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**Department of Defense  
Fiscal Year (FY) 2017 President's Budget Submission**

February 2016



**Missile Defense Agency**

*Defense-Wide Justification Book Volume 2a of 2*

***Research, Development, Test & Evaluation, Defense-Wide***

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Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

**Table of Volumes**

**Defense Advanced Research Projects Agency..... Volume 1**

**Missile Defense Agency..... Volume 2**

**Office of the Secretary Of Defense..... Volume 3**

**Chemical and Biological Defense Program.....Volume 4**

**Defense Contract Management Agency..... Volume 5**

**DoD Human Resources Activity..... Volume 5**

**Defense Information Systems Agency.....Volume 5**

**Defense Logistics Agency.....Volume 5**

**Defense Security Cooperation Agency..... Volume 5**

**Defense Security Service..... Volume 5**

**Defense Technical Information Center.....Volume 5**

**Defense Threat Reduction Agency.....Volume 5**

**The Joint Staff..... Volume 5**

**United States Special Operations Command..... Volume 5**

**Washington Headquarters Service..... Volume 5**

**Operational Test and Evaluation, Defense..... Volume 5**

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Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

- Defense Geospatial Intelligence Agency..... (see NIP and MIP Justification Books)**
- Defense Intelligence Agency..... (see NIP and MIP Justification Books)**
- National Security Agency.....(see NIP and MIP Justification Books)**

**UNCLASSIFIED**

**UNCLASSIFIED**

Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

**Volume 2a Table of Contents**

**Introduction and Explanation of Contents.....Volume 2a - v**  
**Comptroller Exhibit R-1..... Volume 2a - vii**  
**Program Element Table of Contents (by Budget Activity then Line Item Number).....Volume 2a - xi**  
**Program Element Table of Contents (Alphabetically by Program Element Title).....Volume 2a - xv**  
**Overview..... Volume 2a - xix**  
**Appropriation Summary.....Volume 2a - xxxi**  
**Congressional Reporting Requirements.....Volume 2a - xxxv**  
**Program Assessment Rating Tool..... Volume 2a - xlvi**  
**Acronyms..... Volume 2a - xlix**  
**Exhibit R-2's..... Volume 2a - 1**

**UNCLASSIFIED**

UNCLASSIFIED

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UNCLASSIFIED

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## Introduction & Explanation of Contents

The Department of Defense FY2017 President's Budget RDT&E (Includes Procurement, O&M, and MILCON), Defense-wide Volume 2, Missile Defense Agency (MDA) justification materials consists of two books titled Volume 2a and 2b. Justification documents are provided in the books as listed below.

### Volume 2a

- R-1 Comptroller Exhibit
- MDA FY 2017 Budget Estimate Overview
- MDA Appropriation Summary
- Congressional Reporting Requirements
- Program Assessment Rating Tool (PART) Submission
- Acronyms
- RDT&E Exhibits in BA-03, BA-04, and BA-06

### Volume 2b

- P-1 Comptroller Exhibit
- MDA Operation and Maintenance Exhibit
- MDA MILCON Exhibits
- MDA Procurement Exhibits

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Defense-Wide  
 FY 2017 President's Budget  
 Exhibit R-1 FY 2017 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

29 Jan 2016

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Section
28	0603176C	Advanced Concepts and Performance Assessment	03	9,999	12,139		12,139	17,880		17,880	U
29	0603177C	Discrimination Sensor Technology	03	35,223	28,200		28,200				U
30	0603178C	Weapons Technology	03	61,396	51,153		51,153	71,843		71,843	U
31	0603179C	Advanced C4ISR	03	13,061	9,876		9,876	3,626		3,626	U
32	0603180C	Advanced Research	03	18,476	17,364		17,364	23,433		23,433	U
35	0603274C	Special Program - MDA Technology	03	43,439	13,908		13,908	83,745		83,745	U
40	0603294C	Common Kill Vehicle Technology	03	24,836	61,753		61,753				U
		Advanced Technology Development		206,430	194,393		194,393	200,527		200,527	
73	0603881C	Ballistic Missile Defense Terminal Defense Segment	04	161,298	212,230		212,230	206,834		206,834	U
74	0603882C	Ballistic Missile Defense Midcourse Defense Segment	04	863,965	1,269,913		1,269,913	862,080		862,080	U
76	0603884C	Ballistic Missile Defense Sensors	04	260,347	228,392		228,392	230,077		230,077	U
77	0603890C	BMD Enabling Programs	04	395,927	404,780		404,780	401,594		401,594	U
78	0603891C	Special Programs - MDA	04	301,201	400,387		400,387	321,607		321,607	U
79	0603892C	AEGIS BMD	04	761,646	830,647		830,647	959,066		959,066	U
80	0603893C	Space Tracking & Surveillance System	04	29,530	28,605		28,605	32,129		32,129	U
81	0603895C	Ballistic Missile Defense System Space Programs	04	7,560	21,507		21,507	20,690		20,690	U
82	0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04	420,516	429,853		429,853	439,617		439,617	U
83	0603898C	Ballistic Missile Defense Joint Warfighter Support	04	44,220	47,898		47,898	47,776		47,776	U

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 29, 2016 at 09:24:50

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Defense-Wide  
 FY 2017 President's Budget  
 Exhibit R-1 FY 2017 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

29 Jan 2016

Appropriation: 0400D Research, Development, Test &amp; Eval, DW

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
84	0603904C	Missile Defense Integration & Operations Center (MDIOC)	04	53,972	47,939		47,939	54,750		54,750	U
85	0603906C	Regarding Trench	04	15,912	9,583		9,583	8,785		8,785	U
86	0603907C	Sea Based X-Band Radar (SBX)	04	64,610	71,266		71,266	68,787		68,787	U
87	0603913C	Israeli Cooperative Programs	04	268,842	267,595		267,595	103,835		103,835	U
88	0603914C	Ballistic Missile Defense Test	04	354,414	281,740		281,740	293,441		293,441	U
89	0603915C	Ballistic Missile Defense Targets	04	447,424	527,563		527,563	563,576		563,576	U
93	0604115C	Technology Maturation Initiatives	04		27,225		27,225	90,266		90,266	U
104	0604873C	Long Range Discrimination Radar (LRDR)	04	49,606	137,564		137,564	162,012		162,012	U
105	0604874C	Improved Homeland Defense Interceptors	04	97,739	278,944		278,944	274,148		274,148	U
106	0604876C	Ballistic Missile Defense Terminal Defense Segment Test	04	109,394	26,225		26,225	63,444		63,444	U
107	0604878C	Aegis BMD Test	04	88,041	78,468		78,468	95,012		95,012	U
108	0604879C	Ballistic Missile Defense Sensor Test	04	60,048	83,597		83,597	83,250		83,250	U
109	0604880C	Land-Based SM-3 (LBSM3)	04	121,413	34,970		34,970	43,293		43,293	U
110	0604881C	AEGIS SM-3 Block IIA Co-Development	04	259,278	172,645		172,645	106,038		106,038	U
111	0604887C	Ballistic Missile Defense Midcourse Segment Test	04	78,463	64,618		64,618	56,481		56,481	U
112	0604894C	Multi-Object Kill Vehicle	04					71,513		71,513	U
115	0305103C	Cyber Security Initiative	04	944	963		963	969		969	U
		Advanced Component Development And Prototypes		5,316,310	5,985,117		5,985,117	5,661,070		5,661,070	

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of January 29, 2016 at 09:24:50

UNCLASSIFIED

Page D-4

Volume 2a - viii

UNCLASSIFIED

Defense-Wide  
 FY 2017 President's Budget  
 Exhibit R-1 FY 2017 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

29 Jan 2016

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Section
152	0605502C	Small Business Innovation Research - MDA	06	89,507							U
176	0901598C	Management HQ - MDA	06	35,598	35,871		35,871	31,160		31,160	U
		Management Support		125,105	35,871		35,871	31,160		31,160	
Total Research, Development, Test & Eval, DW				5,647,845	6,215,381		6,215,381	5,892,757		5,892,757	

UNCLASSIFIED

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Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

**Program Element Table of Contents (by Budget Activity then Line Item Number)**

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
28	03	0603176C	Advanced Concepts and Performance Assessment.....	Volume 2a - 1
29	03	0603177C	Discrimination Sensor Technology.....	Volume 2a - 9
30	03	0603178C	Weapons Technology.....	Volume 2a - 23
31	03	0603179C	Advanced C4ISR.....	Volume 2a - 33
32	03	0603180C	Advanced Research.....	Volume 2a - 39
35	03	0603274C	Special Program - MDA Technology.....	Volume 2a - 51
40	03	0603294C	Common Kill Vehicle Technology.....	Volume 2a - 53

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
73	04	0603881C	Ballistic Missile Defense Terminal Defense Segment.....	Volume 2a - 61
74	04	0603882C	Ballistic Missile Defense Midcourse Defense Segment.....	Volume 2a - 97
76	04	0603884C	Ballistic Missile Defense Sensors.....	Volume 2a - 137

**UNCLASSIFIED**

**UNCLASSIFIED**

Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
77	04	0603890C	BMD Enabling Programs.....	Volume 2a - 173
78	04	0603891C	Special Programs - MDA.....	Volume 2a - 323
79	04	0603892C	AEGIS BMD.....	Volume 2a - 325
80	04	0603893C	Space Tracking and Surveillance System.....	Volume 2a - 389
81	04	0603895C	Ballistic Missile Defense System Space Programs.....	Volume 2a - 415
82	04	0603896C	Ballistic Missile Defense Command and Control, Battle Management & Communication.....	Volume 2a - 435
83	04	0603898C	Ballistic Missile Defense Joint Warfighter Support.....	Volume 2a - 513
84	04	0603904C	Missile Defense Integration and Operations Center (MDIOC).....	Volume 2a - 561
85	04	0603906C	Regarding Trench.....	Volume 2a - 609
86	04	0603907C	Sea Based X-Band Radar (SBX).....	Volume 2a - 611
87	04	0603913C	Israeli Cooperative Programs.....	Volume 2a - 627
88	04	0603914C	Ballistic Missile Defense Test.....	Volume 2a - 649
89	04	0603915C	Ballistic Missile Defense Targets.....	Volume 2a - 693
93	04	0604115C	Technology Maturation Initiatives.....	Volume 2a - 735
104	04	0604873C	Long Range Discrimination Radar (LRDR).....	Volume 2a - 771
105	04	0604874C	Improved Homeland Defense (HLD) Interceptors.....	Volume 2a - 785
106	04	0604876C	Ballistic Missile Defense Terminal Defense Segment Test.....	Volume 2a - 803
107	04	0604878C	Aegis BMD Test.....	Volume 2a - 821

**UNCLASSIFIED**

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Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
108	04	0604879C	Ballistic Missile Defense Sensor Test.....	Volume 2a - 847
109	04	0604880C	Land Based SM-3 (LBSM3).....	Volume 2a - 865
110	04	0604881C	AEGIS SM-3 Block IIA Co-Development.....	Volume 2a - 891
111	04	0604887C	Ballistic Missile Defense Midcourse Defense Segment Test.....	Volume 2a - 917
112	04	0604894C	Multi Object Kill Vehicle.....	Volume 2a - 937
115	04	0305103C	Cyber Security Initiative.....	Volume 2a - 953

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
152	06	0605502C	Small Business Innovation Research - MDA.....	Volume 2a - 961
176	06	0901598C	Management HQ - MDA.....	Volume 2a - 967

**UNCLASSIFIED**

UNCLASSIFIED

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UNCLASSIFIED



**UNCLASSIFIED**

Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

**Program Element Table of Contents (Alphabetically by Program Element Title)**

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
AEGIS BMD	0603892C	79	04.....	Volume 2a - 325
AEGIS SM-3 Block IIA Co-Development	0604881C	110	04.....	Volume 2a - 891
Advanced C4ISR	0603179C	31	03.....	Volume 2a - 33
Advanced Concepts and Performance Assessment	0603176C	28	03.....	Volume 2a - 1
Advanced Research	0603180C	32	03.....	Volume 2a - 39
Aegis BMD Test	0604878C	107	04.....	Volume 2a - 821
BMD Enabling Programs	0603890C	77	04.....	Volume 2a - 173
Ballistic Missile Defense Command and Control, Battle Management & Communication	0603896C	82	04.....	Volume 2a - 435
Ballistic Missile Defense Joint Warfighter Support	0603898C	83	04.....	Volume 2a - 513
Ballistic Missile Defense Midcourse Defense Segment	0603882C	74	04.....	Volume 2a - 97
Ballistic Missile Defense Midcourse Defense Segment Test	0604887C	111	04.....	Volume 2a - 917
Ballistic Missile Defense Sensor Test	0604879C	108	04.....	Volume 2a - 847
Ballistic Missile Defense Sensors	0603884C	76	04.....	Volume 2a - 137
Ballistic Missile Defense System Space Programs	0603895C	81	04.....	Volume 2a - 415
Ballistic Missile Defense Targets	0603915C	89	04.....	Volume 2a - 693
Ballistic Missile Defense Terminal Defense Segment	0603881C	73	04.....	Volume 2a - 61

**UNCLASSIFIED**

**UNCLASSIFIED**

Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Ballistic Missile Defense Terminal Defense Segment Test	0604876C	106	04.....	Volume 2a - 803
Ballistic Missile Defense Test	0603914C	88	04.....	Volume 2a - 649
Common Kill Vehicle Technology	0603294C	40	03.....	Volume 2a - 53
Cyber Security Initiative	0305103C	115	04.....	Volume 2a - 953
Discrimination Sensor Technology	0603177C	29	03.....	Volume 2a - 9
Improved Homeland Defense (HLD) Interceptors	0604874C	105	04.....	Volume 2a - 785
Israeli Cooperative Programs	0603913C	87	04.....	Volume 2a - 627
Land Based SM-3 (LBSM3)	0604880C	109	04.....	Volume 2a - 865
Long Range Discrimination Radar (LRDR)	0604873C	104	04.....	Volume 2a - 771
Management HQ - MDA	0901598C	176	06.....	Volume 2a - 967
Missile Defense Integration and Operations Center (MDIOC)	0603904C	84	04.....	Volume 2a - 561
Multi Object Kill Vehicle	0604894C	112	04.....	Volume 2a - 937
Regarding Trench	0603906C	85	04.....	Volume 2a - 609
Sea Based X-Band Radar (SBX)	0603907C	86	04.....	Volume 2a - 611
Small Business Innovation Research - MDA	0605502C	152	06.....	Volume 2a - 961
Space Tracking and Surveillance System	0603893C	80	04.....	Volume 2a - 389
Special Program - MDA Technology	0603274C	35	03.....	Volume 2a - 51
Special Programs - MDA	0603891C	78	04.....	Volume 2a - 323
Technology Maturation Initiatives	0604115C	93	04.....	Volume 2a - 735

**UNCLASSIFIED**

**UNCLASSIFIED**

Missile Defense Agency • President's Budget Submission FY 2017 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Weapons Technology	0603178C	30	03.....	Volume 2a - 23

**UNCLASSIFIED**

UNCLASSIFIED

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**Missile Defense Agency  
Fiscal Year (FY) 2017  
Budget Estimates**

**OVERVIEW**



Approved for Public Release  
16-MDA-8540 (15 January 2016)

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## **Missile Defense Agency (MDA) Fiscal Year 2017 Budget Overview**

The Missile Defense Agency (MDA) requests \$7.5 billion in FY 2017 to strengthen and expand the deployment of defenses for our Nation, deployed forces, allies, and international partners against increasingly capable ballistic missiles. The FY 2017 missile defense program will continue to support the warfighter and needs of the Combatant Commanders (COCOMs) with the development, testing, deployment, and integration of interceptors, sensors, and command and control, battle management and communications (C2BMC) systems that make up the Ballistic Missile Defense System (BMDS). The FY 2017 budget preserves homeland and regional missile defense priorities and invests in advanced technology development and future capabilities to counter the proliferation of increasingly complex threats. These priorities are driven by presidential and Department of Defense strategic guidance and are in line with the priorities set last year.

With this budget request, MDA remains committed to operating, sustaining, and expanding our nation's homeland missile defenses and requests \$1.0 billion for the Ground-based Midcourse Defense (GMD) program. This request will continue PB16 efforts to increase the number of deployed Ground-Based Interceptors (GBI) to 44 by the end of 2017 and improve overall GBI operational effectiveness, reliability, producibility, maintainability and testability. The budget continues to: fund GMD flight testing in support of Integrated Master Test Plan (IMTP) requirements; enhance the Stockpile Reliability Program (SRP) and component aging testing in order to better understand and maintain the health of the deployed assets. The budget continues GMD fire control and kill vehicle (KV) software development, testing, and deployment to improve discrimination capabilities.

MDA has initiated the redesign of the Kill Vehicle (KV) for the GMD GBI. The Redesigned Kill Vehicle (RKV) will increase performance to address the evolving threat, improve in-flight communications to better utilize off-board sensor data, and enhance Combatant Commanders' situational awareness via hit/kill assessment messages. MDA requests \$274

million to continue development of the RKV and begin deployment in the 2020 timeframe and undertake other GBI improvements.

MDA is planning development of an upgraded tactical GBI booster (Configuration 3, or C3) to enhance survivability, mitigate current obsolescence and expand homeland defense capabilities against emerging threats. The C3 booster will utilize a 3-Stage booster design with a 2- or 3-stage selectable mode to expand engagement timelines and increase battlespace.

This budget request continues to implement reliability improvements, obsolescence mitigation, and technology modernization for key components of the GMD ground systems, such as fire control workstations, Command Launch Equipment, GMD Communications Network, and In-Flight Interceptor Communication System (IFICS) Data Terminals (IDT). This modernization will support discrimination improvements, improve cybersecurity resilience, reduce life-cycle cost, increase system reliability, and simplify future technology insertion.

The FY 2017 President's Budget reflects the Department's commitment to building regional missile defense forces that are interoperable with systems deployed by international partners. The European Phased Adaptive Approach (EPAA) is the U.S. contribution to NATO BMD designed to protect U.S. deployed forces and NATO allies in Europe from ballistic missile attacks from the Middle East. EPAA Phase 1 was deployed in 2011 and provides coverage of NATO territory in southeastern Europe. In support of EPAA Phase 2 deployment, MDA achieved a Technical Capability Declaration (TCD) of Aegis Ashore in Romania in December 2015, with the capability to launch Standard Missile (SM)-3 Block IA and IB variants.

MDA requests \$630 million for EPAA Phase 3 in FY 2017. This includes the deployment of a second Aegis Ashore site in Poland, upgrade and delivery of the Aegis Ballistic Missile Defense (BMD) weapon system, and integration and initial delivery of a new SM-3 variant, the Block IIA. Aegis Ashore construction for the Poland site is scheduled to begin in FY 2016, with a TCD by the end of calendar year 2018. For EPAA Phase 3, Aegis Ashore sites and Aegis BMD ships will be



capable of launching SM-3 Block IA, IB, and IIA variants, providing improved defensive coverage against short- through intermediate-range threats.

MDA requests \$514 million in procurement for Aegis BMD, which plays a critical role in both homeland and regional defense. MDA will procure 35 Aegis SM-3 Block IB missiles in FY 2017, for a total of 247 SM-3 Block IB missiles procured by the end of FY 2017. MDA will deliver 39 SM-3 Block IB missiles to the Fleet, for a delivery total of 146 missiles.

The procurement budget request continues to support Aegis BMD Weapon Systems, Aegis shipset equipment, and SM-3 Block IB spares. Following a production decision for the SM-3 Block IB in 2nd Quarter FY 2016, MDA will continue to deliver SM-3 Block IBs to the Navy for deployment on land at the Aegis Ashore site in Romania and at sea on multi-mission Aegis ships with BMD capability.

MDA requests \$73 million of Operation and Maintenance funding for the Aegis BMD program to perform missile recertification, repair efforts, demilitarization, and Ordnance Assessment/Surveillance. This funding includes BMD Computer Program, Ship Equipment, and Aegis Ashore - Romania sustainment, as well as Fleet integration support.

MDA requests \$106 million in FY 2017 for SM-3 Block IIA development, a cooperative effort between the U. S. and the Japan Ministry of Defense. SM-3 Block IIA development is ongoing and will continue to build upon established joint research investments by the United States and Japan. MDA is committed to delivering the SM-3 Block IIA to the Fleet to meet global threat requirements and support EPAA Phase 3.

MDA requests \$26 million in FY 2017 for the AN/SPY-1 Refurbishment Program. MDA is working with the U. S. Navy on an AN/SPY-1 radar refurbishment, focusing on improvements to the AN/SPY-1 radar antenna that, when coupled with the appropriate Aegis Weapon System computer baseline, will increase radar detection sensitivity. The resulting improvement in tracking capability against emerging threats for both Anti-Air Warfare (AAW) and BMD will enhance our nation's Integrated Air and Missile Defense capability. The preliminary requirements and design for the AN/SPY-1 refurbishment

are complete; full-scale tests to demonstrate tracking capability against live targets are planned. MDA and the Navy plan to field the refurbished antennas onboard selected Aegis DDG Flight I and II ships starting in the FY 2022 timeframe.

Terminal High Altitude Area Defense (THAAD) is a transportable, ground-based missile defense system that defends against short- and medium-range ballistic missiles in the terminal stage of flight. THAAD provides Combatant Commanders a rapidly deployable capability to deepen, extend, and complement BMDS homeland and regional defenses. One THAAD unit was deployed to Guam in 2013 in response to North Korean threats in the Pacific Area of Operations.

MDA requests \$370 million to continue procurement of THAAD equipment, including 24 THAAD interceptors and one radar training device for the THAAD Institutional Training Base at Fort Sill, OK. By the end of FY 2017, MDA will deliver 61 additional THAAD interceptors to the U.S. Army, for a total of 205 interceptors delivered. This procurement supports the fielding of THAAD batteries, based on warfighter demand and operational need.

MDA requests a total of \$270 million for THAAD developmental efforts. As part of the expansion of THAAD capability, MDA will continue development of THAAD software upgrades and THAAD participation in the IMTP flight and ground tests. Additionally, MDA will continue concept development and risk reduction activities for THAAD Follow-On capabilities, to include advanced capabilities against emerging threats, complex scenes and countermeasures. These activities will explore and mature the expansion of THAAD system interoperability with air and missile defense systems and extension of THAAD battlespace and defended area.

MDA requests \$72 million of Operations and Maintenance funding to support the maintenance and upkeep of all BMDS unique items of the fielded THAAD batteries as well as for all THAAD training devices. By the end of FY 2017 MDA will provide support to seven THAAD batteries.

MDA requests \$491 million to develop, deploy, test and sustain the AN/TPY-2 radars, the Upgraded Early Warning Radars (UEWR), and the Cobra Dane radar. The Services and Combatant Commands, with logistical support from MDA, operate AN/TPY-2 radars (Forward Based Mode) in Japan (two radars), Israel, Turkey, and United States Central Command (USCENTCOM) in support of regional defense. Some of the radars also provide a significant contribution to the defense of

the U.S. homeland by acquiring threats and providing track and discrimination data through the BMDS C2BMC system to the GMD Fire Control. MDA continues to support the AN/TPY-2 radar (Terminal Mode) as part of a forward deployed THAAD battery in Guam.

C2BMC provides persistent tracking, cueing, discrimination, and fire control quality data to Aegis BMD, GMD, THAAD, and missile defense systems of coalition partners to support homeland and regional defense objectives. MDA requests \$440 million to complete development and fielding of Spiral 8.2-1 which will enhance C2BMC track, discrimination and battle management capability to integrate additional space sensors and to sustain current Spiral 6.4 C2BMC global capability. Spiral 8.2-3 will enable Aegis BMD to provide a five-fold increase in defended area by providing critical sensor management and track reporting improvements for Aegis BMD Engage-on-Remote (EOR) functionality in support of EPAA Phase 3, improve Overhead Persistent Infrared-based (OPIR) cueing of radars and shooters in all phases of threat engagements, and provide integration with the new Army Integrated Air and Missile Defense Battle Command System (IBCS). C2BMC is conducting requirements analysis for the future Spiral 8.2-5 which will integrate and control the Long Range Discrimination Radar (LRDR) into the BMDS in the 2020 time frame. MDA is also enhancing C2BMC capability in the United States Pacific Command (USPACOM), United States Northern Command (USNORTHCOM), USCENTCOM, and the United States European Command (USEUCOM) to integrate space, sea, and land-based BMD sensor data for the BMDS.

The MDA Cyber Operations Program is vital in its support of the operational development of the BMDS as well as MDA test and General Service systems. The program has several initiatives, including Computer Network Defense (CND), Certification and Accreditation (C&A) activities, and Computer Emergency Response Teams (CERT). MDA is a constituent part of a multi-tiered Computer Network Defense (CND) capability that quickly adapts to near-term changes, continuously evolves to meet long-range threat and technology trends, and unites all missile defense elements under the coordination and direction of a single lead organization, United States Cyber Command, to conduct multi-component and defense-wide CND operations. The information security framework will be integrated into the agency infrastructure in an effort to connect MDA systems around the world.

MDA requests \$69 million for the Sea-Based X-band (SBX) radar. The SBX is an advanced radar providing precision mid-course tracking and discrimination capabilities. The SBX supports flight testing to demonstrate discrimination and debris mitigation improvements. The budget includes funds to maintain improved reaction time and conduct contingency operations for defense of the Homeland in the USPACOM and USNORTHCOM areas of responsibility.

