBT, Target Only Flight Test)	3	2016	3	2016
GTI-06 Part 2 (BMDS Ground Test)	3	2016	3	2016
GTI-ISR (16) (BMDS Ground Test)	3	2016	3	2016
SFTM-01 (AEGIS 5.1, Intercept Flight Test)	4	2016	4	2016
GTD-06 Part 2 (BMDS Ground Test)	4	2016	4	2016
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
FTM-27 (AEGIS SBT, Intercept Flight Test)	1	2017	1	2017
Israeli Cooperative Intercept Flight Test - FY 2017	1	2017	4	2017
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	2	2017	2	2017
Warfighter TP 06 (BMDS Ground Test)	2	2017	2	2017
FTT-18 (TH, Intercept Flight Test)	3	2017	3	2017
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
FTP-11 (P8-0T2) (LTPO, Intercept Flight Test)	3	2017	3	2017
FTP-12 (P8-0T3) (LTPO, Intercept Flight Test)	3	2017	3	2017
FTP-13 (P8-0T4) (LTPO, Intercept Flight Test)	3	2017	3	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
FTM-24 (AEGIS 5.0, Intercept Flight Test)	4	2017	4	2017
FTX-24 (AEGIS SBT, Target Only Flight Test)	4	2017	4	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
FEV-01 (FTM-DST 1) (AEGIS 5.0, Intercept Flight Test)	4	2017	4	2017

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
Warfighter TP 07a (BMDS Ground Test)	1	2018	1	2018
GTX-07b (BMDS Ground Test)	1	2018	1	2018
Israeli Cooperative Intercept Flight Test - FY 2018	1	2018	4	2018
FTM-28 (AEGIS SBT, Intercept Flight Test)	3	2018	3	2018
FT0-03 E1 (OTA, Intercept Flight Test)	3	2018	3	2018
GM CTV-03 (GM, Non-Intercept Flight Test)	3	2018	3	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
FTM-31 (AEGIS SBT, Intercept Flight Test)	1	2019	1	2019
FTM-33 (AEGIS SBT, Intercept Flight Test)	1	2019	1	2019
FT0-03 E2 (OTA, Intercept Flight Test)	1	2019	1	2019
GTD-07b Part 1 (BMDS Ground Test)	1	2019	1	2019
GTI-ISR (18) (BMDS Ground Test)	1	2019	1	2019
Israeli Cooperative Intercept Flight Test - FY 2019	1	2019	4	2019
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
FTG-17 (DT/OT) (GM, Intercept Flight Test)	3	2019	3	2019
FTM-32 (AEGIS SBT, Intercept Flight Test)	3	2019	3	2019
Warfighter TP 07b (BMDS Ground Test)	3	2019	3	2019
GTX-08 Part 1 (BMDS Ground Test)	3	2019	3	2019
FTX-22 (SN, Target Only Flight Test)	3	2019	3	2019
FTT-19 (TH, Intercept Flight Test)	4	2019	4	2019
FTX-23 (AEGIS 5.1, Target Only Flight Test)	4	2019	4	2019
FTM-35 (AEGIS 5.1, Intercept Flight Test)	4	2019	4	2019
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)	4	2019	4	2019

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MT04 / <i>BMDS Test Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	2020
Israeli Cooperative Intercept Flight Test - FY 2020	1	2020	4	2020
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020
FTT-16 (TH, Intercept Flight Test)	3	2020	3	2020
FTX-25 (SN, Target Only Flight Test)	3	2020	3	2020
GTI-08 (BMDS Ground Test)	3	2020	4	2020
FTM-30 (AEGIS 5. 1, Intercept Flight Test)	4	2020	4	2020
GTD-08 Part 1 (BMDS Ground Test)	4	2020	4	2020
GTD-08 Part 2 (BMDS Ground Test)	1	2021	1	2021
Israeli Cooperative Intercept Flight Test - FY 2021	1	2021	4	2021
Warfighter TP 08 (BMDS Ground Test)	2	2021	3	2021
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FT0-04 (OTA, Intercept Flight Test)	3	2021	3	2021
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)	3	2021	3	2021
FTM-38 (AEGIS 5.0, Intercept Flight Test)	3	2021	3	2021
FTT-21 (TH, Intercept Flight Test)	4	2021	4	2021
GTX-09 (BMDS Ground Test)	4	2021	4	2021

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>
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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
MC04: <i>Cyber Operations</i>	1.040	1.141	2.450	2.479	-	2.479	2.528	2.578	2.631	2.682	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project MC04 is the Defensive Cyber Operations Project established in this Program Element (PE) during PB 2014. Funds were previously reported in Project MT04 of this PE.