The budget requests \$162 million to continue the development of the Long Range Discrimination Radar (LRDR). The LRDR is a midcourse sensor that will improve BMDS target discrimination capability against potential countermeasures, while supporting a more efficient utilization of the GMD interceptor inventory. The LRDR site will be constructed as two separate military construction (MILCON) projects.

MDA requests \$155 million in MILCON for Phase One, a Shielded Mission Control Facility and Radar Foundation in FY 2017. Phase Two will provide \$150 million for the shielded Power Plant that includes fuel storage, a maintenance facility, and associated site support in FY 2019.

MDA performs the systems engineering required to design, build, test, assess and field the integrated BMDS. BMD system-level engineering and integration enables interoperability and drives future capability development from a system perspective to maximize the effectiveness of BMD technologies. MDA employs system and element-level models and simulations to verify system performance and capability to engage and defeat complex threats across a spectrum of scenarios that cannot be tested in live-fire tests. As a result, MDA is able to provide evolving, integrated and layered BMDS performance and capabilities that have been thoroughly assessed and validated through testing and Modeling and Simulation.

The Agency works collaboratively with Director, Operational Test & Evaluation; Deputy Assistant Secretary of Defense, Developmental Test and Evaluation; Commander, Joint Functional Component Command Integrated Missile Defense; Service and the Joint Interoperability Test Command; and Operational Test Agencies to identify and incorporate all testing requirements into development of the IMTP, a comprehensive, highly integrated, complex, cost-effective series of flight, ground tests, wargames and exercises.

MDA, in conjunction with IMTP developers, executes a fully integrated test program that synchronizes the system under test with the Warfighters trained to operate the system under varying wartime conditions against current and emerging threats. This ensures that BMDS capabilities are credibly demonstrated and validated prior to delivery to the Warfighter.

In addition, MDA develops new capabilities to counter the emerging threats. The FY 2017 budget continues the effort to provide discrimination improvements for homeland and regional defense, which will develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat.

These improved technologies will enhance the capability of the BMDS to discriminate and destroy reentry vehicles with a higher degree of confidence, improving Warfighter shot doctrine and preserving interceptor inventory.

MDA requests \$20 million in the BMD Space program for the Spacebased Kill Assessment (SKA) experiment. SKA leverages a commercially hosted sensor network that will provide kill assessment data for the BMDS, which was a focus area in section 237 of the FY 2014 National Defense Authorization Act. The commercial host expects to launch the SKA network in FY 2017.

MDA requests \$32 million for Space Tracking and Surveillance System (STSS) satellite operations and sustainment. STSS consists of two satellites operating in Low Earth Orbit and provides risk reduction data for a potential operational BMDS tracking and surveillance constellation in the areas of sensor management, target signatures, discrimination, and fire control loop closure. STSS will continue participating in MDA test events and data collections providing Battlespace Awareness, Technical Intelligence and Space Situational Awareness to the Warfighter.

MDA is also developing advanced BMD technologies that can be integrated into the BMDS to adapt as the threat changes in the future. The advanced technology investments are informed by capability gap assessments and focus on concepts that bring upgraded capability to the Warfighter. The goal is to provide transformative capabilities that enable the future BMDS to keep pace with new and evolving threats.

MDA requests \$72 million in Weapons Technology to build the technological foundation for the next-generation laser system capable of defeating advanced threats and raids more efficiently than existing missile interceptors. Within the Directed Energy Program, we will continue to develop two potential solid-state lasers to demonstrate the technology necessary to scale laser power to hundreds of kilowatts in a compact efficient manner.

MDA requests \$90 million for Technology Maturation Initiatives to build on the foundational successes in Weapons Technology and Discrimination Sensor Technology. MDA will integrate an advanced sensor into the tactically proven Multispectral Targeting System and MQ-9 Reaper combination to address precision track and discrimination performance of airborne sensors. MDA will also award contracts to design a UAV-borne laser for boost phase missile defense. Adding a boost phase layer to the missile defense architecture could increase the performance and efficiency of the BMDS.

MDA requests \$72 million for the Multi-Object Kill Vehicle (MOKV) Program to address a BMDS gap, allowing us to engage a more numerous and increasingly more complex threat early in the flight trajectory. MDA is working with industry to define concepts that will enable each GBI in our inventory to deploy MOKVs in support of an integrated BMDS and homeland defense. Based on the three prime contractor defined interceptor concepts, MDA will focus technology investments that reduce kill vehicle design and development risk and improve performance.

MDA requests \$23 million for the Advanced Research Program to conduct innovative research and development with small businesses, universities, and international partners to create and advance future missile defense capability. MDA continues to capitalize on the creativity and innovation of the Nation's small business community and academia to enhance the BMDS.

MDA also requests \$18 million for the Advanced Concepts & Performance Assessment effort, which centralizes advanced technology concept modeling, simulation, and performance analysis and delivers independent assessments of government, university, and industry technology concepts that, along with systems engineering requirements, support acquisition strategy decisions and define our technology focus areas. The request will fund the digital simulation and hardware-in-the-loop infrastructure required for testing of an airborne advanced sensor, Kill Vehicle Modular Open Architecture testbed, pre- and

post-mission performance predictions and assessments, and mature related tracking, discrimination, and sensor fusion algorithms.

MDA continues to support the development of regional missile defense capabilities and expand work with international partners to include conducting joint analyses to support missile defense acquisition decision, cooperative research and development projects, deployments, and co-production.

This budget continues MDA's longstanding support of U.S.-Israeli Cooperative BMD Programs, to include the co-development of the David's Sling Weapon System, Upper Tier Interceptor, and Arrow Weapon System Improvements. In addition, MDA continues previous year efforts in co-producing the Iron Dome Defense System in the FY 2017 budget. MDA works with Israel's Missile Defense Organization on these programs in accordance with jointly signed international agreements.

MDA requests \$7.5 billion in FY 2017 to strengthen and expand the deployment of defenses for our Nation, deployed forces, allies, and international partners against increasingly capable ballistic missiles.

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**Missile Defense Agency  
President's Budget (PB) 2017-2021  
FY 2017 through FY 2021 Appropriation Summary  
(\$ Thousands)**

Line Number	Program Element	Budget Project	Program	Budget Activity	FY15 Actual	FY16	FY17	FY18	FY19	FY20	FY21	FY17-21
<b>Operations &amp; Maintenance</b>												
011A	0208866C		O&M	NA	402,462	424,069	446,975	470,884	496,702	533,236	541,432	2,489,229
		MD08	Ground Base Midcourse	NA	150,892	133,511	129,281	137,896	143,027	139,319	142,269	691,792
		MD07	THAAD	NA	62,078	58,308	72,099	78,761	87,478	92,082	91,832	422,252
		MD09	AEGIS	NA	11,632	46,111	73,039	77,707	80,746	98,806	103,809	434,107
		MD11	BMDS AN/TPY-2 Radars	NA	177,860	186,139	172,556	176,520	185,451	203,029	203,522	941,078
			Budget Activity NA Total	NA	402,462	424,069	446,975	470,884	496,702	533,236	541,432	2,489,229
			Operations and Maintenance Total	NA	402,462	424,069	446,975	470,884	496,702	533,236	541,432	2,489,229
<b>Procurement</b>												
	0208866C		PROCUREMENT	NA	1,757,170	1,489,203	988,503	1,390,673	1,499,493	1,617,970	1,781,795	7,278,434
23		MD07	THAAD	NA	449,478	447,971	369,608	451,592	440,883	405,015	420,829	2,087,927
24		MD09	AEGIS BMD	NA	663,316	566,711	463,801	727,291	962,410	1,079,913	1,221,081	4,454,496
25		MD11	BMDS AN/TPY-2 Radars	NA	87,803	78,634	5,503	2,408	3,016	11,017	53,898	75,842
26		MD20	Arrow Upper Tier	NA	0	15,000	0	0	0	0	0	0
27		MD34	David's Sling	NA	0	150,000	0	0	0	0	0	0
28		MD73	Aegis Ashore Phase III	NA	205,601	30,587	57,493	69,880	0	0	0	127,373
29		MD83	Iron Dome	NA	350,972	55,000	42,000	0	0	0	0	42,000
		MD90	Aegis BMD Hardware and Software	NA	0	145,300	50,098	139,502	93,184	122,025	85,987	490,796
			Budget Activity NA Total	NA	1,757,170	1,489,203	988,503	1,390,673	1,499,493	1,617,970	1,781,795	7,278,434
			Procurement Total	NA	1,757,170	1,489,203	988,503	1,390,673	1,499,493	1,617,970	1,781,795	7,278,434
<b>RDT&amp;E</b>												
28	0603176C		Advanced Concepts and Performance Assessment	3	9,999	12,139	17,880	12,599	12,897	13,004	13,221	69,601
		MD71	Advanced Concepts and Performance Assessments	3	9,539	11,569	17,298	11,988	12,242	12,336	12,524	66,388
		MD40	Program-Wide Support	3	460	570	582	611	655	668	697	3,213
29	0603177C		Discrimination Sensor Technology	3	35,223	28,200	0	0	0	0	0	0
		MD95	Discrimination Sensor Technology	3	33,258	23,304	0	0	0	0	0	0
		MT95	Discrimination Sensor Tech-Flight Test Execution	3	0	3,749	0	0	0	0	0	0
		MC95	Cyber Operations	3	132	0	0	0	0	0	0	0
		MD40	Program-Wide Support	3	1,833	1,147	0	0	0	0	0	0
30	0603178C		Weapons Technology	3	61,396	51,153	71,843	69,004	53,745	66,400	67,487	328,479
		MD69	Directed Energy Research	3	20,691	26,055	47,691	65,695	51,044	63,026	63,965	291,421
		MD72	Interceptor Technology	3	40,000	22,967	22,000	0	0	0	0	22,000
		MD40	Program-Wide Support	3	705	2,131	2,152	3,309	2,701	3,374	3,522	15,058
31	0603179C		Advanced C4ISR	3	13,061	9,876	3,626	0	0	0	0	3,626
		MD73	Advanced C4ISR	3	12,382	9,412	3,462	0	0	0	0	3,462
		MD40	Program-Wide Support	3	679	464	164	0	0	0	0	164
32	0603180C		Advanced Research	3	18,476	17,364	23,433	19,870	20,529	21,131	21,494	106,457
		MD25	Advanced Technology Development	3	17,980	16,549	22,600	18,908	19,487	20,047	20,362	101,404
		MD40	Program-Wide Support	3	496	815	833	962	1,042	1,084	1,132	5,053

Line Number	Program Element	Budget Project	Program	Budget Activity	FY15 Actual	FY16	FY17	FY18	FY19	FY20	FY21	FY17-21
35	0603274C		Special Program - MDA Technology	3	43,439	13,908	83,745	0	0	0	0	83,745
		MD81	Special Programs - MDA Technology	3	43,439	13,908	83,745	0	0	0	0	83,745
40	0603294C		Common Kill Vehicle Technology	3	24,836	61,753	0	0	0	0	0	0
		MD85	Common Kill Vehicle Technology	3	23,524	59,558	0	0	0	0	0	0
		MD40	Program Wide Support	3	1,312	2,195	0	0	0	0	0	0
			Budget Activity 03 Total	3	206,430	194,393	200,527	101,473	87,171	100,535	102,202	591,908
73	0603881C		Ballistic Missile Defense Terminal Defense Segment	4	161,298	212,230	206,834	231,105	197,018	250,227	260,613	1,145,797
		MD07	THAAD	4	140,019	200,395	192,699	215,417	181,703	232,169	241,539	1,063,527
		MC07	Cyber Operations	4	389	652	3,367	3,325	4,117	3,964	4,069	18,842
		MD06	Patriot Advanced Capability-3 (PAC-3)	4	960	1,154	1,130	1,168	1,186	1,248	1,267	5,999
		MD40	Program-Wide Support	4	19,930	10,029	9,638	11,195	10,012	12,846	13,738	57,429
74	0603882C		Ballistic Missile Defense Midcourse Defense Segment	4	863,965	1,269,913	862,080	701,311	585,079	600,710	535,614	3,284,794
		MD08	Ground Based Midcourse	4	801,930	1,209,006	815,796	658,613	546,271	560,488	497,613	3,078,781
		MC08	Cyber Operations	4	3,475	4,394	4,563	4,762	4,972	5,195	5,417	24,909
		MD40	Program-Wide Support	4	58,560	56,513	41,721	37,936	33,836	35,027	32,584	181,104
76	0603884C		Ballistic Missile Defense Sensors	4	260,347	228,392	230,077	144,893	141,815	171,644	158,421	846,850
		MD11	BMDS Radars	4	236,819	216,880	219,503	137,144	134,259	161,902	148,004	800,812
		MC11	Cyber Operations	4	1,132	1,239	1,045	1,067	1,089	1,111	1,133	5,445
		MD40	Program-Wide Support	4	22,396	10,273	9,529	6,682	6,467	8,631	9,284	40,593
77	0603890C		BMD Enabling Programs	4	395,927	404,780	401,594	404,993	409,481	427,603	434,868	2,078,539
		MD24	System Engineering & Integration	4	126,625	141,368	133,166	135,296	137,233	139,846	141,901	687,442
		MT23	Enabling - Test	4	32,792	16,611	17,449	25,501	26,040	24,704	25,077	118,771
		MD28	Intelligence & Security	4	38,485	40,263	41,254	45,192	45,654	48,462	49,348	229,910
		MD30	BMD Information Management Systems	4	90,761	95,650	92,628	81,212	80,427	86,691	87,939	428,897
		MC30	Cyber Operations	4	19,189	20,017	22,881	21,019	21,184	23,922	24,396	113,402
		MD31	Modeling & Simulation	4	39,589	42,668	44,458	47,278	47,837	50,226	50,984	240,783
		MC31	M&S Cyber Operations	4	204	225	253	258	263	268	274	1,316
		MD32	Quality, Safety, and Mission Assurance	4	29,358	29,986	31,022	29,582	29,970	31,470	31,967	154,011
		MD40	Program-Wide Support	4	18,924	17,992	18,483	19,655	20,873	22,014	22,982	104,007
78	0603891C		Special Programs - MDA	4	301,201	400,387	321,607	307,410	284,785	264,031	268,024	1,445,857
		MD27	Special Programs	4	301,201	400,387	321,607	307,410	284,785	264,031	268,024	1,445,857
79	0603892C		AEGIS BMD	4	761,646	830,647	959,066	841,738	700,596	592,940	528,744	3,623,084
		MD09	Aegis BMD	4	669,587	719,565	846,028	733,184	593,543	497,562	435,442	3,105,759
		MC09	Cyber Operations	4	880	870	879	885	884	884	901	4,433
		MX09	Aegis BMD Development Support	4	32,016	73,118	68,283	66,770	70,406	63,884	64,285	333,628
		MD40	Program-Wide Support	4	59,163	37,094	43,876	40,899	35,763	30,610	28,116	179,264
80	0603893C		Space Tracking and Surveillance System	4	29,530	28,605	32,129	33,869	34,884	36,203	36,821	173,906
		MD12	Space Tracking and Surveillance System (STSS)	4	27,716	27,214	30,751	32,228	33,111	34,344	34,879	165,313
		MD40	Program-Wide Support	4	1,814	1,391	1,378	1,641	1,773	1,859	1,942	8,593
81	0603895C		Ballistic Missile Defense System Space Programs	4	7,560	21,507	20,690	15,670	11,641	11,796	11,992	71,789
		MD33	MD Space Exp Center (MDSEC)	4	7,191	20,483	19,755	14,911	11,049	11,190	11,360	68,265
		MD40	Program-Wide Support	4	369	1,024	935	759	592	606	632	3,524

Line Number	Program Element	Budget Project	Program	Budget Activity	FY15 Actual	FY16	FY17	FY18	FY19	FY20	FY21	FY17-21
82	0603896C		Ballistic Missile Defense Command and Control, Battle Management & Communication	4	420,516	429,853	439,617	413,198	432,763	454,601	462,065	2,202,244
		MD01	Command & Control, Battle Management, Communications (C2BMC)	4	254,080	260,100	249,662	232,379	240,621	255,093	255,258	1,233,013
		MC01	Cyber Operations	4	819	543	905	942	979	1,018	1,058	4,902
		MT01	C2BMC Test	4	51,890	56,318	52,727	55,665	53,188	55,129	56,207	272,916
		MX01	Command & Control, Battle Management, Communications (C2BMC) Development Support	4	89,235	93,097	116,552	104,221	115,994	120,027	125,174	581,968
		MD40	Program-Wide Support	4	24,492	19,795	19,771	19,991	21,981	23,334	24,368	109,445
83	0603898C		Ballistic Missile Defense Joint Warfighter Support	4	44,220	47,898	47,776	49,621	50,564	53,151	54,042	255,154
		MD03	Joint Warfighter Support	4	40,638	14,569	15,417	15,832	16,071	16,885	17,146	81,351
		MT03	Joint Warfighter Support Test	4	1,051	31,149	30,423	31,369	31,904	33,517	34,027	161,240
		MD40	Program-Wide Support	4	2,531	2,180	1,936	2,420	2,589	2,749	2,869	12,563
84	0603904C		Missile Defense Integration and Operations Center (MDIOC)	4	53,972	47,939	54,750	53,894	55,524	58,100	59,029	281,297
		MD22	Missile Defense Integration and Operations Center (MDIOC)	4	50,127	45,303	51,773	50,663	52,076	54,468	55,255	264,235
		MC22	Cyber Operations	4	592	472	456	612	617	640	653	2,978
		MD40	Program-Wide Support	4	3,253	2,164	2,521	2,619	2,831	2,992	3,121	14,084
85	0603906C		Regarding Trench	4	15,912	9,583	8,785	9,161	9,314	9,786	9,934	46,980
		MD35	Regarding Trench	4	15,912	9,583	8,785	9,161	9,314	9,786	9,934	46,980
86	0603907C		Sea Based X-Band Radar (SBX)	4	64,610	71,266	68,787	73,329	70,423	85,881	74,189	372,609
		MX46	Sea Based X-Band Radar Development Support	4	60,882	68,061	65,678	69,759	66,842	81,471	70,276	354,026
		MD40	Program-Wide Support	4	3,728	3,205	3,109	3,570	3,581	4,410	3,913	18,583
87	0603913C		Israeli Cooperative Programs	4	268,842	267,595	103,835	105,612	108,271	110,009	112,168	539,895
		MD20	Israeli Upper Tier	4	74,707	74,550	55,793	56,861	58,285	59,225	60,392	290,556
		MD26	Israeli ARROW Program	4	56,201	56,519	10,831	10,833	11,117	11,285	11,505	55,571
		MD34	Short Range Ballistic Missile Defense (SRBMD)	4	137,934	136,526	37,211	37,918	38,869	39,499	40,271	193,768
88	0603914C		Ballistic Missile Defense Test	4	354,414	281,740	293,441	337,537	322,334	346,134	351,933	1,651,379
		MT04	BMDS Test Program	4	334,185	267,225	277,851	318,658	303,374	325,732	330,699	1,556,314
		MC04	Cyber Operations	4	1,141	2,450	2,479	2,528	2,578	2,631	2,682	12,898
		MD40	Program Wide Support	4	19,088	12,065	13,111	16,351	16,382	17,771	18,552	82,167
89	0603915C		Ballistic Missile Defense Targets	4	447,424	527,563	563,576	471,059	431,349	454,830	462,429	2,383,243
		MT05	BMDS Targets Program	4	422,612	504,989	539,837	448,238	409,425	431,477	438,049	2,267,026
		MD40	Program Wide Support	4	24,812	22,574	23,739	22,821	21,924	23,353	24,380	116,217
93	0604115C		Technology Maturation Initiatives	4	0	27,225	90,266	149,901	205,787	198,136	201,431	845,521
		MD98	Directed Energy Prototype Development	4	0	0	23,744	46,938	80,900	66,052	60,418	278,052
		MD99	Discrimination Sensor Prototype Development	4	0	20,467	57,382	69,903	109,286	115,812	127,654	480,037
		MT99	Technology Maturation Initiatives Test	4	0	2,357	4,408	25,539	4,963	5,918	2,554	43,382
		MC98	Cyber Operations	4	0	166	168	258	176	179	182	963
		MD40	Program Wide Support	4	0	4,235	4,564	7,263	10,462	10,175	10,623	43,087
104	0604873C		Long Range Discrimination Radar (LRDR)	4	49,606	137,564	162,012	310,347	76,843	98,874	102,320	750,396
		MD96	Long Range Discrim Radar (LRDR)	4	49,606	131,514	150,203	300,338	71,133	94,843	99,080	715,597
		MD40	Program Wide Support	4	0	6,050	11,809	10,009	5,710	4,031	3,240	34,799
105	0604874C		Improved Homeland Defense (HLD) Interceptors	4	97,739	278,944	274,148	321,441	479,049	508,198	580,239	2,163,075
		MD97	Improved HD Interceptors	4	97,739	266,676	260,543	306,321	455,080	482,214	549,783	2,053,941
		MD40	Program Wide Support	4	0	12,268	13,605	15,120	23,969	25,984	30,456	109,134
106	0604876C		Ballistic Missile Defense Terminal Defense Segment Test	4	109,394	26,225	63,444	69,959	79,497	72,950	59,271	345,121
		MT07	THAAD Test	4	109,394	25,072	60,577	66,569	75,456	69,204	56,145	327,951
		MD40	Program Wide Support	4	0	1,153	2,867	3,390	4,041	3,746	3,126	17,170
107	0604878C		Aegis BMD Test	4	88,041	78,468	95,012	127,720	91,461	88,217	98,525	500,935
		MT09	AEGIS BMD Test	4	88,041	76,043	90,953	121,531	86,811	83,687	93,328	476,310
		MD40	Program Wide Support	4	0	2,425	4,059	6,189	4,650	4,530	5,197	24,625

Line Number	Program Element	Budget Project	Program	Budget Activity	FY15 Actual	FY16	FY17	FY18	FY19	FY20	FY21	FY17-21
108	0604879C		Ballistic Missile Defense Sensor Test	4	60,048	83,597	83,250	87,346	100,132	100,073	86,937	457,738
		MT11	BMDs Radars Test	4	60,048	79,782	78,430	82,876	94,753	94,691	82,095	432,845
		MD40	Program Wide Support	4	0	3,815	4,820	4,470	5,379	5,382	4,842	24,893
109	0604880C		Land Based SM-3 (LBSM3)	4	121,413	34,970	43,293	29,045	19,259	21,294	21,646	134,537
		MD68	AEGIS Ashore	4	94,943	33,432	41,548	27,637	18,280	20,200	20,504	128,169
		MT68	Aegis Ashore Test	4	20,473	0	0	0	0	0	0	0
		MD40	Program-Wide Support	4	5,997	1,538	1,745	1,408	979	1,094	1,142	6,368
110	0604881C		AEGIS SM-3 Block IIA Co-Development	4	259,278	172,645	106,038	0	0	0	0	106,038
		MD09	SM-3 Block IIA Co-Development	4	236,565	139,866	91,071	0	0	0	0	91,071
		MT09	SM-3 Block IIA Co-Development Test	4	7,468	25,186	12,208	0	0	0	0	12,208
		MD40	Program-Wide Support	4	15,245	7,593	2,759	0	0	0	0	2,759
111	0604887C		Ballistic Missile Defense Midcourse Defense Segment Test	4	78,463	64,618	56,481	86,709	76,205	74,776	87,415	381,586
		MT08	Midcourse Test	4	78,463	61,777	53,192	83,069	72,723	70,935	82,805	362,724
		MD40	Program Wide Support	4	0	2,841	3,289	3,640	3,482	3,841	4,610	18,862
112	0604894C		Multi Object Kill Vehicle	4	0	0	71,513	34,884	84,503	98,065	99,699	388,664
		MD85	Multi Object Kill Vehicle	4	0	0	68,201	33,194	80,208	93,029	94,442	369,074
		MD40	Program-Wide Support	4	0	0	3,312	1,690	4,295	5,036	5,257	19,590
115	0305103C		Cyber Security Initiative	4	944	963	969	986	997	1,031	1,051	5,034
		MDCS	Cyber Security Initiative	4	944	963	969	986	997	1,031	1,051	5,034
			Budget Activity 04 Total	4	5,316,310	5,985,117	5,661,070	5,412,738	5,059,574	5,189,260	5,159,420	26,482,062
152	0605502C		Small Business Innovation Research - MDA	6	89,507	0	0	0	0	0	0	0
		MD45	Small Business Innovation Research	6	89,507	0	0	0	0	0	0	0
176	0901598C		Management HQ - MDA	6	35,598	35,871	31,160	29,814	27,889	27,131	27,737	143,731
		MD38	Management Headquarters	6	35,598	35,871	31,160	29,814	27,889	27,131	27,737	143,731
			Budget Activity 06 Total	6	125,105	35,871	31,160	29,814	27,889	27,131	27,737	143,731
			RDT&E Total	6	5,647,845	6,215,381	5,892,757	5,544,025	5,174,634	5,316,926	5,289,359	27,217,701
MILCON												
			Major MILCON	NA	0	169,153	176,230	0	150,000	0	0	326,230
			Long Range Discrimination Radar Cmplx, Clear AFS, AK	NA	0		155,000	0	150,000	0	0	305,000
			Missile Defense Cmplx Switchgear Facility, Ft. Greely, AK	NA	0	0	9,560	0	0	0	0	9,560
			Test Support Facility, Wake Island	NA	0	0	11,670	0	0	0	0	11,670
			Aegis Ashore Missile Def Cmplx, Poland	NA	0	169,153	0	0	0	0	0	0
			Minor MILCON	NA	2,000	0	2,414	3,000	3,000	3,000	3,000	14,414
				NA	2,000	0	2,414	3,000	3,000	3,000	3,000	14,414
			MILCON Planning and Design	NA	58,704	15,000	0	6,355	6,384	7,640	7,848	28,227
				NA	58,704	15,000	0	6,355	6,384	7,640	7,848	28,227
			MILCON Total	NA	60,704	184,153	178,644	9,355	159,384	10,640	10,848	368,871
			Program Total		7,868,181	8,312,806	7,506,879	7,414,937	7,330,213	7,478,772	7,623,434	37,354,235

**Missile Defense Agency Congressional Reporting Requirements**

Reporting Requirement Reference	Reporting Requirement Language	Budget Documentation
<p>Sec. 1679 of the FY16 National Defense Authorization Act (HR 1735), pp. 1041-1046</p>	<p><b>SEC. 1679. ISRAELI COOPERATIVE MISSILE DEFENSE PROGRAM CODEVELOPMENT AND COPRODUCTION</b></p> <p>(a) IN GENERAL.—Subject to subsection (b), of the funds authorized to be appropriated for fiscal year 2016 for procurement, Defense-wide, and available for the Missile Defense Agency—</p> <p>(1) not more than \$150,000,000 may be provided to the Government of Israel to procure the David’s Sling Weapon System, including for coproduction of parts and components in the United States by United States industry; and</p> <p>(2) not more than \$15,000,000 may be provided to the Government of Israel for the Arrow 3 Upper Tier Interceptor Program, including for coproduction of parts and components in the United States by United States industry.</p> <p>(b) CERTIFICATION.—</p> <p>(1) CRITERIA.—Except as provided by subsection (c), the Under Secretary of Defense for Acquisition, Technology, and Logistics shall submit to the appropriate congressional committees a certification that—</p> <p>(A) the Government of Israel has demonstrated the successful completion of the knowledge points, technical milestones, and production readiness reviews required by the research, development, and technology agreements for the David’s Sling Weapon System and the Arrow 3 Upper Tier Development Program, respectively;</p> <p>(B) such funds will be provided on the basis of a one-for-one cash match made by Israel for such respective systems or in another matching amount that otherwise meets best efforts (as mutually agreed to by the United States and Israel);</p> <p>(C) the United States has entered into a bilateral agreement with Israel that establishes—</p> <p>(i) in accordance with subparagraph (D), the terms of coproduction of parts and components of such respective systems on the basis of the greatest practicable coproduction of parts, components, and all up rounds (if appropriate) by United States industry and minimizes nonrecurring engineering and facilitization expenses;</p> <p>(ii) complete transparency on the requirement of Israel for the number of interceptors and batteries of such respective systems that will be procured, including with respect to the procurement plans, acquisition strategy, and funding profiles of Israel;</p> <p>(iii) technical milestones for coproduction of parts and components and procurement of such respective systems; and</p> <p>(iv) joint approval processes for third party sales of such respective systems and the components of</p>	<p>Submitted with the FY2017 Budget Release</p>

**Missile Defense Agency Congressional Reporting Requirements**

such respective systems; and  
(D) the level of coproduction described in subparagraph (C)(i) for the David’s Sling Weapon System is equal to or greater than 50 percent.  
(2) NUMBER.—In carrying out paragraph (1), the Under Secretary may submit—  
(A) one certification covering both the David’s Sling Weapon System and the Arrow 3 Upper Tier Interceptor Program; or  
(B) separate certifications for each such respective system.  
(3) TIMING.—The Under Secretary shall submit to the congressional defense committees the certification under paragraph (1) by not later than 60 days before the funds specified in subsection (a) for the respective system covered by the certification are provided to the Government of Israel.  
  
(c) WAIVER.—The Under Secretary may waive the certification required by subsection (b) if the Under Secretary certifies to the appropriate congressional committees that the Under Secretary has received sufficient data from the Government of Israel to demonstrate—  
(1) the funds specified in paragraph (1) and (2) of subsection (a) are provided to Israel solely for funding the procurement of long-lead components in accordance with a production plan, including a funding profile detailing Israeli contributions for production, including long-lead production, of either David’s Sling Weapon System or the Arrow 3 Upper Tier Interceptor Program;  
(2) such long-lead components have successfully completed knowledge points, technical milestones, and production readiness reviews; and  
(3) the long-lead procurement will be conducted in a manner that maximizes coproduction in the United States without incurring additional nonrecurring engineering activity or cost.  
  
(d) PLAN ON COPRODUCTION OF DAVID’S SLING WEAPON SYSTEM.—At the same time that the President submits to Congress the budget for fiscal year 2017 under section 1105(a) of title 31, United States Code, the Director of the Missile Defense Agency and the Under Secretary shall jointly submit to the appropriate congressional committees a plan to achieve a rate of coproduction by United States industry of parts and components of the David’s Sling Weapon System at a level that is not less than 50 percent. Such plan shall include—  
(1) a timeline for achieving such a level of coproduction;  
(2) any nonrecurring engineering or facilitization costs related to such coproduction, costs for additional testing and training, and other additional associated costs;  
(3) a recommendation for whether carrying out such plan is in the national interest of the United States; and  
(4) any other matter the Director and Under Secretary consider appropriate.

<b>Missile Defense Agency Congressional Reporting Requirements</b>		
	<p>(e) APPROPRIATE CONGRESSIONAL COMMITTEES DEFINED.—In this section, the term “appropriate congressional committees” means the following:</p> <p>(1) The congressional defense committees.</p> <p>(2) The Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate.</p>	
<p>Sec. 1681 of the FY16 National Defense Authorization Act (HR 1735), pp. 1050-1052</p>	<p><b>SEC. 1681. DEVELOPMENT AND DEPLOYMENT OF MULTIPLE-OBJECT KILL VEHICLE FOR MISSILE DEFENSE OF THE UNITED STATES HOMELAND</b></p> <p>(a) It is the sense of Congress that—</p> <p>(1) the defense of the United States homeland against the threat of limited ballistic missile attack (whether accidental, unauthorized, or deliberate) is the highest priority of the Missile Defense Agency;</p> <p>(2) the Missile Defense Agency is appropriately prioritizing the design, development, and deployment of the redesigned kill vehicle; and</p> <p>(3) the multiple-object kill vehicle could contribute critical capabilities to the future of the ballistic missile defense of the United States homeland.</p> <p>(b) MULTIPLE-OBJECT KILL VEHICLE.—</p> <p>(1) DEVELOPMENT.—The Director of the Missile Defense Agency shall develop a highly reliable multiple-object kill vehicle for the ground-based midcourse defense system using sound acquisition practices.</p> <p>(2) DEPLOYMENT.—The Director shall—</p> <p>(A) conduct rigorous flight testing of the multiple-object kill vehicle developed under paragraph (1) by not later than 2020; and</p> <p>(B) recognizing the primacy of developing the redesigned kill vehicle, produce and deploy the multiple-object kill vehicle as early as practicable after the date on which the Director carries out subparagraph (A).</p> <p>(c) CAPABILITIES AND CRITERIA.—The Director shall ensure that the multiple-object kill vehicle developed under subsection (b)(1) meets, at a minimum, the following capabilities and criteria:</p> <p>(1) Vehicle-to-vehicle communications.</p> <p>(2) Vehicle-to-ground communications.</p> <p>(3) Kill assessment capability.</p> <p>(4) The ability to counter advanced countermeasures, decoys, and penetration aids.</p> <p>(5) Producibility and manufacturability.</p>	<p>Submitted with the FY2017 Budget Release in PE 0603178C (Weapons Technology) and PE 0604894C (Multi Object Kill Vehicle)</p>

**Missile Defense Agency Congressional Reporting Requirements**

	<p>(6) Use of technology involving high technology readiness levels.</p> <p>(7) Options to be integrated onto other missile defense interceptor vehicles other than the ground based interceptors of the ground-based midcourse defense system.</p> <p>(8) Sound acquisition processes.</p> <p>(d) PROGRAM MANAGEMENT.—The management of the multiple-object kill vehicle program under subsection (b) shall report directly to the Deputy Director of the Missile Defense Agency.</p> <p>(e) REPORT ON FUNDING PROFILE.—The Director shall include with the budget justification materials submitted to Congress in support of the budget of the Department of Defense for fiscal year 2017 (as submitted with the budget of the President under section 1105(a) of title 31, United States Code) a report on the funding profile necessary for the multiple-object kill vehicle program to meet the objectives under subsection (b).</p>	
<p>Sec. 1684 of the FY16 National Defense Authorization Act (HR 1735), pp. 1056-1059</p>	<p><b>SEC. 1684. ADDITIONAL MISSILE DEFENSE SENSOR COVERAGE FOR PROTECTION OF UNITED STATES HOMELAND</b></p> <p>(a) It is the sense of Congress that additional missile defense sensor discrimination capabilities are needed to enhance the protection of the United States homeland against potential long-range ballistic missiles from Iran that, according to the Department of Defense, could soon be obtained by Iran as a result of its active space launch program.</p> <p>(b) STUDIES AND EVALUATIONS ON HOMEPORT OF SEA-BASED X-BAND RADAR.— Not later than 60 days after the date of the enactment of this Act, the Director of the Missile Defense Agency shall commence any siting studies, environmental impact assessments or statements required pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) that have not otherwise been prepared, homeport agreements for sea-based X-band radar support, evaluations of any needed pier modifications, and evaluations of any communications capabilities or other requirements to carry out the reassignment of the homeport of the sea-based X-band radar to a homeport on the East Coast of the United States.</p> <p>(c) POTENTIAL FUTURE MISSILE DEFENSE SENSOR SITES.—</p> <p>(1) EVALUATION.—Not later than March 31, 2016, the Director shall commence a study to evaluate at least three possible additional locations (in or outside the United States), selected by the Director, that would be best suited for future deployment of an advanced missile defense sensor site optimized against threats from Iran.</p>	<p>Submitted in the FY2017 Budget Justification Materials in PE 0603890C (BMD Enabling Programs) and PE 0603884C (BMD Sensors)</p>



**Missile Defense Agency Congressional Reporting Requirements**

	<p>(2) ENVIRONMENTAL IMPACT STATEMENTS.— Except as provided by paragraph (3), the evaluation under paragraph (1) shall include an environmental impact statement or other analysis in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) for each location included in the evaluation.</p> <p>(3) EXCEPTION.—If an environmental impact statement or other analysis described in paragraph (2) has already been prepared, or is not required by law, for a location included in the evaluation under paragraph (1), the Director shall not be required to carry out paragraph (2) with respect to such location.</p> <p>(d) DEPLOYMENT OF ADDITIONAL COVERAGE.— (1) DEPLOYMENT.—Not later than December 31, 2020, the Director, in cooperation with the relevant combatant command, shall deploy a long-range discrimination radar or other appropriate sensor capability in a location optimized to support the defense of the homeland of the United States from emerging long-range ballistic missile threats from Iran.</p> <p>(2) SEA-BASED X-BAND RADAR.—If the Director carries out paragraph (1) by reassigning the homeport of the sea-based X-band radar, the Director and the Secretary of the Navy may not carry out such reassignment until the date on which the Director certifies to the congressional defense committees that Hawaii will have adequate missile defense coverage prior to such reassignment.</p> <p>(e) SUBMISSION OF INFORMATION.—</p> <p>(1) REPORT.—Not later than December 31, 2018, the Director shall submit to the congressional defense committees a report containing the following:</p> <p>(A) The findings of the study conducted under paragraph (1) of subsection (c), including any environmental impact statements or analyses required by paragraph (2) of such subsection.</p> <p>(B) Notification of the manner in which Hawaii is being provided ballistic missile defense coverage.</p> <p>(2) PLAN.—In the budget justification materials submitted to Congress in support of the budget for each of fiscal years 2017 through 2020 submitted by the President to Congress under section 1105 of title 31, United States Code, the Director shall include—</p> <p>(A) the plan of the Director to carry out subsection (d); and</p> <p>(B) an update on the progress of the Director in implementing subsections (b) and (c).</p>	
<p>Sec 231 of the FY14 National Defense Authorization Act (HR 3304, TITLE II – Subtitle C),</p>	<p><b>SEC 231. IMPROVEMENTS TO ACQUISITION ACCOUNTABILITY REPORTS ON BALLISTIC MISSILE DEFENSE SYSTEM</b></p> <p>(a) Improvement to Operations and Sustainment Cost Estimates- In preparing the acquisition accountability reports on the ballistic missile defense system required by section 225 of title 10,</p>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR fully satisfies the requirement.</p>

**Missile Defense Agency Congressional Reporting Requirements**

<p>pp. 18</p>	<p>United States Code, the Director of the Missile Defense Agency shall improve the quality of cost estimates relating to operations and sustainment that are included in such reports under subsection (b)(3)(A) of such section, including with respect to the confidence levels of such cost estimates.</p> <p>(b) Operations and Sustainment Responsibility- Section 225 of title 10, United States Code, is amended by adding at the end the following new subsection:</p> <p>(e) Operations and Sustainment Cost Estimates- The Director shall ensure that each life-cycle cost estimate included in an acquisition baseline pursuant to subsection (b)(3)(A) includes--</p> <p>(1) all of the operations and sustainment costs for which the Director is responsible; and</p> <p>(2) a description of the operations and sustainment functions and costs for which a military department is responsible.'</p> <p>(c) Report-</p> <p>(1) IN GENERAL- Not later than one year after the date of the enactment of this Act, the Director of the Missile Defense Agency shall submit to the congressional defense committees a report outlining the plans of the Director to improve the quality of cost estimates pursuant to subsection (a).</p> <p>(2) ELEMENTS- The report under paragraph (1) shall include--</p> <p>(A) a description of the actions planned to improve the quality of cost estimates included in the acquisition accountability reports on the ballistic missile defense system required by section 225 of title 10, United States Code;</p> <p>(B) the schedule for such planned actions, including the planned schedule for meeting the requirements of subsection (e) of such section 225, as added by subsection (b);</p> <p>(C) a description of any steps taken during the previous year to improve the quality of such cost estimates;</p> <p>(D) an assessment of how the planned improvements compare to the best practices and cost-estimation guidelines recommended by the Comptroller General of the United States for cost estimates of the ballistic missile defense system;</p> <p>(E) any other matters the Director considers appropriate; and</p> <p>(F) the views of the Comptroller General of the United States with respect to the contents of the report.</p> <p>(3) FORM- The report under paragraph (1) shall be submitted in unclassified form.</p>	
<p>Sec 234 of H.R. 1960 H. Rpt 113-02, FY14 House Armed Services Committee Report, pp. 67-68</p>	<p><b>REPORT ON IMPROVEMENTS TO ACQUISITION ACCOUNTABILITY REPORTS ON BALLISTIC MISSILE DEFENSE SYSTEM</b></p> <p>This section would amend section 225 of title 10, United States Code, to include a requirement that the Director, Missile Defense Agency include in the annual Ballistic Missile Defense System Accountability Report certain operation and support costs, and statements as to the quality estimate</p>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR fully satisfies the requirement.</p>

**Missile Defense Agency Congressional Reporting Requirements**

	<p>level of each cost estimate as well as the steps the Director will take to ensure these estimates reach the “high-quality estimate” level established by the Comptroller General of the United States.</p> <p>(a) In General.—Section 225 of title 10, United States Code, is amended—</p> <p style="padding-left: 40px;">(1) in subsection (b)(3)(A), by inserting “comprehensive” before “life-cycle”; and</p> <p style="padding-left: 40px;">(2) by adding at the end the following:</p> <p style="padding-left: 40px;">(e) Quality of Cost Estimates.—(1) The Director shall ensure that each cost estimate included in an acquisition baseline pursuant to subsection (b)(3) includes all operation and support costs, regardless of funding source, for which the Director is responsible.</p> <p style="padding-left: 40px;">(2) In each such baseline submitted to the congressional defense committees, the Director shall state whether the underlying cost estimates in such baseline meet the criteria of the Comptroller General of the United States to be considered a high-quality estimate. If the Director states that such estimates do not meet such criteria, the Director shall include in such baseline the actions, including a schedule, that the Director plans to carry out for the estimates to meet such criteria.”.</p>	
<p>Sec 231 of the FY12 National Defense Authorization Act (S 1867, TITLE II – Subtitle C), pp. 53-54</p>	<p><b>SEC. 231. ACQUISITION ACCOUNTABILITY REPORTS ON THE BALLISTIC MISSILE DEFENSE SYSTEM</b></p> <p>(a) BASELINE REQUIRED.—</p> <p>(1) IN GENERAL.—Chapter 9 of title 10, United States Code, is amended by inserting after section 224 the following new section: 225. Acquisition accountability reports on the ballistic missile defense system</p> <p>(a) BASELINES REQUIRED.—(1) In accordance with paragraph (2), the Director of the Missile Defense Agency shall establish and maintain an acquisition baseline for—</p> <p style="padding-left: 40px;">(A) each program element of the ballistic missile defense system, as specified in section 223 of this title; and</p> <p style="padding-left: 40px;">(B) each designated major subprogram of such program elements.</p> <p>(2) The Director shall establish an acquisition baseline required by paragraph (1) before the date on which the program element or major subprogram enters—</p> <p style="padding-left: 40px;">(A) engineering and manufacturing development; and</p> <p style="padding-left: 40px;">(B) production and deployment.</p> <p>(3) Except as provided by subsection (d), the Director may not adjust or revise an acquisition baseline established under this section.</p> <p>(b) ELEMENTS OF BASELINES.—Each acquisition baseline required by subsection (a) for a program element or major subprogram shall include the following:</p> <p style="padding-left: 40px;">(1) A comprehensive schedule, including—</p>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR fully satisfies the requirement.</p>

## Missile Defense Agency Congressional Reporting Requirements

- (A) research and development milestones;
- (B) acquisition milestones, including design reviews and key decision points;
- (C) key test events, including ground and flight tests and ballistic missile defense system tests;
- (D) delivery and fielding schedules;
- (E) quantities of assets planned for acquisition and delivery in total and by fiscal year; and
- (F) Planned contract award dates.
- (2) A detailed technical description of—
  - (A) the capability to be developed, including hardware and software;
  - (B) system requirements, including performance requirements;
  - (C) how the proposed capability satisfies a capability identified by the commanders of the combatant commands on a prioritized capabilities list;
  - (D) key knowledge points that must be achieved to permit continuation of the program and to inform production and deployment decisions; and
  - (E) how the Director plans to improve the capability over time.
- (3) A cost estimate, including—
  - (A) a life-cycle cost estimate that separately identifies the costs regarding research and development, procurement, military construction, operations and sustainment, and disposal;
  - (B) program acquisition unit costs for the program element;
  - (C) average procurement unit costs and program acquisition costs for the program element; and
  - (D) an identification of when the document regarding the program joint cost analysis requirements description is scheduled to be approved.
- (4) A test baseline summarizing the comprehensive test program for the program element or major subprogram outlined in the integrated master test plan.
- (c) ANNUAL REPORTS ON ACQUISITION BASELINES.—
  - (1) Not later than February 15 of each year, the Director shall submit to the congressional defense committees a report on the acquisition baselines required by subsection (a).
  - (2)(A) The first report under paragraph (1) shall set forth each acquisition baseline required by subsection (a) for a program element or major subprogram.
  - (3) Each subsequent report under paragraph (1) shall include—
    - (i) any new acquisition baselines required by subsection (a) for a program element or major subprogram; and
    - (ii) with respect to an acquisition baseline that was previously included in a report under paragraph (1), an identification of any changes or variances made to the elements described in subsection (b) for such acquisition baseline, as compared to—
      - (I) the initial acquisition baseline for such program element or major subprogram; and
      - (II) the acquisition baseline for such program element or major subprogram that was submitted in

**Missile Defense Agency Congressional Reporting Requirements**

	<p>the report during the previous year.</p> <p>(3) Each report under this subsection shall be submitted in unclassified form, but may include a classified annex.</p> <p>(d) EXCEPTION TO LIMITATION ON REVISION.—The Director may adjust or revise an acquisition baseline established under this section if the Director submits to the congressional defense committees notification of—</p> <p>(1) a justification for such adjustment or revision;</p> <p>(2) the specific adjustments or revisions made to the acquisition baseline, including to the elements described in subsection (b); and</p> <p>(3) the effective date of the adjusted or revised acquisition baseline.”.</p> <p>(2) CLERICAL AMENDMENT.—The table of sections at the beginning of such chapter is amended by adding at the end the following new item: section 225. Acquisition accountability reports on the ballistic missile defense system.”.</p> <p>(b) CONFORMING AMENDMENTS.—</p> <p>(1) FISCAL YEAR 2011 NDAA.—Section 225 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383; 124 Stat. 4170; 10 U.S.C. 223 note) is repealed.</p> <p>(2) FISCAL YEAR 2008 NDAA.—Section 223 of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110–181; 122 Stat. 39; 10 U.S.C. 223 note) is amended by striking subsection (g).</p> <p>(3) FISCAL YEAR 2003 NDAA.—Section 221 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107–314; 116 Stat. 2484; 10 U.S.C. 2431 note) is repealed.</p>	
<p>FY12 National Defense Authorization Act, Report Language – House Report 112-239 (Subtitle C Missile Defense Matters), pp. 43-44</p>	<p><b>SEC. 232. COMPTROLLER GENERAL REVIEW AND ASSESSMENT OF MISSILE DEFENSE ACQUISITION PROGRAMS</b></p> <p>(a) Comptroller General Assessment—</p> <p>(1) IN GENERAL- The Comptroller General of the United States shall review the annual reports submitted under section 225(c) of title 10, United States Code, as added by section 231 of this Act, that cover any of fiscal years 2012 through 2015 and assess the extent to which the Missile Defense Agency has achieved its acquisition goals and objectives.</p> <p>(2) REPORTS- Not later than March 15, 2013, and each year thereafter through 2016, the Comptroller General shall submit to the congressional defense committees a report on the assessment under paragraph (1) with respect to the acquisition baselines for the preceding fiscal year. Each report shall include any findings and recommendations on missile defense acquisition programs and accountability therefore that the Comptroller General considers appropriate.</p>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR fully satisfies the requirement.</p>

**Missile Defense Agency Congressional Reporting Requirements**

	<p>(b) Annual Reports on Missile Defense Executive Board Activities- In each of the first three reports submitted under section 225(c) of title 10, United States Code, as added by section 231 of this Act, the Director shall include a description of the activities of the Missile Defense Executive Board during the fiscal year preceding the date of the report, including the following:</p> <ol style="list-style-type: none"> <li>(1) A list of each meeting of the Board during such year.</li> <li>(2) The agenda and issues considered at each such meeting.</li> <li>(3) A description of any decisions or recommendations made by the Board at each such meeting.</li> </ol> <p>(c) Repeal of Superseded Reporting Authority- Section 232 of the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107-107; 115 Stat. 1037; 10 U.S.C. 2431 note) is amended by striking subsection (g).</p>	
<p>Sec. 1688 of the FY16 National Defense Authorization Act (HR 1735), pp. 1065</p>	<p><b>SEC. 1688. EXTENSION OF REQUIREMENT FOR COMPTROLLER GENERAL OF THE UNITED STATES REVIEW AND ASSESSMENT OF MISSILE DEFENSE ACQUISITION PROGRAMS</b>  Section 232(a) of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81; 125 Stat. 1339) is amended—</p> <ol style="list-style-type: none"> <li>(1) in paragraph (1), by striking “through 2015” and inserting “through 2020”; and</li> <li>(2) in paragraph (2), in the first sentence, by striking “through 2016” and inserting “through 2021”.</li> </ol>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR fully satisfies the requirement.</p>
<p><i>Sec 223(a). Ballistic Missile Defense Programs: Procurement;</i> National Defense Authorization Act for Fiscal Year 2004 (H.R. 1588, H. Rpt. 108-354), pp. 30-31</p>	<p><b>BUDGET JUSTIFICATION MATERIALS</b></p> <p>In the budget justification materials submitted to Congress in support of the Department of Defense budget for any fiscal year (as submitted with the budget of the President under section 1105(a) of title 31), the Secretary of Defense shall specify, for each ballistic missile defense system element for which the Missile Defense Agency is engaged in planning for production and initial fielding, the following information: (1) The production rate capabilities of the production facilities planned to be used for production of that element. (2) The potential date of availability of that element for initial fielding. (3) The estimated date on which the administration of the acquisition of that element is to be transferred from the Director of the Missile Defense Agency to the Secretary of a military department.</p>	<p>MDA to provide BMDS Accountability Report (BAR) to Congressional Defense Committees. The BAR partially satisfies the requirement through its schedule baseline.</p> <p>Exhibit P-21 – Budget Production Schedule</p> <p><b>Procurement -MDA 0208866C</b>, Terminal Defense, <b>0208866C</b>, Aegis BMD,</p>

**Missile Defense Agency Congressional Reporting Requirements**

		<p><b>0208866C</b>, Aegis Ashore Phase III</p> <p><b>0208866C</b>, BMDS AN/TPY-2 Radars</p> <p><b>0208866C</b> Iron Dome</p>
<p><i>Sec 223(b). Ballistic Missile Defense Programs: Procurement; National Defense Authorization Act for Fiscal Year 2004 (H.R. 1588, H. Rpt. 108-354, pp. 30-31)</i></p>	<p><b>FUTURE-YEARS DEFENSE PROGRAM</b></p> <p>The Secretary of Defense shall include in the future-years defense program submitted to Congress each year under section 221 of this title an estimate of the amount necessary for procurement for each ballistic missile defense system element, together with a discussion of the underlying factors and reasoning justifying the estimate.</p>	<p><b>Procurement -MDA 0208866C</b>, Terminal Defense,</p> <p><b>0208866C</b>, Aegis BMD,</p> <p><b>0208866C</b>, Aegis Ashore Phase III</p> <p><b>0208866C</b>, BMDS AN/TPY-2 Radars</p> <p><b>0208866C</b>, Iron Dome</p>

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# PART SUMMARY

## Missile Defense

### Mission:

To Develop and deploy a layered BMDS to defend the United States, its deployed forces, allies and friends from ballistic missile attacks of all ranges in all phases of flight.