A. Mission Description and Budget Item Justification

The funds in this project sustain Missile Defense Agency DoD Information Assurance Certification and Accreditation Program (DIACAP), Risk Management Framework Standards, Computer Network Defense Service Provider and Controls Validation Testing activities; analysis of validation results; risk assessments and reviews of proposed Program Manager/Information Assurance Manager (PM/IAM) Plans of Action and Milestones (POA&Ms) for MDA Ballistic Missile Defense Test program. It maintains the Certification and Accreditation (C&A) data repository, capturing the DIACAP documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POA&M on all MDA information systems. This project supports the monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer/Certification Authority (CA) and DAA. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with the Federal Information Security Management Act (FISMA).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2015	FY 2016	FY 2017
Title: Network / System Certification and Accreditation (C&A)	1.141	2.450	2.479
Articles:	-	-	-
Description: N/A			
FY 2015 Accomplishments:			
<ul style="list-style-type: none"> - Provided Cybersecurity Program oversight of all MDA Test Directorate (DT) information systems, networks, sponsored remote sites, ground and flight test infrastructure, and exercise/wargame infrastructures. This includes management of: cybersecurity compliance and authorization; cybersecurity training and awareness; information system secure configuration; assessment and incident management; and computer network defense. - Funded Ballistic Missile Defense Test Program Information Assurance Manager (IAM) civilian salaries. - Conducted cyber security/information assurance engineering and architecture planning for DT information technology systems. - Planned and tested the Information Assurance controls for Ballistic Missile Defense System. 			

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2015	FY 2016	FY 2017
<p>- Developed DT DIACAP certification and accreditation packages.</p> <p>FY 2016 Plans: The Increase of \$780 Thousand is a result of additional personnel and realignment of cyber duties from MT budget project.</p> <p>- Provide Cybersecurity Program oversight of all MDA Test Directorate (DT) information systems, networks, sponsored remote sites, ground and flight test infrastructure, and exercise/wargame infrastructures. This includes management of: cybersecurity compliance and authorization; cybersecurity training and awareness; information system secure configuration; assessment and incident management; and computer network defense.</p> <p>- Fund Ballistic Missile Defense Test Program Information Assurance Manager (IAM) civilian salaries.</p> <p>- Conduct cyber security/information assurance engineering and architecture planning for Test Directorate (DT) information technology systems.</p> <p>- Plan and test the Information Assurance controls for BMDS.</p> <p>- Develop DT NIST certification and accreditation packages.</p> <p>FY 2017 Plans: The Increase of \$46 Thousand is a result of additional personnel and realignment of cyber duties from MT budget project.</p> <p>- Provide Cybersecurity Program oversight of all MDA Test Directorate information systems, networks, sponsored remote sites, ground and flight test infrastructure, and exercise/wargame infrastructures. This includes management of: cybersecurity compliance and authorization; cybersecurity training and awareness; information system secure configuration; assessment and incident management; and computer network defense.</p> <p>- Fund Ballistic Missile Defense Test Program Information Assurance Manager (IAM) civilian salaries.</p> <p>- Conduct cyber security/information assurance engineering and architecture planning for Test Directorate information technology systems.</p> <p>- Plan and test the Information Assurance controls for BMDS.</p> <p>- Develop DT National Institute of Standards and Technology (NIST) certification and accreditation packages.</p>				
Accomplishments/Planned Programs Subtotals		1.141	2.450	2.479
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Network / System Certification and Accreditation (C&A) - Information Assurance	C/IDIQ	Torch Technologies : Various	0.887	0.832		2.134		2.155		-		2.155	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Information Assurance Civ	MIPR	MDA : Various	0.153	0.309		0.316		0.324		-		0.324	Continuing	Continuing	Continuing
Subtotal			1.040	1.141		2.450		2.479		-		2.479	-	-	-

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	1.040	1.141	2.450	2.479	-	2.479	-	-	-

Remarks
N/A

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>
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Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity +
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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
MC04 Cyber Operations					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MC04 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC04 Cyber Operations	1	2016	4	2020

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>
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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: <i>Program Wide Support</i>	43.867	19.088	12.065	13.111	-	13.111	16.351	16.382	17.771	18.552	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of a decrease to Ballistic Missile Defense Test and in FY 2017, PWS reflects a proportional change as a result of an increase to Ballistic Missile Defense Test.
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, 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	19.088	12.065	13.111
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	19.088	12.065	13.111

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	0.190	0.021		0.000		0.262	Jul 2017	-		0.262	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	42.677	19.067		12.065	Dec 2015	12.849	Aug 2017	-		12.849	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance - SRM	MIPR	Various : Multi: AK,AL,CA,VA	1.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			43.867	19.088		12.065		13.111		-		13.111	-	-	-

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	43.867	19.088	12.065	13.111	-	13.111	-	-	-

Remarks
N/A

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>
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Significant Event Complete ▲ Milestone Decision Complete ★ Element Test Complete ◆ System Level Test Complete ● Complete Activity +
 Significant Event Planned △ Milestone Decision Planned ☆ Element Test Planned ◇ System Level Test Planned ○ 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					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

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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 0603914C / <i>Ballistic Missile Defense Test</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>

Schedule Details

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

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