In accordance with the President's Management Agenda, Budget and Performance Integration Initiative, this program has been assessed using the Program Assessment Rating Tool (PART). Remarks regarding program performance and plans for performance improvement can be located at the Expectmore.gov website –

<http://www.whitehouse.gov/sites/default/files/omb/assets/omb/expectmore/index.html>

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Missile Defense Agency  
Fiscal Year (FY) 2017 President's Budget Submission

ACRONYMS AND ABBREVIATIONS

<b>A</b>	
A&AS	Advisory and Assistance Services
AAEA	Aegis Ashore Engineering Agent
AAFTM	Aegis Ashore Flight Test Mission
AAMDS	Aegis Ashore Missile Defense System
AAMDSC	Aegis Ashore Missile Defense System Complex
AAMDTC	Aegis Ashore Missile Defense Test Complex
AAW	Anti-Air Warfare
ABEWS	Airborne Early Warning System
ABIR	Airborne Infrared Radar
ABMD	Aegis Ballistic Missile Defense
ABS	Airborne Sensors; American Bureau of Shipping
ABWO	Assistant Ballistic Missile Defense Watch Officer
ACB	Advanced Capability Build
ACB 12	Advanced Capability Build 12
ACD	Adversary Capability Document
ACD&P	Advanced Component Development & Prototypes
ACL	Achievable Capabilities List
ACS	Aegis Combat System
ADP	Arrow Deployability Program; Automated Data Processing; Adversary Delta Package
AEDC	Arnold Engineering Development Center
AEI	Annual Integration Events
AEP	Analysis Execution Plans
AEU	Antenna Equipment Unit
AFB	Air Force Base
AFS	Avionics Flight Software
AI&T	Assembly, Integration and Test
AIE	Annual Integration Event
ALO	Aegis Light-Off
ALTB	Active Layered Theater Ballistic
AMCOM	Army Aviation and Missile Command
AMDWS	Air and Missile Defense Workstation
AMOD	Aegis Modernization (program)
AMRDEC	Aviation and Missile Research, Development and Engineering Center
AN/SPY-1	Joint Army-Navy equipment nomenclature: S -Water (surface ship), P - Radar, Y - Surveillance (target detecting and tracking) and Control (fire control and/or air control), 1 - model number [AN/SPY-1 is an equipment nomenclature, not an Acronym]
AN/TPY	Army Navy/Transportable Radar Surveillance
AN/TPY-2	Joint Army-Navy equipment nomenclature: T - Transportable (ground), P - Radar, Y - Surveillance (target detecting and tracking) and Control (fire control and/or air control), 2 - model number [AN/TPY-2 is an equipment nomenclature, not an Acronym]
AOC	Air Operations Center
AOR	Area of Responsibility
APEX	Assessment Parameter Extraction
APL	Applied Physics Laboratory
ARAV	Aegis Readiness Assessment Vehicles
ARST	Advanced Remote Sensor Technology
ARSTRST	(US) Army Forces Strategic Command
ASIP	Arrow System Improvement Program; Application Specific Integrated Circuit
AT&L	Acquisition, Technology and Logistics
ATD	Advanced Technology Development; Assistant to the Director
ATEC	Army Test and Evaluation Command

ACRONYMS AND ABBREVIATIONS

ATK	Alliant Techsystems, Inc
AUR	All Up Round
AWS	Arrow Weapon System; AEGIS Weapon System
<b>B</b>	
BCA	Business Case Analysis; BMDS Capability Assessment
BCF	BCF Solutions, Incorporated
BCM	C2BMC model
BCN	BMDS Communications Network
BCSC-T	BMDS Communication System Complex Transportable
BDR	BMDS Discrepancy Reports
BER	Baseline Execution Reviews
BM	Battle Management; Ballistic Missile
BMD	Ballistic Missile Defense
BMDS	Ballistic Missile Defense System
BNOSC	BMDS Network Operations and Security Center
BOA	BMDS Overhead Non-imaging Infrared (ONIR) Architecture
BoD	Boards of Director
BORRS	BMDS Operational Readiness Reporting System
BOS	Base Operations Support
BSA	Budget Sub-Activity
BSC	Battery Support Center
BSO	BMDS Safety Officers
BSP	BMD Signal Processor
BTG	BCN Teleport Gateway
BWO	BMDS Watch Officers
<b>C</b>	
C&A	Certification and Accreditation
C/FFP	Cost Fixed Firm Price
C2BMC	Command and Control, Battle Management, and Communications
C2P	Command and Control Processor
C4I	Command, Control, Communications, Computers and Intelligence
CAFM	Computer-aided Facilities Management
CARD	Cost Analysis and Requirements Document
CBAU	Consolidated Booster Avionics Upgrade
CCAS	Combat Capabilities Assessment Schedule
CCC	C2BMC Control Center
CCLS	Centralized Contractor Logistics Support
CCM	Counter Counter-Measures
CCMD	Combatant Commander
CD	Concept Descriptions; Cobra Dane
CDCS	Coherent Doppler Collection System
CDIN	C2BMC Deployable Interface Node
CDLMS	Common Data Link Monitoring System
CDR	Critical Design Review
CDU	Cobra Dane Upgrade
CE	Capability Enhanced
CEC	Critical Engagement Condition
CECOM	US Army Communications & Electronics Command
CENAU	Corps of Engineers European Division
CENTCOM	Central Command
CEU	Cooling Equipment Unit
CG	US Navy ship hull classification symbol for - Guided Missile Cruiser [CG is not an Acronym]
CIC	Counterintelligence in Cyberspace
CIDS	Critical Items Description Specifications
CIIA	Cyber, Identity, and Information Assurance

ACRONYMS AND ABBREVIATIONS

CIRT	Computer Incident Response Team
CLE	Command and Launch Equipment
CLS	Contractor Logistics Support
CND	Computer Network Defense
CNET	Classified Network
COCOM	Combatant Commanders
COMNET	communications network
COMSEC	Communication Security
CONOPS	Concept of Operations
CONPLAN	Concept Plan
CONPLANS	Contingency Plans
CONUS	Continental United States
COOP	Calibrated Orbiting Objects Program (COOP)
CoS	Colorado Springs
COTS	Commercial off the Shelf
CP	Computer Program
CPAF	Cost Plus Award Fee
CPCR	Computer Program Change Request
CPFF	Cost Plus Fixed Fee
CPIF	Cost-Plus-Incentive-Fee
CPRS	Computer Program Requirements Specifications
CR	Capability Release
CSC	Computer Sciences Corporation
CSCS	Center for Surface Combat Systems
CSEDS	Combat Systems Engineering Development Site
CSS	Contractor Support Services
CTM	Core Truth Models
CTTO	Concurrent Test, Training and Operations
CTV	Control Test Vehicle
CTV-01	Controlled Test Vehicle-01
CU	Capability Upgrade
CVT	Controls Validation Testing
CY	Calendar Year
<b>D</b>	
DAA	Designated Approving Authority
DAA	Defense Appropriations Act; Designated Approving Authority
DAC	Divert Attitude Control
DACS	Divert and Attitude Control System
DARPA	Defense Advanced Research Projects Agency
DASA	German Aerospace. Member of the MEADS Program Team.
DAU	Defense Acquisition University
DDCS	Digital Data Collection System
DDG	US Navy ship hull classification symbol for - Guided Missile Destroyer [DDG is not an Acronym]
DECC	Defense Enterprise Computing Center
DEERS	Defense Enrollment Eligibility Reporting System
DESH	MDA/DESH - Missile Defense Agency (MDA)/Modeling & Simulation Huntsville (DESH) [office symbol within MDA Engineering Directorate, not an Acronym]
DESIM	Discrete Event Simulation
DFAR	Defense Federal Acquisition Regulation
DHP	Data Handling Plan
DIA	Defense Intelligence Agency
DIACAP	DoD Information Assurance Certification and Accreditation Process; DoD Information Assurance Certification and Accreditation Program
DISA	Defense Information Systems Agency
DMETS	Distributed, Multi-Echelon Training System
DMIC	Digital M&S Integration Center

ACRONYMS AND ABBREVIATIONS

DMS	Diminished Manufacturing Support
DoD	Department of Defense
DODIC	Department of Defense Identification Code
DOT&E	Director of Operational Test and Evaluation
DPALS	Diode Pumped Alkali Laser System
DPF	MDA Facilities, MILCON & Environmental Management Directorate
DREN	Defense Research Engineering Network
DRSN	Defense Red Switch Network
DSA	Digital Simulation Architecture
DSCS	Defense Satellite Communication System
DSWS	David's Sling Weapon System
DT&E	Developmental Test and Evaluation
DTIC	Digital Test and Integration Center
DTLOMS	Doctrine, Training, Leadership, Organization, Materiel, Soldier
DTRA	Defense Threat Reduction Agency
DW	Defense Wide
DWCF	Defense Working Capital Fund
<b>E</b>	
E/CCA	Element/Component Characteristics for Analysis
EA	Executing Agent; Engineering Assessment
EADSIM	Extended Air Defense Simulation
EAS	Eareckson Air Station
ECS	Element Capability Specification; Engineering Change Summary
EDP	Evolutionary Development Program
EECS	Event Execution Control System
EEU	Electronics Equipment Unit
EHF	Extremely High Frequency
EKV	Exoatmospheric Kill Vehicle
E-LRALT	Enhanced Long Range Air Launch Target
EMD	Engineering, Manufacturing, and Development
EMDR	Executive Mission Data Review
EME	Empirical Measurement Events
eMRBM	Extended Medium Range Ballistic Missile
EMRL	Engineering and Manufacturing Readiness Level
EO/IR	Electro-Optical/Infrared
EoR	Engage-on-Remote
EPAA	European Phased Adaptive Approach
EQLB	Executive Quick Look Briefing
ESD	Enterprise System Directorate
ESI	External System Interface; Enterprise Software Initiative
ESL	External Sensors Lab
ESOH	Environmental, Safety and Occupational Health
ET	Embedded Test;
EUCOM	European Command
EVMS	Earned Value Management System
EWR	Early Warning Radar
EWS	Enterprise Work Stations
<b>F</b>	
FCS	Fire Control Section; Fire Control System (SPY/FCS - AN/SPY radar Fire Control System)
FDE	Force Developers Evaluation
FFP	Firm Fixed Price
FFPLOE	Firm Fixed Prices Level of Effort
FFRDC	Federally Funded Research and Development Center
FISMA	Federal Information Security Management Act
FLITES	Fast Line-of Sight Imagery for Target and Exhaust Plume Signatures
FMA	Foreign Material Acquisition; Foreign Military Asset

ACRONYMS AND ABBREVIATIONS

FMS	Foreign Military Sales
FOCI	Foreign Ownership, Control, and Influence
FOIA	Freedom of Information Act
FPA	Focal Plane Array
FPAF	Fixed Price Award Fee
FPIF	Fixed Price Incentive Fee
FT	Flight Test
FTF	Flexibility Target Family
FTG	Flight Test GMD
FTM	Flight Test Mission
FTO-02	Flight Test Operational-02
FTT	Flight Test - THAAD
FY	Fiscal Year
FYDP	Future Years Defense Program
G	
GBI	Ground Based Interceptor
GBR-P	Ground Based Radar Prototype
GCC	Geographic Combatant Commander
GCCS-M	Global Command and Control System - Maritime
GCN	Global Command Network; GMD Communications Network
GD	Global Deployment
GDDT	Government Directed Down Time
GEM	Global Engagement Manager; Guidance Enhancement Missiles (PATRIOT)
GENSER	General Services
GEOINT	Geospatial Intelligence
GEP	Ground Entry Point
GFC	GMD Fire Control
GFC / C	GMD Fire Control and Communications
GFE	Government Furnished Equipment
GFS	Government Furnished Services
GIG	Global Information Grid
GM	Ground-based Midcourse
GMD	Ground-based Midcourse Defense
GPS	Global Positioning System
GS	Ground Systems
GSOC	Global Security Operations Center
GT	Ground Test
GTD	Ground Test Distributed
GTI	Ground Test Integrated
GTRI	Georgia Tech Research Institute
GTX	Ground Test (Element to Element)
GWS	GEM Work Stations

ACRONYMS AND ABBREVIATIONS

<b>H</b>	
HAENS	High Altitude Exoatmospheric Nuclear Survivability
HEMP	High Altitude Electromagnetic Pulse
HEMTT	Heavy Expanded Mobility Tactical Truck
HIL	Human-in-the-Loop; Hardware-in-the-Loop
HMOC	Huntsville Mission Operations Center
HOSC	Huntsville Operations Support Center
HRTS	Human Resource Tracking System
HWIL	Hardware-in-the-loop
<b>I</b>	
I&T	Integration & Test
IA	Information Assurance
IAI	Israel Aircraft Industries
IAM	Information Assurance Manager
IAMD	Integrated Air and Missile Defense
FPAF	Fixed Price Award Fee
IAS	Interocean American Shipping
IAW	In Accordance With
ICBM	Intercontinental Ballistic Missiles
ICD	Interface Control Document
ICOFT	Institutional Conduct of Fire Trainer
ICP	Interface Change Proposal
IDIQ	Indefinite Delivery Indefinite Quantity
IDMP	Integrated Data Management Plan
IDT	In-Flight Interceptor Communications System Data Terminal
IEM	Integrated Electronics Module
IETM	Integrated Electronic Technical Manual
IETT	Integrated Event Test Team
IFICS	In-Flight Interceptor Communications System
ILP	Initial Lot Production
ILS	Integrated Logistics Support
IM	Insensitive Munitions
IMAP	Integrated Master Assessment Plan
IMD	Integrated Missile Defense
IMoD	Israeli Ministry of Defense
IMTP	Integrated Master Test Plan
IMU	Inertial Measurement Unit
IMVP	Integrated Master VV&A Plan
INFOSEC	Information Security
IPA	Intergovernmental Personnel Act
IR	Infra-red
IRBM	Intermediate-Range Ballistic Missiles
ISA&I	Israeli System Architecture and Integration
ISET	Integrated Systems Engineering Team
ISIM	International Simulation
IT	Integrated Test; Information Technology
ITB	Institutional Training Base; Israeli Test Bed
IV&V	Independent Verification and Validation
IWS	Indications and Warning System; Integrated Warfare Systems
<b>J</b>	
JAT	Joint Analysis Teams
JBTEC	Joint BMDS Training and Education Center
JEWL	Joint Early Warning Laboratory
JFCC	Joint Functional Component Command
JFCC-IMD	Joint Functional Component Command - Integrated Missile Defense
JHU	John Hopkins University



## ACRONYMS AND ABBREVIATIONS

JHU/APL	John's Hopkins University/Applied Physics Laboratory
JMOD	Japan Ministry of Defense
JNIC	Joint National Integration Center, Schriever AFB, CO
JPOW	Joint Project Optical Windmill
JRDC	JNIC) Research and Development Contract
JRMET	Joint Reliability and Maintainability Engineering Team
JTF-GNO	Joint Task Force-Global Network Operations
JTIDS	Joint Tactical Information Data System
JTOC	JNIC Target Operations Center
JWSP	Joint Warfighter Support Program
<b>K</b>	
KHILS	Kinetic Kill Vehicle hardware in-the-Loop Simulator
KIDD	Kinetic Impact Debris Distribution
KV	Kill Vehicle
KW	Kinetic Warhead
<b>L</b>	
L&TSE	Launch and Test Support Equipment
LBSM3	Land Based SM-3 (early name for Aegis Ashore)
LCC	Launcher Control Center
LHCT	Long Haul Communications Transport
LLNL	Lawrence Livermore National Laboratory
LM	Lockheed Martin
LMSSC	Lockheed Martin Space Systems Company
LNO	Liaison Officer
LoR	Launch on Remote
LRDS	Long Range Detection Suite
LRS&T	Long Range Surveillance and Tracking; Long Range Surveillance and Track
LRU	Line Replaceable Unit'
LSC	Launch Support Systems;
LSE	Launch Support Equipment
LSS	Launch Support Systems; Launch Site Controller
LTPO	Lower Tier Program Office
<b>M</b>	
M&S	Materials and Structure; Modeling and simulation
MAIS	Major Automated Information System
MAP	MDA Assurance Plan; MDA Assurance Provisions
MAR	MDA Assurance Representative
MARAD	Maritime Administration
MASINT	Measures and Signals Intelligence
MAX/MIF	Maximum (number of)/Missiles In Flight
MD	Missile Defense
MDA	Missile Defense Agency
MDAHQ	Missile Defense Agency Headquarters
MDAP	Major Defense Acquisition Program
MDEB	Missile Defense Executive Board
MDIOC	Missile Defense Integrated Operations Center
MDR	Mission Data Review
MDSDC	Missile Defense Space Development Center
MDSE	Missile Defense System Exerciser
MDSEC	Missile Defense Space Experimentation Center
MDST	Missile Defense Space Warning Tool
MET	Modernization Enterprise Terminal
MFRL	Modification and Fielding Request List
MFU	Missile Firing Unit
MICS	MDA Integrated Communications Services
MiDAESS	Missile Defense Agency Engineering and Support Services

ACRONYMS AND ABBREVIATIONS

MIF	MIF
MILCON	Military Construction; Military Construction funding (type of Appropriation)
MIL-STD	Military Standards
MIP	Master Integration Plan
MIPR	Military Interdepartmental Purchase Request
MIS	MDSDC Interchange System; MDSEC Interchange System
MIT	Miniature Interceptor Technology; Massachusetts Institute of Technology
MIT/LL	Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, MA
MMR	Multi-Mission Radar
MOC	Missile Defense Agency Operations Center
MoKVA	Modular open Kill Vehicle Architecture
MOU	Memorandum of Understanding
MPAT	Producibility and Manufacturing Technology
MPL	ManPower Loading
MRA	Mission Readiness Assessment
MRBM	Medium-Range Ballistic Missiles
MRT	Medium Range Target
MRTF	Major Range and Test Facilities
MSR	Minimum Sustaining Rate
MTOE	Modified Table of Organization and Equipment
MTS	Multi-Spectral Targeting System
<b>N</b>	
NASIC	National Air and Space Intelligence Center
NATO	North Atlantic Treaty Organization
NAVFAC	Naval Facilities Engineering Command; Naval Facility
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center
NCR	National Capital Region
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NFIRE	Near Field Infrared Experiment
NGAS	Northrop Grumman Aerospace Systems
NGST	Northrop Grumman Space Technology
NIPRNET	Non-Secure Internet Protocol Router Network
NIST	National Institute of Standards and Technology
NORAD	North American Aerospace Defense Command
NORTHCOM	Northern Command
NRE	non-recurring engineering
NRL	Naval Research Laboratory, Washington, DC
NRT	Navy Review Team
NSA	National Security Agency
NSWC	Naval Surface Warfare Center
NTD	Near-Term Discrimination
<b>O</b>	
O&M	Operations and Maintenance
O&S	Operations and Sustainment
OA	Open Architecture
OCO	Overseas Contingency Operations
OCONUS	Outside of CONUS
OGA	Other Government Agency
OMB	Office of Management and Budget
ONIR	Overhead Non-Imaging Infra-Red
OPIR	Overhead Persistent Infrared
OPLAN	Operations Plan
OPSCAP	Operations Capabilities
OPTISIG	Optical Signatures In-Line Generator

ACRONYMS AND ABBREVIATIONS

ORNL	Oak Ridge National Laboratory
OSA	Open Systems Architecture
OSC	Operations Support Center
OSD	Office of the Secretary of Defense
OSF	Objective Simulation Framework
OSFC	Operations Forces Standing Committee
OSM	Object Sighting Message; Open Systems Architecture Sensor Models
OSPT	Operations Support Planning Team
OSS	Off-Shore Support; Optimistic Sensor Model
OTA	Operational Test Agencies
<b>P</b>	
P&P	Policy and Procurement
PA	Performance Assessments; Project Arrangement
PAA	Phased Adaptive Approach
PAC-3	Patriot Advanced Capability-3
PACOM	U.S. Pacific Command
PAM	Planning Allocation Matrix
PB	President's Budget
PBL	Performance Based Logistics
PCO	Procurement Contracting Office
PDR	Preliminary Design Review
PDSS	Post Deployment Software Support
PE	Program Element
PEELS	Parametric Endo/Exo-atmospheric Lethality Simulation
PEGEM	Post Engagement Ground Effects Model
PEO IWS	Program Executive Office - Integrated Warfare Systems
PFR	Post Flight Reconstruction
PHACIL	Phacil, Incorporated
PIDS	Prime Item Development Specifications
PLET	Phenomenology, Lethality, Environment, Threat
PLT	Production Lead Time
PLUS	Plume Simulation
PM	Program Manager
PM/IAM	Program Manager/Information Assurance Manager
PMAP	Process Mission Assurance Plan
PMDCATS	Program Manager - Communications and Transmission Systems
PME	Primary Mission Equipment
PMI	preventative maintenance inspection
PMP	Parts, Materials and Processes
PMRF	Pacific Missile Range Facility, Barking Sands, Kauai, HI
PMT	Pre-Mission Test
POA&M	Plan of Action and Milestones
POC	Point of Contact
PPR	Pre-Planned Responses
PPU	Prime Power Unit
PROCAP	Protection Capability
PSEM	Patriot System Effectiveness Model
PSN	Parallel Staging Area
PTSS	Precision Tracking Space System
PWS	Program-Wide Support
PY	Prior Year
<b>Q</b>	
QLB	Quick Look Briefing
QoS	Quality of Service
QRT	Quick Response Team
QSMa	Quality Safety and Mission Assurance

ACRONYMS AND ABBREVIATIONS

<b>R</b>	
RAFU	Radar Field Upgrade
RAM	Reliability, Availability and Maintainability
RASP	RApid Scenario Prototype
RCS	Radar Cross Section
RDEC	Research, Development, and Engineering Center
RDECOM	Research, Development, Engineering Command
RDT&E	Research, Development, Test & Evaluation
RF	Radio Frequency
RFA	Requests for Analysis
RFARFI	Request for Analysis Request for Information
RFI	Requests for Information
RFP	Request for Proposal
RMOET	Radar March Order & Emplacement Trainer
ROI	Return on Investment
RPFM	Rocket Plume Flowfield Model
RSC	Radar Sustainment Contract
RSO	Resident Space Object
RTI	Return to Intercept
RTS	Ronald Reagan Test Site, Kwajalein, Marshall Islands
RV	Reentry Vehicle
<b>S</b>	
SATCOM	Satellite Communications
SBIR	Small Business Innovative Research
SBIR/STTR	Small Business Innovative Research/Small Business Technology Transfer
SBIRS	Space Based Infrared System
SBT	Sea Based Terminal
SBX	Sea Based Test X-Band Radar
SCD	SM-3 Cooperative Development; Standard Missile-3 Cooperative Development (Program)
SCG	Security Classification Guides
SCN	System Change Notices
SCR	SM-3 Cooperative Development; System Capability Review
SCRM	Supply Chain Risk Management
SDACS	Solid Divert Attitude Control System
SDD	System Description Document
SDL	Space Dynamics Laboratory
SDR	System Design Review; Software Design Review
SE&I	Systems Engineering and Integration
SEI	Systems Engineering & Integration
SEAR	System Engineering Assessment Report
SED	Software Engineering Design
SEPM	System Engineering Program Management
SGP	Super Green Pine
SIAO	Senior Information Assurance Officer
SIAO/CA	Senior Information Assurance Officer (SIAO)/Certification Authority (CA)
SIGNIT	Signal Intelligence
SIM	Simulation
SIPRNET	Secret Internet Protocol Router Network
SIU	SSF Interface Unit
SIV	silo interface vault
SM	Standard Missile
SM-3	Standard Missile -3
SMDC	Space and Missile Defense Command, U.S. Army
SMDC/ARSTRST	Space and Missile Defense Command/Army Forces Strategic Command
SME	Subject Matter Expert

ACRONYMS AND ABBREVIATIONS

SMM	System Mission Manager
SNL	Sandia National Lab
SNWC	Space and Naval Warfare Command
SOLD	Simulation-Over-Live Driver
SPAWAR	Naval Space and Warfare Command; Space and Naval Warfare Systems Command
SPFR	System Post Flight Reconstruction
SPMT	System Pre Mission Test
SPS	Standard Procurement System
SPURC	Standard Plume Ultraviolet Radiation Code
SRALT	Short Range Air Launch Target
SRBM	Short-Range Ballistic Missiles
SRBMD	Short Range Ballistic Missile Defense
SRHSM	Sensor Registration Health & Status Monitoring
SRP	Stockpile Reliability Program
SRR	System Requirements Review; Software Readiness Review
SS	Sole Source; Summary Screens; System Specification
SS/CPAF	Soul Source/ Cost Plus Award Fee
SS/CPFF	Soul Source/ Cost Plus Fixed Fee
SSA	Space Situational Awareness
SSC	System Security Concept
SSF	Single Stimulation Framework
STOC	System Test and Operations Center
STRATCOM	US Strategic Command
STSS	Satellite Tracking and Surveillance System; Space Tracking and Surveillance System
STTR	Small Business Technology Transfer
SYMP	Symposium
<b>T</b>	
T&E	Test and Evaluation
TALSS	THAAD Active Leak Sensor System
TC	Targets and Countermeasures
TCM	Total downtime due to corrective maintenance actions including logistics
TDA	Table of Distribution and Allowances
TDA	Technical Decision Authority
TDACS	Throttleable Divert and Attitude Control System
TDS	Terminal Defense Segment
TEC	Test Execution Control
TECC	Theater Enterprise Computing Center
TECHREP	Technical Representative
TFCC	THAAD Fire Control and Communications
TGx	Trajectory Generator - External
THAAD	Terminal High Altitude Area Defense
TIL	Test Integration Lab
TIM	Technical Interchange Meeting
TMC	Threat Modeling Center
TMSS	Threat Modeling Simulation System
TOO	Test of Opportunity; Target of Opportunity
TOR	Trouble Observation Reports
TPM	Technical Performance Measurement; Total downtime due to preventative maintenance actions including logistics delay
TRIMM	Transmit/Receive Integrated Microwave Module
TRM	Test Resource Manager
TRMP-T	Test Resources Mission Planning Tool
TSG	Tactical Support Groups
TSS	Training Support System
TT	Total Time
TTP	Tactics, Techniques & Procedures

ACRONYMS AND ABBREVIATIONS

<b>U</b>	
UARC	University Affiliated Research Center
UAV	Unmanned Aerial Vehicle
UEWR	Upgraded Early Warning Radar
ULCHI	Ulchi Freedom Guardian
UNET	Unclassified Network
USAFE	U.S. Air Forces in Europe
USDAT&L	Office of Under Secretary of Defense/Acquisitions, Technology and Logistics OUSD/AT&L
USN	United States Navy
USNORTHCOM	United States Northern Command
USPACOM	United States Pacific Command
USSTRATCOM	United States Strategic Command
UUR	University-to-University
<b>V</b>	
V&A	Verification & Assessment
V&V	verification and validation
VAFB	Vandenberg Air Force Base, CA
VGI	VLS GPS Interface
VLS	Vertical Launching System; Vertical Launch System
VTC	Video Teleconferencing
VV&A	Verification, Validation, and Accreditation
VVACB	Verification, Validation and Accreditation Control Board
VVAWG	VV&A working group
<b>W</b>	
WETLANS	Wargames, Exercises and Training Local Area Networks
WIP	Warfighter Involvement Process
WSC	Wargames Support Center
WSMR	White Sands Missile Range, White Sands, NM
WSTF	White Sands Test Facility
<b>X</b>	
XBR	X-Band Radar
<b>Y</b>	
YPG	Yuma Proving Ground

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</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	6.919	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
MD71: <i>Advanced Concepts and Performance Assessments</i>	6.919	9.539	11.569	17.298	-	17.298	11.988	12.242	12.336	12.524	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	-	0.460	0.570	0.582	-	0.582	0.611	0.655	0.668	0.697	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 increase funds post-test and planned data replay simulation events, hardware in the loop (HWIL) infrastructure, high performance computing infrastructure upgrade, as well as test costs required for performance assessments for the Aegis Launch-on-Remote live fire test (FEV-1) and the advanced sensor demonstration (FEV-2).

**A. Mission Description and Budget Item Justification**

Advanced Concepts & Performance Assessments MD71 program delivers an integrated government concept definition, simulation, and analysis capability and centralizes assessment of advanced ballistic missile defense technology. Delivering insight into the performance of proposed concepts extends MDA's ability to address evolving threats for the warfighter.

Subject matter experts provide independent assessments of government, university, and industry technology concepts, used in concert with systems engineering requirements to support acquisition strategy decisions and define technology focus areas. The innovative structured concept definition and assessment methodology enables the MDA to quickly validate focus areas, verify contractor technology solutions, and evaluate promising concepts in future Ballistic Missile Defense System (BMDS) architectures. This methodology significantly enhances the MDA's ability to assess technology concepts while decreasing the cost of the development through:

- Independent model-based simulations of industry technology concepts to inform systems engineering process
- Digital simulation and hardware-in-the-loop performance assessments of algorithms and hardware concepts prior to expensive live fire test events
- End-to-end testing of technology concepts integrated with weapon systems and Command, Control, Battle Management and Communications

Performance assessment of advanced concepts incorporates Better Buying Power philosophy in the earliest stages of technology development to maximize technology investments with minimal investment.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	8.470	12.139	13.227	-	13.227
Current President's Budget	9.999	12.139	17.880	-	17.880
Total Adjustments	1.529	0.000	4.653	-	4.653
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.670	0.000			
• SBIR/STTR Transfer	-0.141	0.000			
• Other Adjustment	0.000	0.000	4.653	-	4.653

**Change Summary Explanation**

The FY 2017 adjustment reflects realignment of Department of Defense priorities.



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

<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>				<b>Project (Number/Name)</b> MD71 / <i>Advanced Concepts and Performance Assessments</i>			
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
MD71: <i>Advanced Concepts and Performance Assessments</i>	6.919	9.539	11.569	17.298	-	17.298	11.988	12.242	12.336	12.524	Continuing	Continuing

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Advanced Concepts & Performance Assessment centralizes all advanced technology concept modeling, simulation, software, and analysis. Integrating models of promising technical solutions into BMDS system-level simulations enables leadership to make data driven acquisition and technology investment decisions.

Advanced Concepts & Performance Assessment capitalizes on the innovation of small business, universities, Federally Funded Research and Development Centers, and University Affiliated Research Centers to pursue a broad range of hardware, software, models, algorithms, trade studies and analysis. These innovations bring together government developed models representing existing and future ballistic missile defense architectures, technology concepts, and advanced algorithms to provide detailed assessments of concept performance to make investment decisions.

These innovations, combined with a robust high performance computing infrastructure, provide a unique in-house government capability to demonstrate and assess technology concepts.

**B. Accomplishments/Planned Programs (\$ in Millions)**

<b>Title:</b> Advanced Concepts and Performance Assessment	FY 2015	FY 2016	FY 2017
<b>Description:</b> Advanced Concepts and Performance Assessment's diverse staff of subject matter experts developed advanced concepts across the broad spectrum of ballistic missile defense technology initiatives. -Prioritize technology investments and inform requirements -Analyze and evaluate industry sensor and kill vehicle concepts -Develop and extend modeling techniques -Demonstrate concept performance against evolving threats	9.539	11.569	17.298
<b>FY 2015 Accomplishments:</b> -Worked with the Ballistic Missile Defense System (BMDS) Architect and MDA Systems Engineer to provide realistic assumptions, design concepts, models and assessments for technology items included within the future BMDS, elements, and component concepts -Provided technology concepts, models and assessments for kill vehicles, discrimination sensors, space alternatives and directed energy systems			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	<b>Project (Number/Name)</b> MD71 / <i>Advanced Concepts and Performance Assessments</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Matured tracking, discrimination, and sensor fusion algorithms</p> <p>-Demonstrated precision track through simulation exercises</p> <p>-Accelerated assessment of hardware and algorithms for space alternative sensors</p> <p>-Focused research and engineering activities from university and small business partners to identify suitable technology and concepts that improve BMDS performance through a rapid innovation model based engineering test bed</p> <p>-Reduced time to translate innovative technology into BMDS capability by providing integrated models of emerging concepts that characterize key parameters and expected performance</p> <p><b>FY 2016 Plans:</b></p> <p>-Increase from FY 2015 to FY 2016 funds upgrades to the digital simulation and hardware-in-the-loop (HWIL) infrastructure required to move from Multi-Spectral Targeting System (MTS)-B to MTS-C hardware and airborne processor software prior to Standard Missile -3 Flight Test Standard Missile-01 (SFTM-01), Controlled Test Vehicle (CTV-02+) flight test, and Aegis Launch-on-Remote live fire test (FTM FEV-1) missions</p> <p>-Build the digital simulation and hardware in the loop infrastructure required for testing of the MTS-C and airborne processor software prior to Standard Missile -3 Flight Test Standard Missile-01 (SFTM-01), Controlled Test Vehicle (CTV-02+) flight test, and Aegis Launch-on-Remote live fire test (FTM FEV-1) test missions</p> <p>-Work with the BMDS Architect and MDA Systems Engineer to design concepts, build models and assess technology concepts for the future BMDS</p> <p>-Analyze discrimination sensor flight tests</p> <p>-Conduct HWIL tests</p> <p>-Develop modular open kill vehicle architecture testbed</p> <p>-Mature tracking, discrimination, and sensor fusion algorithms</p> <p>-Demonstrate precision track through digital and HWIL simulation exercises</p> <p>-Focus research and engineering activities from university and small business partners to identify suitable technology and concepts that improve BMDS performance through a rapid innovation model based engineering test bed</p> <p>- Reduce time to translate innovative technology into Ballistic Missile Defense System (BMDS) capability by providing integrated models of emerging concepts that characterize key parameters and expected performance</p> <p><b>FY 2017 Plans:</b></p> <p>Increase from FY 2016 to FY 2017 funds post-test and planned data replay simulation events, hardware in the loop (HWIL) infrastructure, high performance computing infrastructure upgrade, as well as test costs required for performance assessments for the Aegis Launch-on-Remote live fire test (FEV-1) and the advanced sensor demonstration (FEV-2).</p> <p>-Define and analyze sensor discrimination capability using flight test data</p> <p>- Mature tracking, discrimination, and sensor fusion algorithms for multi-phenomenology sensor platform</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	<b>Project (Number/Name)</b> MD71 / <i>Advanced Concepts and Performance Assessments</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Demonstrate end-to-end correlation of sensor track and discrimination data through digital and hardware-in-the-loop simulation exercises -Conduct performance analysis of government and industry Multi-Object Kill Vehicle and low-power and multi-kilowatt directed energy concepts -Incrementally demonstrate contribution to BMD for launch-on-remote, engage-on-remote, discrimination, and handover improvements for next-generation sensors and kill vehicle concepts -Demonstrate ruggedized deployable virtual testbed to provide onsite assessment of flight test data in near real-time -Implement modular open kill vehicle architecture testbed to verify industry concepts -Accelerate development of hardware in the loop (HWIL) infrastructure required for assessment and testing of advanced sensor and directed energy concepts in preparation for FY18 concept demonstrations. -Update High Performance Computing infrastructure to improve security and performance of concept assessment models and simulations -Work with the BMDS Architect and MDA Systems Engineer to design concepts, build models and assess technology concepts for the future BMDS -Focus research and engineering activities from university and small business partners to identify suitable technology and concepts that improve BMDS performance through a rapid innovation model based engineering test bed			
<b>Accomplishments/Planned Programs Subtotals</b>	9.539	11.569	17.298

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	<b>Project (Number/Name)</b> MD71 / <i>Advanced Concepts and Performance Assessments</i>

**D. Acquisition Strategy**

The Advanced Concepts and Performance Assessment acquisition strategy continues a successful partnership with Small Business, the Aviation & Missile Research Development & Engineering Center, Federally Funded Research and Development Centers, and University Affiliated Research Centers to provide concept modeling and assessment capability. This innovative strategy leverages agency and partner subject matter experts and government model-based assessments to inform Better Buying Power acquisition decisions.

**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	<b>Project (Number/Name)</b> 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>	-	0.460	0.570	0.582	-	0.582	0.611	0.655	0.668	0.697	Continuing	Continuing

**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).

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</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	29.642	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MD95: <i>Discrimination Sensor Technology</i>	29.523	33.258	23.304	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MT95: <i>Discrimination Sensor Tech-Flight Test Execution</i>	-	0.000	3.749	0.000	-	0.000	0.000	0.000	0.000	0.000	0	3.749
MC95: <i>Cyber Operations</i>	0.119	0.132	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	-	1.833	1.147	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

No FY 2017 funding is requested in this program element. The technology developed in the Discrimination Sensors Technology program element is technically mature enough to develop prototype systems. The follow on activity for the program element is captured in Technology Maturation Initiatives, program element 0604115C.

**A. Mission Description and Budget Item Justification**

Discrimination Sensor Technology develops solutions to improve identifying, acquiring, tracking and discriminating incoming Ballistic Missile threats, supporting the US Strategic Command's Prioritized Capabilities List. Areas of concentration include advanced detectors, infrared sensors, focal planes and algorithms for ground, sea, air and space systems. Sensor technology enhances the BMDS capability to develop precision tracks and to discriminate lethal objects among the incoming threat cluster.

The Discrimination Sensor Technology program funds the demonstration of Aegis Launch on Remote real time stereo tracking with Multi-Spectral Targeting System -Cs integrated into MQ-9 Reapers. Aegis Launch on Remote is the capability that allows Aegis BMD to launch an interceptor before its own radar acquires the threat, greatly expanding the space where the Aegis BMD can intercept the threat and significantly extending the defended area. In FY 2014, the MDA was successful in testing the Multi-Spectral Targeting System -B variant integrated onto the MQ-9 Reaper at the Pacific Missile Range Facility proving that the Aegis weapon system could launch a Standard Missile-3 against a ballistic missile target and achieve intercept using the tracking data from the airborne Multi-Spectral Targeting System sensors. In FY 2015, Discrimination Sensor Technology performed System Integration Laboratory and ground testing in preparation for flight testing the MQ-9 with a Multi-spectral Targeting System -C and flew the Reaper in missile defense configuration (Multi-spectral Targeting System -C mounted on a forward fuselage extension, a Ruggedized Airborne Processor and special software) for the first time. In FY 2016, the MDA will participate in Controlled Test Vehicle -02 (CTV-02) to test Multi-Spectral Targeting System equipped MQ-9 Reapers specifically modified to accomplish missile defense tracking missions.

The MD95, Discrimination Sensor Technology project, funds the prime contract integration and system test, checkout flights, and performance analysis. Discrimination Sensor Technology incrementally builds on the airborne Multi-Spectral Targeting System -B Launch on Remote demonstrations using airborne Multi-Spectral Targeting System -C sensors integrated into MQ-9 Reaper Unmanned Aerial Vehicles. The Discrimination Sensor Technology program will demonstrate the increased Electro Optical/Infrared capability of Multi-Spectral Targeting System -C airborne sensors for precision track Launch on Remote and discrimination over Multi-Spectral Targeting

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	
<p>System -Bs as a precursor to advanced sensor equipped Multi-Spectral Targeting System -C prototype development and test under the Technology Maturation Initiatives program element.</p> <p>The MT95, Discrimination Sensor Technology Flight Test Execution project, funds the costs associated with Multi-Spectral Targeting System -C/MQ-9 Reaper participation in BMDS testing including prime contract test execution, MQ-9 operations and maintenance, and Enterprise Sensors Laboratory and Space &amp; Naval Warfare Systems Center interfaces.</p> <p>MDA collaborates with the Office of the Assistant Secretary of Defense for Research and Engineering, the United States Navy and the United States Air Force in a systems engineering based strategy to research, develop, test and evaluate Discrimination Sensor Technology. The Discrimination Sensor Technology test program includes Air Force provided F-16 aircraft for use as surrogate targets and sharing of Multi-Spectral Targeting System -C test data between the MDA and the Air Force to augment sensor characterization activities.</p> <p>This technology significantly enhances the following BMDS priorities:</p> <ul style="list-style-type: none"><li>- Precision track of multiple objects to enable missile defense components to engage-on-remote</li><li>- Discriminating lethal objects from countermeasures</li><li>- End-to-end correlation of sensor track and discrimination data</li></ul> <p>The Discrimination Sensor Technology program element development and test results directly feed sensor prototype demonstrations in the Technology Maturation Initiatives program element 0604115C.</p> <p>MC98, Cyber Operations, sustains the MDA DoD Information Assurance Certification and Accreditation Program and Controls Validation Testing activities for Discrimination Sensor Technology.</p> <p>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.</p>		



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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	36.610	28.200	0.000	-	0.000
Current President's Budget	35.223	28.200	0.000	-	0.000
Total Adjustments	-1.387	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.772	0.000			
• SBIR/STTR Transfer	-0.615	0.000			
• Other Adjustment	0.000	0.000	0.000	-	0.000

**Change Summary Explanation**

The \$1.387M reduction in FY 2015 is due to a realignment of Department of Defense priorities.

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MD95 / <i>Discrimination Sensor Technology</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
<i>MD95: Discrimination Sensor Technology</i>	29.523	33.258	23.304	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

FY 2017 funding is requested in the Technology Maturation Initiatives Program Element, 0604115C, for follow on Multi-spectral Targeting System -C advanced sensor development and prototype development and test.

**A. Mission Description and Budget Item Justification**

The MD95, Discrimination Sensor Technology project develops next-generation sensors and detectors and integrates them into a Reaper MQ-9 Unmanned Aerial Vehicle to demonstrate improvements in discrimination for missile defense. This project evaluates and researches emerging technology that enables game changing discrimination improvements for incorporation into next generation interceptors and air or space systems. The Discrimination Sensor Technology project pursues a cost-effective incremental upgrade philosophy that demonstrates airborne precision tracking and improved track performance and discrimination of missile threats. These advanced sensors improve the probability of engagement success for stressing threats, expand the BMD battle space and increase the ability to negate larger raid sizes.

The MD95, Discrimination Sensor Technology project, funds the prime contract integration and system test, checkout flights, and performance analysis. In FY 2015, Discrimination Sensor Technology performed System Integration Laboratory and ground testing in preparation for flight testing the MQ-9 with a Multi-spectral Targeting System -C and flew the Reaper in missile defense configuration (Multi-spectral Targeting System -C mounted on a forward fuselage extension, a Ruggedized Airborne Processor and special software) for the first time.

The MDA's sensor technology construct incrementally buys down risk by testing an evolving sensor technology first on the ground then on unmanned aerial vehicles. Discrimination Sensor Technology also measures resident space objects and targets of opportunity to characterize performance before participating in BMDS tests. Discrimination Sensor Technology interfaces with the existing BMDS architecture to develop three-dimensional tracks of the ballistic missile, which are sent via Link-16 to Aegis ships for engagement.

**B. Accomplishments/Planned Programs (\$ in Millions)**

<b>Title:</b> Discrimination Sensor Technology	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Description:</b> N/A	33.258	23.304	0.000
<b>FY 2015 Accomplishments:</b>			
- Flight tested 2 UAV-borne Multi-Spectral Targeting System (MTS)-B sensors			
-- Demonstrated real time airborne stereo tracking launch on remote capability using two MTS-Bs installed on two MQ-9s in conjunction with Flight Test Standard Missile (FTM)-25			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MD95 / <i>Discrimination Sensor Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-- Demonstrated that Airborne Electro-Optical (EO)/Infrared (IR) precision tracking exceeds Aegis Launch-on/Engage-on Remote track requirements</p> <p>- Ground tested an advanced EO/IR sensor integrated into MTS-Cs against resident space objects and BMDS targets of opportunity</p> <p>-- Completed System Integration Laboratory testing in preparation for flight certification testing, resulting in a very successful and efficient flight test series</p> <p>- Modified the Reaper, processor and ground control station with a MTS-C and tracked 16 resident space objects during an initial demonstration flight</p> <p>- Integrated an Advanced Sensor into a MTS-C EO/IR turret and conducted ground testing at the Pacific Missile Range Facility during FTX-20, FTM-25, and at the contractor's test facility. These tests demonstrated the advanced sensor performance in a MTS-C and supports future advanced sensor development activities</p> <p><b>FY 2016 Plans:</b></p> <p>- Complete Multi-Spectral Targeting System - C (MTS-C) Sensor tests to demonstrate Aegis Launch-on-Remote quality of track performance:</p> <p>-- Conduct Continental United States (CONUS) checkout flights to collect data for Hardware-in-the-Loop simulations, sensor characterization and confirm system readiness in preparation for the 2Q FY 2016 Control Test Vehicle (CTV) - 02+ BMDS test</p> <p>-- Conduct MTS-C CTV-02+ pre and post-test performance analysis</p> <p>-- Analyze BMDS test data to verify demonstration of quality of service to meet Aegis Launch on Remote requirements</p> <p>-- Analyze airborne sensor BMDS test data to demonstrate MTS-C discrimination performance</p> <p>- Configure an Extended Range MQ-9 Reaper with an MTS-C and conduct CONUS flight certification tests and CONUS to Outside Continental United States (OCONUS) endurance tests to support future BMDS airborne sensor requirements</p> <p>- Partner with the Air Force to characterize MTS performance for Air Dominance</p> <p><b>FY 2017 Plans:</b></p> <p>FY 2017 funding is requested in the Technology Maturation Initiatives program element, 0604115C, for follow on Multi-spectral Targeting System -C advanced sensor development and prototype development and test</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	33.258	23.304	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MD95 / <i>Discrimination Sensor Technology</i>

**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0604115C: <i>Technology Maturation Initiatives</i>	0.000	27.225	90.266	-	90.266	149.901	205.787	198.136	201.431	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy for Discrimination Sensor Technology consisted of contracts to industry via the Advanced Technology Innovation Broad Agency Announcement and agreements with Federally Funded Research and Development Centers and University Affiliated Research Centers. The MDA leveraged Agency and partner subject matter experts and used government model based assessments to inform Better Buying Power philosophy acquisition decisions. The MDA awarded contracts to industry and universities via the Advanced Technology Innovation Broad Agency Announcement to develop and demonstrate promising components and integrated systems in realistic test environments. Discrimination Sensor Technology shaped future BMDS acquisition decisions by advancing and documenting the technology readiness levels of emerging and developing technology, while simultaneously assessing the performance and contributions of the technology to the BMDS architecture.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MD95 / <i>Discrimination Sensor Technology</i>

<b><u>E. Performance Metrics</u></b> N/A
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>				<b>Project (Number/Name)</b> MT95 / <i>Discrimination Sensor Tech-Flight Test Execution</i>			
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
MT95: <i>Discrimination Sensor Tech-Flight Test Execution</i>	-	0.000	3.749	0.000	-	0.000	0.000	0.000	0.000	0.000	0	3.749

**Note**

The MT95, Discrimination Sensor Technology Flight Test Execution project, will complete technology demonstration of real time stereo tracking with Multi-Spectral Targeting System -Cs. FY 2017 funding is requested in the Technology Maturation Initiatives Program Element, 0604115C, for follow on Multi-Spectral Targeting System -C advanced sensor prototype development and test.

**A. Mission Description and Budget Item Justification**

The MT95, Discrimination Sensor Technology Flight Test project funds the management and execution of Discrimination Sensor Technology testing through technology demonstration of Aegis Launch-on-Remote real time stereo tracking with Multi-Spectral Targeting System - Cs. Aegis Launch-on-Remote capability allows Aegis BMD to launch an interceptor before its own radar acquires the threat, thus expanding Aegis BMD's defended area. Aegis BMD Launch-on-Remote involves Command, Control, Battle Management, and Communications providing information about the paths (called tracks) of ballistic missile threats, to Aegis BMD from forward based radars. The MT95, Discrimination Sensor Technology flight test project leverages other BMDS tests as an associated operation to gather sensor data.

In FY 2015, MDA successfully tested two Multi-Spectral Targeting System -B sensors integrated into MQ-9 Reapers. The Discrimination Sensor Technology tests used the BMDS operational architecture, proving that the Aegis weapon system could launch a Standard Missile - 3 against a ballistic missile target and achieve intercept using the tracking data from the airborne Multi-Spectral Targeting System sensors.

In FY 2016, the Discrimination Sensor Technology Flight Test project tests two Multi-Spectral Targeting System -Cs integrated into MQ-9 Reapers to demonstrate increased track precision and discrimination capability for the BMDS. As a precursor to the BMDS testing, the MDA is partnering with the Air Force to characterize Multi-Spectral Targeting System performance and provide data for Air Force Air Dominance development planning.

The Discrimination Sensor Technology Flight Test project funds flight, operations and maintenance costs for Unmanned Aerial Vehicles, ground control stations and ground support equipment. It also funds shipping of the test assets to test ranges, labor, travel, range support and Command, Control, Battle Management and Communications test support specific to Discrimination Sensor Technology.

The results from this airborne Multi-Spectral Targeting System -C Launch-on-Remote test sequence mature the critical technologies necessary for prototype development under the Technology Maturation Initiatives program element 0604115C. Launch-on-Remote is the precursor to Engage-on-Remote, which significantly expands BMD reach and the defended area.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Discrimination Sensor Technology Flight Test Execution	0.000	3.749	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MT95 / <i>Discrimination Sensor Tech-Flight Test Execution</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b>                      - Conduct system level Hardware-in-the-Loop (HWIL) testing in conjunction with the Enterprise Sensor Laboratory (ESL) and the Experimental Laboratory (X-Lab) for the Pacific Dragon test                      - Ship two MQ-9 Reapers, Multi-Spectral Targeting System - Cs (MTS-Cs) and ground support equipment                      - Conduct Pacific Dragon checkout flights, dry-runs, and dress rehearsals and operate and maintain the Unmanned Aerial Vehicles (UAVs), test equipment, ground control stations and ground support equipment                      - Demonstrate real time stereo tracking Aegis launch-on-remote quality of track using MTS-Cs installed on two MQ-9 Reaper UAVs in conjunction with the Pacific Dragon test</p> <p><b>FY 2017 Plans:</b> N/A</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	3.749	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MT95 / <i>Discrimination Sensor Tech-Flight Test Execution</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

**D. 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 of the BMDS models & simulations. This paradigm uses critical factor analysis to drive test design, planning, and execution for accrediting models & simulations, which is used to validate and assess system performance. With this test approach, the MDA will establish confidence that the models & simulations 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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>			<b>Project (Number/Name)</b> MC95 / <i>Cyber Operations</i>				
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC95: <i>Cyber Operations</i>	0.119	0.132	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

FY 2017 funding is requested in the Technology Maturation Initiatives Program Element, 0604115C, for follow on Cyber Operations activities.

**A. Mission Description and Budget Item Justification**

The funding in this project sustains the MDA DoD Information Assurance Certification and Accreditation Program and Controls Validation Testing activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones for the MDA Discrimination Sensor Technology mission systems. It maintains the Certification and Accreditation data repository, capturing the DoD Information Assurance Certification and Accreditation Program documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority accreditation decisions) and Plans of Action and Milestones on all MDA information systems.

This project monitors and tracks cyber security mitigations detailed in Information Technology security Plans of Action and Milestones. Activities include preparation of Certification and Accreditation documentation and accreditation recommendations to the MDA Senior Information Assurance Officer/Certification Authority and Designated Approving Authority. Independent Verification and Validation 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.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Network / System Certification and Accreditation (C&A)	0.132	0.000	0.000
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- Conducted cyber security / information assurance engineering and architecture planning for Discrimination Sensor Technology information technology systems			
- Planned and tested the information assurance controls for Ballistic Missile Defense System (BMDS) Discrimination Sensor Technology systems			
- Developed Discrimination Sensor Technology DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages			

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>	<b>Project (Number/Name)</b> MC95 / <i>Cyber Operations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017
- Conducted Controls Validation Testing (CVT) for Discrimination Sensor Technology mission systems and provided Plan of Action and Milestones to mitigate information assurance deficiencies  - Conducted annual information assurance reviews on the Discrimination Sensor Technology enclaves to assess compliance in implementing and maintaining IA controls  <b>FY 2016 Plans:</b> - Beginning in FY 2016, transfers to the Technology Maturation Initiatives Program Element 0604115C.  <b>FY 2017 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	0.132	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0604115C: <i>Technology Maturation Initiatives</i>	0.000	27.225	90.266	-	90.266	149.901	205.787	198.136	201.431	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**  
The acquisition strategy for cyber operations consists of using the MDA civilian employees and the existing competitively awarded support contracts.

**E. Performance Metrics**  
N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603177C / <i>Discrimination Sensor Technology</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	-	1.833	1.147	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**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).

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</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	45.268	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
MD69: <i>Directed Energy Research</i>	26.315	20.691	26.055	47.691	-	47.691	65.695	51.044	63.026	63.965	Continuing	Continuing
MD72: <i>Interceptor Technology</i>	18.953	40.000	22.967	22.000	-	22.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	-	0.705	2.131	2.152	-	2.152	3.309	2.701	3.374	3.522	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 Directed Energy Research MD69 increase from FY 2016 to FY 2017 funds laser test bed power demonstrations, laser packaging demonstrations, and hundreds of kilowatt class scaling designs based on successful 44 kilowatt Fiber Combining Laser (FCL) and 13 kilowatt Diode Pumped Alkali Laser (DPAL) system demonstrations. The increase from FY 2017 to 2018 reflects additional diode purchases to scale the DPAL from the 30 kilowatts planned in FY 2016 to 120 kilowatts in FY 2018 and scale the fully packaged, flight qualifiable FCL from 30 kilowatts in FY 2017 to 50 kilowatts in FY 2019. The decrease from FY 2018 to FY 2019 reflects the downselect from two technologies to the single best technology for further development beginning in FY 2019.

**A. Mission Description and Budget Item Justification**

The Weapons Technology program element develops and tests a high-powered directed energy laser to build the foundation of the next-generation laser system on a high altitude airborne platform. This laser system will be capable of acquiring, tracking and destroying an enemy missile at a much lower cost per kill than is possible with the existing Ballistic Missile Defense System (BMDS). The MDA's laser development investment, incrementally develops scalable, efficient, and compact high energy laser technology in the laboratory before beginning a high power laser flight test program. The technology required for tracking the target, aiming the laser, and building the flight demonstrator prototype is developed under the Technology Maturation Initiatives (TMI) program element (0604115C).

The MDA collaborates with the Office of the Assistant Secretary of Defense for Research and Engineering, the Defense Advanced Research Projects Agency (DARPA), the High Energy Laser Joint Technology Office, and the Air Force in a systems engineering based strategy to research, develop and test Directed Energy weapons technology. Within Directed Energy Research MD69 MDA conducts research into the transmission and control of directed energy largely above the atmosphere for mid-term missile defense applications and, ultimately, boost phase intercepts. The MDA is pursuing promising laser technology in a competitive environment with Industry, supported by breakthrough research at the Nation's premier laboratories. The MDA will focus on Directed Energy technology development with the goal of scaling to power levels required for robust, speed of light missile defense. The MDA is developing a set of common core technology that will enable both missile defense and air dominance missions. These core technologies include fiber launchers; high brightness, high efficiency diode pump modules; and high power, high efficiency fiber amplifiers. In FY 2017, the MDA, the DARPA and the Air Force will complete a 30 kilowatt packaged FCL system at the Massachusetts Institute of Technology Lincoln Laboratory. The system consists of the laser, batteries and thermal device. In FY 2018, The MDA will upgrade the 30 kilowatt packaged FCL to a 50 kilowatt class Fiber Combined Laser (FCL) for demonstration in FY 2019. In FY 2017, the MDA will upgrade a Diode Pumped Alkali Laser (DPAL) testbed at Lawrence Livermore National Laboratory to conduct a 30 kilowatt demonstration with improved beam quality. The MDA will also complete a design review for a 120 kilowatt DPAL system. This

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>
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effort is a prerequisite to conduct a 120 kilowatt laboratory demonstration in FY 2019, after which the MDA will evaluate the DPAL, FCL, and Industry laser systems to select the best approach to continue high power laser system development and fabrication. Each laser will demonstrate the technology necessary to scale the power to hundreds of kilowatts in order to enable the MDA path to boost phase intercept.

The Agency will make technology investments in Divert and Attitude Control System (DACS) for future BMD interceptors and kill vehicles.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	54.068	45.389	48.912	-	48.912
Current President's Budget	61.396	51.153	71.843	-	71.843
Total Adjustments	7.328	5.764	22.931	-	22.931
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	5.764			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	8.272	0.000			
• SBIR/STTR Transfer	-0.944	0.000			
• Other Adjustment	0.000	0.000	22.931	-	22.931

**Change Summary Explanation**

The FY 2015 increase provided an added collaborative laser lethality demonstration using the 150 kiloWatt-class Demonstrator Laser Weapons System, and additional funding to maintain diode production for both the Diode Pumped Alkali Laser and Fiber Combining Laser.

The FY 2016 and FY 2017 increase continues funding for Divert Attitude Control System.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>				<b>Project (Number/Name)</b> MD69 / <i>Directed Energy Research</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD69: <i>Directed Energy Research</i>	26.315	20.691	26.055	47.691	-	47.691	65.695	51.044	63.026	63.965	Continuing	Continuing

**Note**

The FY 2017 MD69, Directed Energy Research, increase from FY 2016 to FY 2017 funds increased laser test bed power demonstrations, laser packaging demonstrations, and hundreds of kilowatt class scaling designs based on a successful > 40 kilowatt Fiber Combining Laser and >10 kilowatt Diode Pumped Alkali Laser system demonstrations.

**A. Mission Description and Budget Item Justification**

The MDA mission is to develop a robust system to defend the United States against ballistic missile attacks at all ranges, in all phases of flight. Negating a ballistic missile in boost phase, before a threat missile can spawn countermeasures, will revolutionize missile defense by dramatically reducing the role of interceptors. In FY 2010, the Airborne Laser program proved we could acquire, track and destroy a boosting missile, addressing many aspects of the boost phase kill, but also underscored the complexity and challenges of fielding such a weapon system. The experience we gained from that successful first foray into directed energy system is pointing us along a new path that integrate a highly efficient, compact electric laser into a high altitude, low Mach Unmanned Aerial Vehicle capable of flying in the stratosphere above the clouds, which diffuse the laser energy. Flying at low speed in relatively calm air at 60,000 feet significantly reduces the complex beam pointing and atmospheric jitter compensation systems that were significant challenges on the Airborne Laser. The key to realizing this future high altitude, unmanned directed energy system is the laser.

With these lessons learned and breakthrough research at our nation's premier scientific laboratories, the MDA is implementing an incremental roadmap that will prove high power laser technology is ready to execute Missile Defense missions by 2022. This roadmap jointly develops with the Defense Advanced Research Projects Agency and the Air Force a set of core technologies common to both Air Force and missile defense missions; including fiber launchers; high brightness, high efficiency diode pump modules; and high power, high efficiency fiber amplifiers.

The Directed Energy Research project funds the laboratory development of two high energy laser technologies, the Diode Pumped Alkali Laser (DPAL) with Lawrence Livermore National Laboratory and a Fiber Combined Laser (FCL) with the Massachusetts Institute of Technology Lincoln Laboratory. Both laser technologies have considerable promise for scaling to very high average power while simultaneously achieving high system electrical-to-optical efficiencies, exceeding 40 percent, and very low system weight and volume. However, each technology takes a unique approach to attaining high power. The DPAL scales in power by increasing the size of a single laser gain cell. This approach has the benefit of simplicity of design but must address very high energy levels within the single cell. Livermore successfully demonstrated over 10 kilowatts in FY 2015; will demonstrate 30 kilowatts in FY 2017 and scale the system to 120 kilowatts in FY 2019 to address energy scaling. The FCL scales in power by combining multiple individual fiber amplifiers. MDA's key fiber laser investments are targeted at driving the weight per kilowatt of power in the fiber amplifier system down while increasing the individual fiber amplifier power output. MDA joined with the Defense Advanced Research Projects Agency and the Air Force to demonstrate 44 kilowatts in a room-sized, 40 kilogram per kilowatt configuration in FY 2015, to a packaged 7 kilograms per kilowatt 30 kilowatt system in FY 2017, and increase the compactness and power to a 5 kilogram per kilowatt 50 kilowatt system in FY 2018.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>	<b>Project (Number/Name)</b> MD69 / <i>Directed Energy Research</i>
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The MDA strategy is to reduce technical risk through dual path laboratory development and transition the laboratory development to industry for high altitude unmanned platform integration and test. In FY 2018, the MDA will conduct multiple industry laser studies to investigate high power scaling and technology readiness. In FY 2019, the MDA will select the best available high energy laser technology from the National Laboratories and/or Industry and develop a prototype 300 kilowatt-class laser system by 2022.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Directed Energy Research</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Demonstrated greater than 10 kilowatt Diode Pumped Alkali Laser (DPAL) test bed performance with high efficiency and excellent gain medium thermal control</li> <li>-- Demonstrated DPAL operation with accumulated run time of greater than 100 minutes without degradation of any system components</li> <li>-- Completed design and procurement of a beam correction system for 30 kilowatt (kW) test bed</li> <li>-- Completed design and construction of a next-generation, high-flow alkali vapor circulator system for the 30 kW test bed</li>   <li>- In conjunction with the Defense Advanced Research Projects Agency; <ul style="list-style-type: none"> <li>-- Completed the engineering development unit for the next-generation Fiber Combined Laser (FCL) compact amplifier</li> <li>-- Upgraded the efficiency of the 42 element FCL laboratory system and demonstrated greater than 40kW average power output with near-ideal beam quality</li> <li>-- Completed Concept Design Review/System Readiness Review for the Low-Size Weight and Power (SWaP) FCL demonstration</li> <li>-- Demonstrated excellent beam quality with a 101-element low-power combining setup confirming scalability of FCLs</li> <li>-- Demonstrated a 2.5 kilowatt combinable fiber amplifier, a significant upgrade from the current 1 kilowatt amplifiers used today</li> <li>-- Completed testing of a next generation fiber launcher prototype</li> </ul> </li>   <li>- Analyzed and evaluated DPAL and FCL laboratory test data, as well as power and efficiency analysis for scaling to Ballistic Missile Defense System relevant power levels</li>   <li>- Awarded five contracts with Industry to define concepts that could be used to develop and integrate a multi-kilowatt class laser into a high altitude airborne platform for multi-mission demonstrations</li> </ul> <p><b>FY 2016 Plans:</b> Based on multiple successful Fiber Combined Laser (FCL) 40 kilowatt (kW) demonstrations and Diode Pumped Alkali Laser (DPAL) 10 kW demonstrations, the increase from FY 2015 to FY 2016 funds increased laser test bed power, laser packaging demonstrations, system robustness and megawatt-class scaling designs.</p>	20.691	26.055	47.691



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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>	<b>Project (Number/Name)</b> MD69 / <i>Directed Energy Research</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017
<p>- Upgrade the 10 kW DPAL laboratory demonstration system to a 30 kW-class test bed</p> <p>-- Conduct beam quality characterization testing to validate gain cell flow uniformity</p> <p>-- Validate gain cell waveguide scaling path to higher power operation</p> <p>-- Demonstrate improved robustness and reliability of pump diode modules</p> <p>-- Initiate design for a 120 kW DPAL gain cell and pump delivery system</p> <p>- In collaboration with the Defense Advanced Research Projects Agency and the Air Force, complete the critical design review and begin fabrication and integration of the 5 kilograms (kg) per kW low size weight and power Fiber Combined Laser (FCL) system</p> <p>-- Conduct FCL advanced beam combiner high power demonstration to verify the combiner can scale to required performance levels</p> <p>-- Analyze and evaluate laboratory and industry high energy laser test data for scaling to ballistic missile defense system relevant power levels</p> <p>- Implement directed energy models and simulations to assess technology capability against expected threats, define technology gaps and identify and mitigate technical risks</p> <p>-- In conjunction with the High Energy Laser Joint Technology Office (HEL JTO) address real-time laser deconfliction procedures and implementation mechanisms</p> <p><b>FY 2017 Plans:</b></p> <p>The increase from FY 2016 to FY 2017 funds increased laser test bed power demonstrations, laser packaging demonstrations, and hundreds of kilowatt (kW) class scaling designs based on successful &gt; 40 kW Fiber Combined Laser (FCL) and &gt; 30 kW Diode Pumped Alkali Laser (DPAL) system demonstrations</p> <p>- Demonstrate a 30 kW operation with 30% electrical-to-optical (E-O) efficiency</p> <p>- Upgrade the 30 kW DPAL system laboratory test bed</p> <p>-- Demonstrate a 30 kW DPAL beam with the ability to tightly focus on the target (beam quality at 1.5X diffraction-limited)</p> <p>--- Complete characterization of a deformable mirror beam correction system</p> <p>--- Design, fabricate and install a beam formatting and transport subsystem</p> <p>-- Complete a preliminary design for a 120 kW DPAL system</p> <p>-- Integrate a 10x12 diode array unit cell backplane</p> <p>- In collaboration with the Defense Advanced Research Projects Agency and the Air Force; upgrade the FCL system</p> <p>-- Deliver and demonstrate a flight qualified 1kg per kW compact fiber amplifier traceable to Ballistic Missile Defense System high energy laser system requirements</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>	<b>Project (Number/Name)</b> MD69 / <i>Directed Energy Research</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-- Demonstrate a compact, packaged FCL system			
--- Conduct first light of the compact, packaged FCL system			
--- Conduct a 30 kilowatt Low Size Weight and Power (SWaP) demonstration validating a 7 kilogram per kilowatt integrated FCL package			
-- Conduct preliminary and critical designs for a 50 kilowatt low SWaP 5 kilogram per kilowatt integrated FCL package			
<b>Accomplishments/Planned Programs Subtotals</b>	20.691	26.055	47.691

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0604115C: <i>Technology Maturation Initiatives</i>	0.000	27.225	90.266	-	90.266	149.901	205.787	198.136	201.431	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy for the MD69, Directed Energy Research, consists of partnering with Industry, the Defense Advanced Research Projects Agency, the Air Force, Federally Funded Research and Development Centers and University Affiliated Research Centers. MDA will leverage Agency and partner subject matter experts and use government model based assessments to inform Better Buying Power philosophy acquisition decisions. MDA will then award contracts to industry and universities via the Advanced Technology Innovation Broad Agency Announcement and competitive procurements to develop and demonstrate promising components and integrated systems in realistic test environments.

**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>				<b>Project (Number/Name)</b> MD72 / <i>Interceptor Technology</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD72: <i>Interceptor Technology</i>	18.953	40.000	22.967	22.000	-	22.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The Interceptor Technology project develops Divert and Attitude Control System (DACS) technology to enhance operational performance of future Multi-Object Kill Vehicle (MOKV). Technology investment will focus on DACS subsystem and system elements that support longer operation, multiple discrete events, precision attitude control, safe operation and minimum kill vehicle mass. In FY 2017, MDA will continue investment in a competitive next generation solid DACS development with industry to reduce propulsion component risk for the MOKV. The concept(s) being developed for MOKV application will transition to implementation with the industry MOKV developers. MDA will also continue to conduct component testing of lightweight, long duration Cooled Gas and Multi-Pulse Attitude Control Systems having application to both a Kill Vehicle and a Third Stage Rocket Motor, while anchoring system sizing and performance prediction models. MDA will define the baseline requirements using analytical tools to identify mature technology capable of supporting MOKV development.

The project will also model and assess electromagnetic rail gun projectile technology readiness, suitability, and integration requirements for ballistic missile defense applications.

**B. Accomplishments/Planned Programs (\$ in Millions)**

<b>Title:</b> Interceptor Technology	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Description:</b> Interceptor Technology focuses on development and test of component and sub-systems for solid propulsion Divert and Attitude Control Systems (DACS), including propellant tanks, Attitude Control System and divert thrusters, and pressurant subsystems. This project will also investigate electromagnetic rail gun suitability and integration requirements for ballistic missile defense applications. This is a continuation of systems engineering and analysis that began under the BMD Enabling Programs program element, 0603890C in FY 2014.	40.000	22.967	22.000
<b>FY 2015 Accomplishments:</b>			
- Developed performance measures based on multi-object kill vehicle (MOKV) government concepts			
- Assessed solid DACS concepts			
- Identified solid DACS technology gaps for MOKV application and potential technology solutions			
- Invested with industry to develop gap filling technology solutions leading to a next generation initial DACS design for MOKV			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>	<b>Project (Number/Name)</b> MD72 / <i>Interceptor Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Conducted additional material and sub-component level tests (Valve, Thruster, Accumulator) to mature a multiple gas generator solid DACS ) design for use in future Ballistic Missile Defense System (BMDS) interceptors			
<b><i>FY 2016 Plans:</i></b>			
- In FY 2016, \$12.967 million is for advanced technology efforts in interceptor technology to address an emerging threat.			
- Deliver initial design of a next generation solid DACS technology concept(s) that support multiple object kill vehicle development			
- Conduct initial government review and assessment of contractor(s) concepts to determine utility of alternative technology			
- Initiate component development testing to support government assessment and finalize concept design			
- Conduct government review and update assessment of contractor's final concept(s) to identify remaining gaps			
- Investigate preliminary rail gun projectile technology suitability for ballistic missile defense applications			
<b><i>FY 2017 Plans:</i></b>			
- Conduct DACS technology development and testing to further reduce propulsion component risk for industry MOKV concept development			
- Conduct component testing of lightweight, long duration Cooled Gas Attitude Control System			
- Investigate rail gun projectile technology suitability for ballistic missile defense applications			
<b>Accomplishments/Planned Programs Subtotals</b>	40.000	22.967	22.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>	<b>Project (Number/Name)</b> MD72 / <i>Interceptor Technology</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

This effort leverages Agency and partner subject matter experts and government model based assessments to inform Better Buying Power philosophy acquisition decisions. Through a competition with industry contractors, MDA will develop a next generation Divert Attitude Control System based on future multi-object kill vehicle architecture and interfaces.

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603178C / <i>Weapons Technology</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	-	0.705	2.131	2.152	-	2.152	3.309	2.701	3.374	3.522	Continuing	Continuing

**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).

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603179C / <i>Advanced C4ISR</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	12.809	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	39.372
MD73: <i>Advanced C4ISR</i>	12.809	12.382	9.412	3.462	-	3.462	0.000	0.000	0.000	0.000	0	38.065
MD40: <i>Program-Wide Support</i>	-	0.679	0.464	0.164	-	0.164	0.000	0.000	0.000	0.000	0	1.307

**Program MDAP/MAIS Code:** 362

**Note**

The decrease in FY 2017 is due to the completion of technology development efforts.

**A. Mission Description and Budget Item Justification**

The Advanced Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Program Element develops future BMDS capabilities to out-pace emerging and evolving threats and identifies, develops, and readies for transition the technical solutions that address BMDS shortfalls identified by the Combatant Commanders. MDA uses the Prioritized Capabilities List (PCL) and the Agency's Achievable Capabilities List (ACL) to prioritize technology investments including Advanced C4ISR. MDA's investments balance the pursuit of promising next generation technology with the need for near-term solutions to enhance existing BMDS capability.

This Program Element includes support for discrimination improvement efforts, which aim to develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture more capable of discriminating and destroying a re-entry vehicle with a high degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near-term, Mid-term, and Far-term discrimination capability fielding. The discrimination improvements require a coordinated effort between Systems Engineering (PE 0603890C), Ground-based Midcourse Defense (PE 0603882C), BMD Sensors (PE 0603884C), C2BMC (PE 0603896C), Aegis BMD, and Advanced C4ISR (PE 0603179C)

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> / BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603179C / <i>Advanced C4ISR</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	13.284	9.876	3.723	-	3.723
Current President's Budget	13.061	9.876	3.626	-	3.626
Total Adjustments	-0.223	0.000	-0.097	-	-0.097
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.223	0.000			
• Other Adjustment	0.000	0.000	-0.097	-	-0.097

**Change Summary Explanation**

The FY 2017 decrease reflects realignment of Department of Defense priorities.



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

Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)			
0400 / 3					PE 0603179C / <i>Advanced C4ISR</i>				MD73 / <i>Advanced C4ISR</i>			
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
MD73: <i>Advanced C4ISR</i>	12.809	12.382	9.412	3.462	-	3.462	0.000	0.000	0.000	0.000	0	38.065

**Note**  
The decrease in FY 2017 is due to the completion of technology development efforts.

**A. Mission Description and Budget Item Justification**

Advanced Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR enables rapid, exponential capability increases in the Ballistic Missile Defense System (BMDS) command, control, battle management and communications (C2BMC) and existing sensor networks. MDA will develop and mature technology, software and algorithms to facilitate integration of Service command and sensor network approaches into the BMDS.

This Program Element also included support for C2BMC centric discrimination improvements for Near-Term and Mid-Term capability fielding. For FY18 and beyond, the discrimination technologies developed under this PE have been transitioned to the Ballistic Missile Defense Sensors (0603884C) Program Element for further refinement and implementation.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Advanced X-Band Radar Capabilities	12.382	9.412	3.462
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> -Developed advanced X-band radar target acquisition and discrimination capabilities against threats launched over extended geographical regions on wide range of flight trajectories. Selected new algorithms and developed plan for incorporation into future XBR software program.			
<b>FY 2016 Plans:</b> -Begin incorporation of advanced discrimination algorithms into XBR and AN/TPY-2 radars, planned for completion in FY 2017			
<b>FY 2017 Plans:</b> -The decrease in FY 2017 is due to the completion of technology development efforts -Complete development of advanced discrimination algorithms for XBR and AN/TPY-2 radars -Complete transition of technology to the BMD Sensors (0603884C) program element. Mid-term discrimination improvements are planned to field in FY 2019			
<b>Accomplishments/Planned Programs Subtotals</b>	12.382	9.412	3.462

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 3				<b>R-1 Program Element (Number/Name)</b> PE 0603179C / <i>Advanced C4ISR</i>				<b>Project (Number/Name)</b> MD73 / <i>Advanced C4ISR</i>			

**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

Advanced X-Band Radar Capabilities follow the MDA capability-based acquisition strategy that emphasizes testing, development and evolutionary acquisition. The advanced technology development will include development of target acquisition and discrimination algorithms and assessment of performance. Performance assessment and transition risk reduction will use modeling, simulation, and online or offline assessment of live tracking opportunities. When ready, technology will transition to appropriate program elements for advanced component development and integration into BMDS X-Band Radars.

The Radar Sustainment Contract (RSC) will be used for both advanced technology development and for transition of technology to systems. The RSC is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract awarded in 2012 to sustain all the BMDS X-Band Radars. The contract provides sustainment of previously developed X-Band radar products, such as:

- Software maintenance of existing software developed to support the X-Band Radars
- Models & Simulation: development, maintenance, and verification of high fidelity models, support for war games and exercises, and support for performance assessment events
- Engineering Services -engineering support for deployed radars to facilitate maintenance efforts which may include but are not limited to hardware obsolescence studies, hardware redesign, technology insertion, and refurbishment efforts
- BMDS Test Planning, Execution, and Analysis -planning, execution and analysis of BMDS test requirements for previously developed hardware and software in accordance with the MDA Integrated Master Test Plan (IMTP).

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603179C / <i>Advanced C4ISR</i>	<b>Project (Number/Name)</b> MD73 / <i>Advanced C4ISR</i>
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**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603179C / <i>Advanced C4ISR</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
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>	-	0.679	0.464	0.164	-	0.164	0.000	0.000	0.000	0.000	0	1.307

**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).

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</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	23.025	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
MD25: <i>Advanced Technology Development</i>	23.025	17.980	16.549	22.600	-	22.600	18.908	19.487	20.047	20.362	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	-	0.496	0.815	0.833	-	0.833	0.962	1.042	1.084	1.132	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 increase funds the highly successful effort to transition advanced material technology to the Ballistic Missile Defense System, along with initiatives in Nano-technology (propellants, batteries, electronics, multifunctional structures, thermal management, and electro-optics) and Additive Manufacturing Technology for interceptor propulsion and structural components.

**A. Mission Description and Budget Item Justification**

Advanced Research conducts leading edge research and development to create and enable future missile defense capability. MDA executes this mission by capitalizing on the creativity and innovation of the brightest minds in our Nation's universities and small businesses, collaborative research partnerships between allied country academic institutions, and innovative ideas from industry. This includes a focus on facilitating the transition of technology to the Ballistic Missile Defense System (BMDS) through a Commercialization and Transition Office and the execution of the Rapid Innovation Fund Program. Advanced Research identifies priorities and balances the research portfolio in collaboration with the Agency's Chief Engineer and an Agency-wide executive level Research Council.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	16.584	17.364	18.919	-	18.919
Current President's Budget	18.476	17.364	23.433	-	23.433
Total Adjustments	1.892	0.000	4.514	-	4.514
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.171	0.000			
• SBIR/STTR Transfer	-0.279	0.000			
• Other Adjustment	0.000	0.000	4.514	-	4.514

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>				<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD25: <i>Advanced Technology Development</i>	23.025	17.980	16.549	22.600	-	22.600	18.908	19.487	20.047	20.362	Continuing	Continuing

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Advanced Technology Development explores new BMDS capability by leveraging the creativity and innovation of the Nation's small businesses and universities, and through cooperative international research agreements between U.S. and foreign universities of allied nations. The program manages the selection process and administers the Missile Defense Small Business Innovation Research program element, 0605502C. Small Business Innovation Research topics and projects are selected annually based on identified needs across the BMDS and executed in partnership with sponsoring intra-agency organizations. In FY 2017, the program will conduct Advanced Technology Innovation Broad Agency Announcement solicitation for identifying potential breakthrough research on missile defense related technology with private industry, qualified accredited educational institutions, and non-profit organizations. Projects may include directed energy, sensors, command and control, and interceptor technology. The program will execute and administer the Missile Defense Agency Science, Technology and Research Broad Agency Announcement which invests in university research ranging from sensor data fusion to solid rocket propulsion to advanced materials for missile defense application.

Advanced Technology Development pursues a broad range of revolutionary technology targeted for application and insertion into the BMDS. This work facilitates the commercialization and transition of promising technology into the BMDS by promoting a cooperative environment to reduce cost and increase return on investment between small business, prime contractors and MDA elements.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Advanced Research	17.980	16.549	22.600
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
-Pursued on-going scientific and engineering university research initiatives and projects:			
--Alabama A&M University: Reconfigurable Computing for Multi-Sensor Tracking Applications			
--Howard University: Machine Learning for Analyzing the Forensics and Reliability of Integrated Circuits			
--Howard University: Infrared Analysis in Counterfeit Parts Detection and Supply Chain Validation			
--Purdue University: Propulsion Improvements for MDA Applications			
--Texas A&M University: Solid Propellant Additives for Divert Attitude Control System (DACs) Applications			
--Texas A&M University: Hybrid Waveguide/Micro Electro Mechanical System Optical Signal Processor			
--Texas A&M University: Ignition of Composite Propellants with Advanced Additives			
--University of Alabama Huntsville: Computational studies of aero-optic effects of higher Reynolds numbers gas flows over sensor			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>structures</p> <ul style="list-style-type: none"> <li>--University of Alabama Huntsville: Green Oxidizer Development</li> <li>--University of Connecticut: Innovative Radar Signal Processing &amp; Algorithms</li> <li>--University of Dayton: Common Aperture Light Weight Multi-Aperture All Electric HEL</li> <li>--University of Illinois: Decision Theory for Optimal Engagement Planning</li> <li>--University of Maryland: Development of Thrusters for Fast Response Time DAC Propulsion Systems</li> <li>--University of New Hampshire: Gas Circulator for Diode Pumped Alkali Laser</li> <li>--University of Southern California: Algorithms for detection, track, and classification of objects in a high debris environment</li> <li>--University of Tennessee: Target Handoff and Resource Management for Multi-Sensor Multi-Target Tracking System</li> <li>--University of Texas at Austin: Nanomaterial Based Ink Jet Printing Science and Technology for X-Band Phased Array Antenna</li> <li>--University of Texas, El Paso: HAN Based Advanced Hybrid Rocket Motor Technologies</li> <li>--Washington State University: Reliability of Through Silicon Vias and Solder Microbumps in 3D Electronics for High Performance Defense Applications</li> </ul> <p>-Sponsored breakthrough technology and innovative solutions from private industry, qualified accredited domestic educational institutions, and nonprofit organizations, using the Advanced Technology Innovation Broad Agency Announcement (ATI BAA), to include research in:</p> <ul style="list-style-type: none"> <li>--Radar and Communication Systems</li> <li>--Electro-Optical / Infrared Sensor Systems</li> <li>--Directed Energy Systems</li> <li>--Computer Science, Signal and Data Processing</li> <li>--Mathematics, Probability and Decision Theory</li> <li>--Physics, Chemistry, and Materials</li> <li>--Mechanical and Aerospace Engineering</li> <li>--Modeling and Simulation</li> <li>--International BMDS Cooperation</li> <li>--Advanced Non-Liquid Kill Vehicle Propulsion Systems or Architectures</li> <li>--Advanced Kill Vehicle Technology and Architectures</li> </ul> <p>-Partnered with industry, the High Energy Laser Joint Technology Office, Universities and National Laboratories through advanced technology initiatives to improve sensor technology, high energy laser acquisition, tracking, and pointing technology, and lightweight fiber laser amplifiers</p>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Conducted research and material solution analysis to identify initiatives and technology to include missiles, sensors, and command and control components in the defense against current and future threats:</p> <ul style="list-style-type: none"> <li>--Fabricated SM-3 IIA unitary nosecone assembly prototype (composite structure, thermal protection system, and deployment hardware)</li> <li>--Fabricated Small Business Innovative Research developed composite Arrow-3 replacement nosecone meeting all critical requirements with high fidelity testing</li> <li>--Successfully demonstrated a tungsten based non-eroding throat in a full scale static hot-fire test</li> <li>--Partnered with industry, Lawrence Livermore National Labs (LLNL), and the Defense Threat Reduction Agency to perform radiation source characterization tests to improve radiation hardness of optical components for Kill Vehicle seeker development</li> <li>--Partnered with industry and Vanderbilt University, Institute of Space and Defense Electronics to develop a new capability for modeling space radiation environments for the BMDS</li> </ul> <p>-Leveraged University-to-University (UUR) International Research opportunities with allied nations to enhance Ballistic Missile Defense System (BMDS) Advanced Technology initiatives and build stronger relationships with Missile Defense Agency (MDA) North Atlantic Treaty Organization (NATO) Allied nations and our partner countries</p> <ul style="list-style-type: none"> <li>--University of Nebraska Lincoln / University of Bordeaux France: Diamond Coating Adaptive to Substrate Materials Using a Diamond Composite Buffer Layer</li> <li>--North Carolina State University / Czech Technical University; Space Debris Exploration: Modeling and Fusion Algorithms</li> <li>--Auburn University / Middle East Technical University, Turkey: Integrated Framework for Engineering Replicability into High Assurance BMDS Simulations</li> </ul> <p>-Managed the selection process of the Small Business Innovation Research and Small Business Technology Transfer programs to assist MDA-funded technology developers in finding and entering technology transfer opportunities to missile defense applications</p> <ul style="list-style-type: none"> <li>---Awarded 92 Phase I contracts and 68 Phase II contracts in the following research areas:</li> <li>--Advanced Technology</li> <li>--Aegis BMD</li> <li>--Anti-Tamper</li> <li>--Battle Management and Communications</li> <li>--Directed Energy</li> <li>--Future Capability</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>
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**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>--Ground-Based Midcourse Defense</li> <li>--Modeling and Simulation</li> <li>--Quality, Safety &amp; Mission Assurance</li> <li>--Sensors</li> <li>--Targets and Countermeasures</li> <li>--Test Instrumentation</li> <li>--Terminal High Altitude Area Defense</li>   <li>-Conducted system engineering and integration to identify and mature initiatives and technology to defend against current and future threats</li>   <li>-MDA Science Technology Engineering and Mathematics (STEM) Outreach expanded volunteer activities for other MDA facilities to increase overall MDA K-12 STEM awareness and engagement nationwide</li> <li>---Increased internal and external awareness through:                             <ul style="list-style-type: none"> <li>--Administering Best Robotics Grants</li> <li>--MDA Engineering In Art program</li> <li>--Partner in Education (MDA/Ft. Belvoir)</li> <li>--Colorado STEM Network (MDA/Colorado Springs)</li> <li>--Garrison Team Redstone - Huntsville Police Department's Community Awareness for Youth and Adventures in Engineering</li> <li>--University of Alabama Huntsville Innovative System Project for the Increased Recruitment of Emerging STEM Students</li> <li>--FIRST Robotics events</li> <li>--Future City Competition</li> <li>--Society for Science Broadcom Math, Applied Science, Technology Engineering for Rising Stars (MASTERS) science fairs</li> <li>--University engagement awareness by providing Teacher Professional Development at an Alabama state-wide conference</li> </ul> </li>   <li>-Initiated innovative Advanced Sensor scene generation and modeling capability</li>   <li><b><i>FY 2016 Plans:</i></b> <ul style="list-style-type: none"> <li>-Pursue on-going scientific and engineering university research initiatives and projects:                                     <ul style="list-style-type: none"> <li>--Texas A&amp;M University: Solid Propellant Additives for Divert Attitude Control System (DACs) Applications</li> <li>--Texas A&amp;M University: Hybrid Waveguide Micro Electro Mechanical System Optical Signal Processor</li> <li>--Alabama A&amp;M University: Reconfigurable Computing for Multi-Sensor Tracking Applications</li> <li>--University of Texas at Austin: Nanomaterial-based Ink-Jet Printing Science and Technology for Conformable X-Band Phased Array Antenna</li> <li>--University of New Hampshire: Gas Circulator for Diode Pumped Alkali Laser (DPAL)</li> </ul> </li> </ul> </li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>--University of Connecticut: Development of innovative solutions for hardware security, and detection and prevention</p> <p>-- University of New Hampshire: Numerical Simulations of DPAL with Co-Flowing Planar Jet Geometries</p> <p>-- Auburn University / Middle East Technical University, Turkey: Integrated Framework for Engineering Replicability into High Assurance Ballistic Missile Defense System (BMDS) Simulations</p> <p>-Sponsor breakthrough technology and innovative solutions from private industry, qualified accredited domestic educational institutions, and nonprofit organizations, using the Advanced Technology Innovation Broad Agency Announcement (ATI BAA), to include research in:</p> <ul style="list-style-type: none"> <li>-- Radar Systems</li> <li>-- Directed Energy Systems</li> <li>-- Electro-Optical Infrared Sensor Systems</li> <li>-- Computer Science, Signal and Data Processing</li> <li>-- Mechanical and Aerospace engineering</li> <li>-- Decision Theory</li> <li>-- Modeling &amp; Simulation</li> <li>-- Interceptor Technology</li> <li>-- Sensor Technology</li> </ul> <p>-Partner with industry, the High Energy Laser Joint Technology Office, universities and national laboratories through advanced technology initiatives to improve sensor technology, high energy laser acquisition, tracking, and pointing technology, and lightweight fiber laser amplifiers</p> <p>-Conduct systems engineering, integration, research and material solution analysis to identify initiatives and technology to include missiles, sensors, and command and control components in the defense against current and future threats</p> <p>-Leverage University-to-University (UUR) International Research opportunities with allied nations to enhance BMDS Advanced Technology initiatives and build stronger relationships with Missile Defense Agency (MDA) North Atlantic Treaty Organization (NATO) allied nations and our partner countries</p> <p>-Manage the selection process of the Small Business Innovation Research and Technology Applications programs to assist MDA-funded technology developers in finding and entering technology transfer opportunities to missile defense applications</p> <p><b><i>FY 2017 Plans:</i></b></p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>The increase in funding from FY 2016 to FY 2017 is to provide additional funding to the highly successful effort to transition advanced material technology to the BMDS, along with initiatives in Nano-technology (propellants, batteries, electronics, multifunctional structures, thermal management, and electro-optics) and Additive Manufacturing Technology for interceptor propulsion and structural components.</p> <p>-Partner with industry, universities and national laboratories through advanced technology initiatives to improve:                      --Nano-technology initiatives                      ---Propellants                      ---Batteries                      ---Electronics                      ---Multifunctional structures                      ---Thermal management                      ---Electro-optics                      --Additive manufacturing technology initiatives for interceptor propulsion and structural components</p> <p>-Pursue on-going scientific and engineering university research initiatives and projects:                      --Alabama A&amp;M University: Reconfigurable Computing for Multi-Sensor Tracking Applications                      --Auburn University / Middle East Technical University, Turkey: Integrated Framework for Engineering Replicability into High Assurance BMDS Simulations                      --Howard University: Machine learning for Analyzing the Forensics and Reliability of Integrated Circuits                      --Johns Hopkins University: Improvements in Thermal Battery Capabilities                      --Purdue University: Development and Characterization of Hypergolic Propellants                      --Purdue University: Investigation of Root Causes of Combustion Instability                      --Texas A&amp;M University: Propellant Formulations for Suppressing Combustion Instability in Solid Rocket Motors                      --Texas A&amp;M University: Hysteresis Engineering of Adaptive Materials for Electronic and Optoelectric Devices                      --University of Connecticut: Radar and Electro Optical Systems Track Detection Algorithms                      --University of Dayton: Common Aperture Light Weight Multi-Aperture All Electric High Energy Laser                      --University of Michigan: Narrow-Band Infrared Spectral Filtering via Silicon Sub-Wavelength Dielectric Gratings                      --University of Nebraska / University of Bordeaux, France: Diamond Coating Adaptive to Substrate Materials                      --University of Texas El Paso: Hydroxyl ammonium Nitrate Based Advanced Hybrid Rocket Motor Technologies                      --Washington State University: Reliability of Through Silicon Vias and Solder Microbumps in 3D Electronics for High Performance Defense Applications</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Sponsor breakthrough technology and innovative solutions from private industry, qualified accredited domestic educational institutions, and nonprofit organizations, using the Advanced Technology Innovation Broad Agency Announcement, to include research in:</p> <ul style="list-style-type: none"> <li>-- Radar Systems</li> <li>-- Directed Energy Systems</li> <li>-- Electro-Optical Infrared Sensor Systems</li> <li>-- Computer Science, Signal and Data Processing</li> <li>-- Mechanical and Aerospace engineering</li> <li>-- Decision Theory</li> <li>-- Modeling &amp; Simulation</li> <li>-- Interceptor Technology</li> <li>-- Sensor Technology</li> </ul> <p>-Partner with industry, universities and national laboratories through advanced technology initiatives to improve:</p> <ul style="list-style-type: none"> <li>--Space and Sensor Technology</li> <li>--Nanosat Technology Demonstrations</li> <li>--Radiation Hardened Mirror Technology</li> <li>--Multi-Static Radar Technology to Include Interferometric Processing</li> <li>--Radiation Hardened Strained-Layer Superlattice Focal Plane Arrays</li> <li>--Improvements in Spacecraft Manufacturing Efficiency</li> <li>--Deep Learning Algorithms for Missile Discrimination</li> <li>--Directed Energy Technology</li> <li>--High Power Optical Fibers</li> <li>--Quick Recovery High Energy Diodes</li> <li>--Ultra Low Size Weight and Power Diode Pump Modules</li> <li>--Large Stroke, High Spatial Bandwidth, Deformable Mirrors</li> <li>--Light Weight, Dampened Optical Benches</li> <li>-- Optics and Coatings for Alkali Environments</li> <li>--Interceptor Technology</li> <li>--Aerospace-Grade Rayon Technology Development</li> <li>--Liquid Bipropellant Combustion Models</li> <li>--Liquid Propellant Neutralization</li> <li>--Navigation Algorithm Technology Development</li> <li>--Future Ballistic Missile Defense System Concept Development</li> <li>--Advanced Sensor Algorithm Initiative</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017
--Aerospace Vehicle Target Tracking and Discrimination --Radar Interferometric Processing for Electro Magnetic Rail Gun  -Conduct systems engineering, integration, research and material solution analysis to identify initiatives and technology to include missiles, sensors, and command and control components in the defense against current and future threats  -Leverage University-to-University International Research opportunities with allied nations to enhance BMDS Advanced Technology initiatives and build stronger relationships with MDA North Atlantic Treaty Organization allied nations and partner countries  -Continue an International Cooperative Agreement between the DoD and the Ministry of Defense of the Kingdom of Denmark concerning ballistic missile defense technology (Frequency Modulated Continuous Wave radar project) to determine the utility of high-resolution range/range-rate radar technology for ballistic missile defense applications  -Manage the selection process of the Small Business Innovation Research and Technology Applications programs to assist MDA-funded technology developers in finding and entering technology transfer opportunities to missile defense applications			
<b>Accomplishments/Planned Programs Subtotals</b>	17.980	16.549	22.600

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
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
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>	<b>Project (Number/Name)</b> MD25 / <i>Advanced Technology Development</i>
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**D. Acquisition Strategy**

The acquisition strategy to conduct these technology development agreements consists of partnering with accredited domestic universities, small businesses, and nonprofit organizations. MDA awards competitive procurements via the MDA Science and Technology Advanced Research Broad Agency Announcement; the Advanced Technology Innovation Broad Agency Announcement; the Small Business Innovative Research program; and the Small Business Technology Transfer program.

**E. Performance Metrics**

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603180C / <i>Advanced Research</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	-	0.496	0.815	0.833	-	0.833	0.962	1.042	1.084	1.132	Continuing	Continuing

**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).



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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603274C / <i>Special Program - MDA Technology</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	130.119	43.439	13.908	83.745	-	83.745	0.000	0.000	0.000	0.000	0	271.211
MD81: <i>Special Programs - MDA Technology</i>	130.119	43.439	13.908	83.745	-	83.745	0.000	0.000	0.000	0.000	0	271.211

**Program MDAP/MAIS Code:** 362

**Note**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	40.433	64.708	85.594	-	85.594
Current President's Budget	43.439	13.908	83.745	-	83.745
Total Adjustments	3.006	-50.800	-1.849	-	-1.849
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-50.800			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	3.722	0.000			
• SBIR/STTR Transfer	-0.716	0.000			
• Other Adjustment	0.000	0.000	-1.849	-	-1.849

**Change Summary Explanation**

FY 2015 reprogramming decreases PE0603891C and increases PE0603274C. Details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

FY 2017 other adjustments reflect realignment to Department of Defense priorities. Details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</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	67.796	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MD85: <i>Common Kill Vehicle Technology</i>	67.796	23.524	59.558	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	1.312	2.195	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

In FY 2017 the funding will transfer from Common Kill Vehicle Technology program element 0603294C to the Multi-Object Kill Vehicle (MOKV) program element 0604894C.

**A. Mission Description and Budget Item Justification**

On 15 March 2013, the Secretary of Defense announced steps to bolster protection of the homeland and stay ahead of the evolving quantity and complexity of long range ballistic missile threats. These steps included adding Ground-Based Interceptors and shifting resources to develop advanced kill vehicle technology to improve all ballistic missile defense interceptors that operate outside the earth's atmosphere. The successful first phase of the Common Kill Vehicle Technology effort defined concepts for the redesign of the ground based interceptor Exo-atmospheric Kill Vehicle. This effort completed advanced technology development and transitioned to the redesigned kill vehicle effort in FY 2014.

The next phase of the Common Kill Vehicle Technology effort will enhance Ballistic Missile Defense System interceptor performance by improving discrimination and adding the capability to destroy several objects within a threat complex using multiple kill vehicles carried on a single interceptor. MDA is developing the concepts for a MOKV based on a modular, open architecture designed to common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The Agency will focus on the competitive development of MOKV concepts with industry in FY 2015-2016.

This capability relies on a BMDS architecture that balances performance across the sensor, Command, Control, Battle Management and Communications, and kill vehicle elements. The Agency anticipates deploying this capability across the interceptor fleet in the next decade to address the evolving threat.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	25.639	46.753	75.262	-	75.262
Current President's Budget	24.836	61.753	0.000	-	0.000
Total Adjustments	-0.803	15.000	-75.262	-	-75.262
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	15.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.372	0.000			
• SBIR/STTR Transfer	-0.431	0.000			
• Other Adjustment	0.000	0.000	-75.262	-	-75.262

**Change Summary Explanation**

The FY 2017 funding adjustment reflects the transfer of the funding from Common Kill Vehicle Technology program element 0603294C to the new Multi-Object Kill Vehicle program element 0604894C.

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

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</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
<i>MD85: Common Kill Vehicle Technology</i>	67.796	23.524	59.558	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

N/A

**A. Mission Description and Budget Item Justification**

In calendar year 2014, Phase I of the Common Kill Vehicle technology effort resulted in the transition of industry concepts for a Re-designed Kill Vehicle. The concepts informed the Agency's development of system requirements and served as the foundation for product development of the Re-designed Kill Vehicle.

In FY 2015, the Agency awarded several contracts with industry to define concepts for a Multi-Object Kill Vehicle (MOKV) based on this open architecture. The Agency's focus in FY 2016 is to develop government and industry concepts for a MOKV as a second phase of the common kill vehicle technology effort. A key element is the requirement for industry to comply with a modular, open architecture with common standards and interfaces defined by the government. These requirements make future upgrades easier and broaden our vendor and supplier base. The Government will develop MOKV system engineering guidelines from the industry concept(s), government analysis, modeling, and simulation along with hardware-in-the-loop prototype concept demonstration(s). The kill vehicle hardware-in-the-loop prototype concept(s) and identified technologies will formulate the trade space across cost, risk, and kill vehicle performance to establish requirements that are feasible and affordable for the engineering, manufacturing and development of a future MOKV.

The effectiveness of the BMDS relies on balancing performance requirements across the elements in the architecture. For example, the goal of the sensor portion of the architecture is to detect, acquire, track and discriminate lethal object(s), deployment debris, and countermeasures.

Analysis shows that having multiple kill vehicles on each interceptor dramatically improves the performance of the system, while maximizing the use of the interceptor inventory, and reducing our cost to defend the Homeland.

The Agency's past efforts on multiple kill vehicle research showed that the most difficult technical challenge for Multiple Kill Vehicles was managing the many-on-many engagements that occur. In FY 2016, MDA will resume tackling this challenge by investigating the engagement management concepts authored by industry as well as our government concepts. MDA will test these algorithms and strategy using our hardware-in-the-loop, and invest in key technologies that will enable a MOKV concept including kill vehicle-to-kill vehicle communications, and a more accurate and lighter weight inertial measurement unit.

The MOKV industry prototype concept(s) will identify and reduce development risk; identify technology readiness; and demonstrate critical technical features and capabilities. The Agency will use industry concept models to assess MOKV performance and the utility of the MOKV architecture. The prototype demonstration will validate the industry concept models for higher confidence and prove the viability of the MOKV. These results will inform Agency requirements development efforts that may support a future milestone decision.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</i>
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Accurate and reliable inertial measurement units are essential for navigation during the long kill vehicle flight times required to engage Intercontinental ballistic missile threats. MOKV investments will develop precise, small, lightweight, highly reliable, and low cost inertial measurement units to increase kill vehicle performance for long flight times. Continued investment will satisfy the inertial measurement unit performance needed for the small, high performance kill vehicle concepts that can defeat future interceptor threats. This inertial measurement unit will demonstrate improved performance over current state of the art by reducing navigation error. The initial hardware inertial measurement unit prototype will demonstrate reduced size, weight and power requirements.

High band width kill vehicle-to-kill vehicle and kill vehicle-to-ground communications will enable engagement management for Multi-Object Kill Vehicle (MOKV) architecture. MOKV investments will focus on minimizing size, weight and power of a software defined radio that provides flexible communication capabilities that are robust and reliable. Design and development efforts of this communications technology in 2016 will lead to a future prototype demonstration of high band-width communications using software defined radio technology.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Common Kill Vehicle</p> <p><b>Description:</b> The Missile Defense Agency is developing common kill vehicle technology to address emerging threats and enable the missile defense of our homeland.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Developed Kill Vehicle payload criteria to support Broad Agency Announcement (BAA) for the Multi-Object Kill Vehicle (MOKV) concept definition</li> <li>- Received and assessed proposals for MOKV concept definition awards in FY2015</li> <li>- Developed initial government MOKV concept for independent performance predictions via government simulations to establish baseline for contractor concept assessment(s)</li> <li>- Developed a second source design of a 512x512 digital Read Out Integrated Circuit (ROIC) focal plane array to support enhanced discrimination for future BMDS interceptors</li> <li>- Developed initial inertial measurement unit (IMU) design using a ring laser gyro and a micro-electro-mechanical system (MEMS) accelerometer to upgrade BMDS interceptors</li> <li>- Completed initial radiation environment screening of IMU parts</li> <li>- Awarded industry contracts for the development of MOKV concepts</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- The FY 2016 \$13.221 million increase to Common Kill Vehicle Technology, MD85, begins the concept definition for a MOKV to address an emerging threat</li> <li>- MOKV industry contractor(s) will deliver initial concepts and modeling parameters for preliminary government assessment</li> <li>- Initiate development of the MOKV engagement management algorithms to address managing the many-on-many engagement challenges due to complex threats</li> </ul>	23.524	59.558	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Update and refine government MOKV concept for independent performance predictions via government simulations to initiate contractor concept assessment(s) - Build, assemble and test initial inertial measurement unit prototype to support model validation - Initiate design and analysis of a high band width software defined radio to support kill vehicle-to-kill vehicle and kill vehicle-to-ground communications  <b>FY 2017 Plans:</b> - In FY 2017 the funding will transfer from Common Kill Vehicle Technology program element 0603294C to the MOKV program element 0604894C			
<b>Accomplishments/Planned Programs Subtotals</b>	23.524	59.558	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy consists of three focus areas. First, through competition with missile integration contractors, develop kill vehicle architecture and interfaces with follow on competitive design of multi-object kill concepts incorporating engagement management concept of operations, lightweight kill vehicles and enhanced discrimination capability. Second, conduct risk reduction activities to identify and mature the technology necessary to increase the reliability and performance of our kill vehicles using the Advanced Technology Innovation Broad Agency Announcement and competitive procurements. Make the necessary investments to maturing component technology; enhanced inertial navigation and kill vehicle-to-kill vehicle communications. Third, leverage the technical expertise of Federally Funded Research and Development Centers, University Applied Research Centers, and Universities and government laboratories to independently develop reference concept using proven modeling/analysis techniques.

**E. Performance Metrics**

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>				<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program Wide Support</i>	-	1.312	2.195	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

Beginning in FY 2017, Program Wide Support was proportionately reallocated as a result of the Common Kill Vehicle Technology Program Element 0603294C transfer to Multi Object Kill Vehicle Program Element 0604894C.

**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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	1.312	2.195	0.000
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - Beginning in FY 2015, Program Wide Support was proportionately allocated to Common Kill Vehicle Technology - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>FY 2017 Plans:</b> - In FY 2017, Program Wide Support was proportionately reallocated as a result of the Common Kill Vehicle Technology transfer to the Multi Object Kill Vehicle, Program Element 0604894C.			
<b>Accomplishments/Planned Programs Subtotals</b>	1.312	2.195	0.000

**C. Other Program Funding Summary (\$ in Millions)**

N/A



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>

**C. Other Program Funding Summary (\$ in Millions)**

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</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	980.326	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
MD07: <i>THAAD</i>	928.249	140.019	200.395	192.699	-	192.699	215.417	181.703	232.169	241.539	Continuing	Continuing
MC07: <i>Cyber Operations</i>	0.799	0.389	0.652	3.367	-	3.367	3.325	4.117	3.964	4.069	Continuing	Continuing
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	5.526	0.960	1.154	1.130	-	1.130	1.168	1.186	1.248	1.267	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	45.752	19.930	10.029	9.638	-	9.638	11.195	10.012	12.846	13.738	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The decrease in cost in FY 2017 reflects the transfer to O&M for Terminal High Altitude Area Defense (THAAD) deployment support for previously fielded software.

**A. Mission Description and Budget Item Justification**

The Terminal Defense programs provide vital forward-deployable capabilities to support Regional defensive operations.

Terminal High Altitude Area Defense (THAAD) provides the only air transportable, fast reaction capability for the warfighter to provide area coverage against Short and Medium Range Ballistic Missiles within four hours of arrival. The THAAD element includes five major components: Interceptors, Launchers, Army Navy/Transportable Radar Surveillance - Type 2 (AN/TPY-2) Radars, THAAD Fire Control and Communication (TFCC), and THAAD Peculiar Support Equipment. THAAD delivered Battery #1 in FY 2009 and Battery #2 in FY 2010 to the U.S. Army at Fort Bliss, Texas, for initial fielding and training. Delivery and fielding schedule for all future batteries is detailed in THAAD Procurement Budget Exhibit. THAAD has completed the development of the THAAD 1.0 configuration and is developing the THAAD Build 2.0 capability. Continued development and integration will provide enhanced debris mitigation capability, improved interoperability with other BMDS elements, and training devices to support the THAAD Institutional Training Base. In FY 2016, MDA began a risk reduction effort to explore and to mature the design concept, validate the threat assessment, and develop a life cycle cost estimate for the proposed THAAD Follow On program. The program seeks to extend the THAAD interceptor's range to expand battlespace and defended area, increase THAAD's interoperability with other air and missile defense systems via the Army Integrated Battle Command System, and incorporate threat upgrades to keep pace with adversary advances. MDA will evaluate the technical merits of these future capability improvements and assess the proposed program's affordability before deciding whether to proceed with the full Follow-On THAAD program.

Cyber Operations sustain MDA Department of Defense (DoD) Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) activities; analysis of validation results, risk assessments; reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones for MDA Command and Control, Battle Management and Communications (C2BMC) mission systems; and supports THAAD certification to operate in the BMDS. Cyber Operations include non-recurring requirements from FY 2015 to FY 2017 to transition all THAAD information systems from DIACAP to DoD directed Risk Management Framework.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>
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PAC-3 is a short range U.S. Army system capability that interfaces with the BMDS. These funds ensure PAC-3 participation in BMDS interoperability integration efforts.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	163.892	228.021	230.306	-	230.306
Current President's Budget	161.298	212.230	206.834	-	206.834
Total Adjustments	-2.594	-15.791	-23.472	-	-23.472
• Congressional General Reductions	0.000	-0.191			
• Congressional Directed Reductions	0.000	-15.600			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.594	0.000			
• Other Adjustment	0.000	0.000	-23.472	-	-23.472

**Change Summary Explanation**

The FY 2017 reduction is primarily due to the transfer of funding to support deployed THAAD software to the Operations and Maintenance request. Additional factors include the shift of software development initiation efforts such as Message Based Regional Engagement Command and Regional Peer to Peer Engagement Coordination to align with demonstration in Flight Test THAAD-19 (FTT-19) and realignment of funding to higher Department of Defense priorities.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</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
MD07: <i>THAAD</i>	928.249	140.019	200.395	192.699	-	192.699	215.417	181.703	232.169	241.539	Continuing	Continuing
Quantity of RDT&E Articles	50	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

The Terminal High Altitude Area Defense (THAAD) system provides a capability to engage threats both inside and outside of the atmosphere in their terminal phase of flight, including engagements against short to medium-range ballistic missiles and asymmetric threats. THAAD provides the only air transportable, fast reaction capability for the warfighter to provide Regional area coverage against Short and Medium Range Ballistic Missiles within four hours of arrival. THAAD 1.0 Baseline Capability is complete.

THAAD 2.0 (Advanced Capability Development) consists of multiple, independent software builds (e.g. Build 2.0, Build 3.0, etc.) to expand the capability of the THAAD 1.0 system, with a projected capability delivery in FY 2019. New THAAD capabilities include: 1) Launch on Link 16 Based-based BMD System track, providing the ability to initiate an engagement and launch THAAD interceptors using sensor data provided by BMDS sources outside the THAAD Battery; 2) improved THAAD Weapons System performance in the presence of a high debris environment; 3) expanded defended area footprints via remote operation of THAAD Launchers; 4) Regional Peer-to-Peer Engagement Coordination with Aegis and PATRIOT; 5) software upgrades to maintain capability against evolving threats; 6) Message Based Regional Engagement Command to process C2BMC messages to obtain direction for target engagement; 7) Weapon System Information Assurance mandatory updates; 8) Warfighter requested enhancements; and 9) upgrades to maintain interfaces with other BMDS elements.

THAAD Follow-On proposes to further improve THAAD defensive capabilities by providing extended range, integrated battle command system, and threat upgrades. THAAD Follow-On will begin with a risk reduction effort to mature the design concept, validate the threat assessment, and develop a life cycle cost estimate for a proposed future capability improvement. MDA will assess the technical merits of increasing THAAD's interoperability with other air and missile defense system, and expanding the battlespace and defended area of the THAAD baseline weapon system. The decision to pursue the full follow-on program will be based on an evaluation of the results of the technical assessment and an affordability determination.

THAAD Program Support provides support for communications and interoperability efforts to operate on multiple networks and safety and mission assurance efforts in support of the Materiel Release process.

Program Operations provides strategic planning, program integration, cost estimating, contracting, financial management, internal reviews and audits, earned-value management and program assessments for the THAAD Program Office.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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Project Redwood - Details at a Higher Classification - is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Terminal High Altitude Area Defense (THAAD) Development</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> This task includes the continued development of the THAAD 2.0 program as a series of independent, parallel software builds to deliver enhanced system capabilities and expand defense of allies and deployed forces from short-to-medium-range threats.</p> <ul style="list-style-type: none"> <li>- THAAD software build 3.0 includes debris mitigation phase II and packaged threat products. THAAD software build 3.0 is scheduled to be completed in 2Q FY 2018 and tested in 4Q FY 2018 during Flight Test Operational-03 Event 2 (FTO-03 E2).</li> <li>- THAAD software build 4.0 includes launch on Link 16, J7.7 message implementation, track ID proliferation, regional peer-to-peer engagement coordination, message based regional engagement command, and Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS) Step 1. THAAD software build 4.0 is scheduled to be completed in 3Q FY 2019 and tested in 4Q FY 2019 during Flight Test THAAD-19 (FTT-19).</li> <li>- THAAD software build 5.0 includes TFCC - Launcher Radio Frequency Communications. It is scheduled to be completed in 2Q FY 2021 and tested in 4Q FY 2021 during Flight Test THAAD-21 (FTT-21).</li> </ul> <p>This task also includes software support; incorporation of test finding revisions; information assurance; requirements development; modeling and simulation; and capability integration and performance verification within the integrated BMDS.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Conducted THAAD 2.0 Engineering Design Review to ensure Phase II debris mitigation design accounts for the results of FTO-01 (BMDS Operational Flight Test).</li> <li>- Continued development of Phase II debris mitigation functionality and integration into the weapon system to improve interoperability with other BMDS elements.</li> <li>- Continued Models and Simulations (M&amp;S) development to support element and Ballistic Missile Defense System (BMDS) events including all Integrated Master Test Plan (IMTP) M&amp;S related activities to include System Pre Mission Tests (SPMTs) and System Post Flight Reconstruction (SPFRs), and analyzed the Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) data collected during test events to validate and accredit the M&amp;S by the Operational Test Agency (OTA).</li> <li>- Continued to design, develop, qualification test, and field annual release of THAAD system software to ensure continued performance and operation of fielded batteries.</li> <li>- Continued to maintain laboratory assets and equipment, for both system simulations and Hardware-in-the-Loop (HWIL), that supported:</li> </ul>	82.158	133.622	124.616
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>* the testing and verification of THAAD software build 2.70 and TFCC Engagement Manager 5.3.0</li> <li>* the integration and testing of the leap second addition for THAAD software builds 1.4.1 and 2.2.1</li> <li>* the integration and testing of THAAD software build 2.30</li> <li>* the verification of Debris Mitigation Phase II capability and testing of TFCC Engagement Manager 5.4.0</li> <li>* risk reduction activities in support of Flight Test Operational-02 Event 2 (FTO-02 E2) and Flight Test THAAD-18 (FTT-18)</li> <li>- Continued to provide software updates in support of performance upgrades and fielded batteries through the release of software builds to provide fixes as identified in both MDA Ground Test Campaigns and Combatant Command war games and exercises.</li> <li>- Continued development of Packaged Threat Products to give deployed and fielded batteries the ability to upload new data on threat missiles as they evolve to ensure that the batteries' defense takes into account both new threats and changes to existing threats.</li> <li>- Continued requirements development, engineering analysis, capability integration, and performance verification for BMDS and THAAD element-level development and integration.</li> <li>- Continued system performance and requirement studies to assess capability development plans.</li> <li>- Performed Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries.</li> <li>- Updated THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs and guidance</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- The increase in cost between FY 2015 and FY 2016 is primarily due to the initiation of software development efforts such as Link 16 and Peer to Peer Engagement, acquisition of the testbeds to support multiple THAAD battery configurations, and increased software support and modeling and simulation to participate with multiple representations of THAAD batteries and deliver tactical software functionality to support BMDS Incremental capabilities</li> <li>- Continue development of Phase II debris mitigation functionality and integration into the weapon system to improve interoperability with other BMDS elements</li> <li>- Initiate development of a new capability in the THAAD weapon system to launch the interceptor based on information from an external BMDS sensor prior to the threat being acquired by the battery's radar. Add the Link 16 J7.7 Association message to the THAAD Link 16 implementation. This addition facilitates "launch on" engagements for THAAD and other BMD Weapon Systems, allowing them to extend their defensive coverage beyond what is possible with their organic sensors.</li> <li>- Initiate acquisition of testbeds required to support multiple fielded battery configurations, development and integration of component software into system level software builds, and flight test pre-post- test analysis. Without this acquisition the current, limited testbeds must continue to be shared thus impacting support to deployed batteries, development deliveries, and flight tests</li> <li>- Initiate development to mitigate the effects of Track ID Proliferation through the implementation of BMDS changes approved in MIL-STD- 6016 Interface Change Proposals (ICPs) in coordination with Aegis BMD, Command and Control, Battle Management,</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>and Communications (C2BMC) and MDA Engineering. These changes require implementation by all members of the Network Participation Group to be effective</p> <ul style="list-style-type: none"> <li>- Continue Models and Simulations (M&amp;S) development to support element and Ballistic Missile Defense System (BMDS) events including all Integrated Master Test Plan (IMTP) M&amp;S related activities to include System Pre Mission Tests (SPMTs) and System Post Flight Reconstruction (SPFRs) and conduct analysis of the Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) data collected during test events to validate and accredit the M&amp;S by the Operational Test Agency (OTA)</li> <li>- Continue to design, develop, qualification test, and field annual release of Terminal High Altitude Area Defense (THAAD) system software to ensure continued performance and operation of fielded batteries</li> <li>- Continue to maintain laboratory assets and equipment, for both system simulations and Hardware-in-the-Loop (HWIL), to enable future development, to isolate root causes of equipment and software deficiencies identified by the warfighter, to identify hardware and software fixes to remedy the deficiencies, and to perform engineering verification and analysis to ensure accurate element configuration and representation.</li> <li>- Perform requirements development, engineering analysis, and performance verification for THAAD development and BMDS integration, to ensure THAAD compliance with the BMDS Specification, BMD System Description Document, and Master Integration Plan.</li> <li>- Continue to provide software updates in support of performance upgrades and fielded batteries through the release of software builds which provide fixes as identified in MDA Ground Test Campaigns and Combatant Command (COCOM) war games and exercises</li> <li>- Continue development of Packaged threat Products to give deployed and fielded batteries the ability to upload new data on threat missiles as they evolve to ensure that the batteries defense takes into account both new threats and changes to existing threats</li> <li>- Continue system performance and requirement studies to assess capability development plans</li> <li>- Perform Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries</li> <li>- Update THAAD software and hardware to ensure compliance with Department of Defense (DoD) Weapon System Information Assurance Programs and guidance</li> <li>- Continue the assessment of current intelligence data on the threats assigned to the THAAD element of the BMDS. The assessment includes analyses of the changes in performance of those threats and the subsequent impact on the THAAD weapon system performance. The assessments and analyses provide the basis for future changes to the weapon system through additional software changes, system adjustable parameter changes and/or Packaged Threat Products, to allow the weapon system to optimize its performance against the improved threats.</li> <li>- Participate in MDA and Army studies to determine the architecture and integration of the THAAD Weapon system into the Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS).</li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Provide and coordinate analysis, studies and papers to support the resolution of issues and concerns with the integration of the THAAD weapon system into the future Army IBCS architecture.</p> <p>- Initiate the development and coordination of the THAAD Portable Planner in Step 1 of the IBCS architecture to enable integration of the THAAD battery capability into the IBCS battle planning process.</p> <p><b>FY 2017 Plans:</b></p> <p>- The decrease in cost between FY 2016 and FY 2017 is primarily due to a reduction in RDT&amp;E funding for system software support. Beginning in FY 2017, THAAD has requested funding in O&amp;M to provide deployment support for previously fielded software, reducing the RDT&amp;E request. Funding for deployed software support was previously included in MD07: THAAD, R-2a THAAD Development, and R-3 Cost Category Item Lockheed Martin and is now found in MDA's O&amp;M request under THAAD. Additional reductions are due to the movement of cyber security and information assurance vulnerability assessment from MD07 THAAD Development to MC07 Network/System Certification and Accreditation (C&amp;A), the completion of intelligence data assessment updates, and lower costs associated with the testbeds being acquired in FY 2017 compared to FY 2016. The following bullets describe the planned accomplishments for FY 2017:</p> <p>- Continue development of Phase II debris mitigation functionality and integrate into the weapon system to improve interoperability with other BMDS elements.</p> <p>- Initiate development of real-time enhancements to Regional Peer-to-Peer Engagement Coordination via automated exchange coordination messages between BMD tactical level weapon systems that share defended assets and are capable of engaging a common threat. Assess enhancing Shoot-Assess-Shoot opportunities when THAAD is the second shooter. These changes will enhance THAAD's communications and interoperability with the other BMDS weapons and with the C2BMC.</p> <p>- Continue development of a new capability in the THAAD weapon system to launch the interceptor based on information from an external BMDS sensor prior to the threat being acquired by the battery's radar. Add the Link 16 J7.7 Association message to the THAAD Link 16 implementation. This addition facilitates "launch on" engagements for THAAD and other BMD Weapon Systems, allowing them to extend their defensive coverage beyond what is possible with their organic sensors.</p> <p>- Continue the acquisition of testbeds required to support multiple fielded battery configurations, development and integration of component software into system level software builds, and flight test pre-post- test analysis. Without this acquisition the current, limited testbeds must continue to be shared, thus impacting support to deployed batteries, development deliveries, and flight tests.</p> <p>- Continue Models and Simulations (M&amp;S) development to support element and BMDS events, per the approved Integrated Master Test Plan (IMTP). Support M&amp;S related activities such as System Pre Mission Tests (SPMTs) and System Post Flight Reconstruction (SPFRs), and support analysis of the Critical Engagement Condition (CEC) and Empirical Measurement Event (EME) data collected during test events to provide evidence for M&amp;S validation and accreditation.</p> <p>- Continue development of Packaged Threat Products to give deployed and fielded batteries the ability to upload new data on Threat missiles as they evolve, including new threats and changes to existing threats.</p>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Complete assessment of updated threat intelligence-based data including analyses to determine changes in threat system performance and their impact on THAAD weapon system performance. The assessments and analyses provide the basis for future weapon system updates through software changes, system adjustable parameter changes and/or Packaged Threat Products which optimize weapon system performance against enhanced threats.</li> <li>- Continue to design, develop, qualification test, and field the annual release of THAAD system software to ensure continued performance and operation of fielded batteries.</li> <li>- Continue to maintain laboratory assets and equipment, for both system simulations and Hardware-in-the-Loop (HWIL), to enable future development, to isolate root causes of equipment and software deficiencies identified by the warfighter, to identify hardware and software fixes to remedy the deficiencies, and to perform engineering verification and analysis to ensure accurate element configuration and representation.</li> <li>- Perform requirements development, engineering analysis, and performance verification for THAAD development and BMDS integration, to ensure THAAD compliance with the BMD System Specification, BMD System Description Document, and Master Integration Plan.</li> <li>- Continue development to mitigate the effects of Track ID Proliferation through the implementation of BMDS changes approved in MIL-STD-6016 Interface Change Proposals (ICPs) in coordination with Aegis BMD, C2BMC and MDA Engineering. These changes require implementation by all members of the Network Participation Group to be effective.</li> <li>- Participate in MDA and Army studies to determine the architecture and integration of the THAAD Weapon system into the Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS).</li> <li>- Provide and coordinate analysis, studies and papers to support the resolution of issues and concerns with the integration of the THAAD weapon system into the future Army IBCS architecture.</li> <li>- Continue the development and coordination of the THAAD Portable Planner into Step 1 of the IBCS architecture to enable integration of the THAAD battery capability into the IBCS battle planning process.</li> </ul>			
<p><b>Title:</b> THAAD Program Support</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This activity provides support for efforts such as communications and interoperability, safety and mission assurance, and it provided verification testing of THAAD reliability growth.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued THAAD Fire Control and Communication (TFCC)-Interoperability development and maintenance to support weapon system interoperability capabilities, joint and service certifications, and net-worthiness certification. Without these certifications, the weapon system would not be authorized to operate on joint, service, or allied communications networks.</li> </ul>	8.713 -	6.141 -	2.276 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Continued development of the THAAD Portable Planner and Interface to Command, Control, Battle Management and Communications (C2BMC) to provide interactive defense design capability to plan defensive course(s) of action and develop detailed defense plans.</p> <p>- Continued support of independent offices such as the Army Aviation and Missile Command (AMCOM), Aviation and Missile Research Development and Engineering Center (AMRDEC), and the Developmental Test Command (DTC) as part of the Materiel Release process. These efforts included safety confirmation and verification testing, preparation and approvals of System Safety Risk Assessments, issuance of hazard classifications and safety releases, insensitive munitions approvals and waivers, and independent oversight and support in the areas of reliability, availability, and maintainability (RAM) and quality assurance.</p> <p>- Successfully conducted over 900 hours of Reliability Growth Testing (RGT) on actual Battery hardware to satisfy a Materiel Release condition. The RGT completed nine (9) separate ~96 hour operational periods, followed by scheduled/preventive maintenance. Data collectors observed system operation from a centralized location and witnessed Battery maintenance and repair activities. Ultimately, results from the RGT exceeded THAAD's reliability requirements and final results will be published by the Army Test and Evaluation Command (ATEC).</p> <p><b>FY 2016 Plans:</b></p> <p>- Reduction from FY 2015 to FY 2016 due to the completion of the Reliability Demonstration Test in FY 2015 on a fully operational THAAD Battery for the purpose of demonstrating reliability growth in support of Materiel Release</p> <p>- Continue THAAD Fire Control and Communication (TFCC)-Interoperability development and maintenance to support weapon system interoperability capabilities, joint and service certifications, and net-worthiness certification. Without these certifications, the weapon system would not be authorized to operate on joint, service, or allied communications networks</p> <p>- Set up an Institutional Conduct of Fire Trainer (ICOFT) testbed to stabilize fielded ICOFT software, resolve Software Change Requests and related findings, develop a standardized grading methodology across all ICOFT laboratories, and update ICOFT courseware impacted by the Interactive Electronic Technical Manual (IETM).</p> <p>- Continue support of independent offices such as the Army Aviation and Missile Command (AMCOM), Aviation and Missile Research Development and Engineering Center (AMRDEC), and the Developmental Test Command (DTC) as part of the Materiel Release process. These efforts include safety confirmation and verification testing, preparation and approvals of System Safety Risk Assessments, issuance of hazard classifications and safety releases, insensitive munitions approvals and waivers, and independent oversight and support in the areas of reliability, availability, and maintainability (RAM) and quality assurance.</p> <p><b>FY 2017 Plans:</b></p> <p>- The decrease in cost between FY 2016 and FY 2017 is due the completion of ICOFT testbed upgrades in FY 2016.</p> <p>- Continue THAAD Fire Control and Communications (TFCC)-Interoperability development and maintenance to support THAAD Weapon System interoperability capabilities, Joint and Service certifications, and net-worthiness certification. Without these certifications, the weapon system would not be authorized to operate on Joint, Service, or Allied communications networks.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Continue support to independent offices such as the Army Aviation and Missile Command (AMCOM), Aviation and Missile Research Development and Engineering Center (AMRDEC), and the Developmental Test Command (DTC) as part of the Materiel Release process. These efforts include safety confirmation and verification testing, preparation and approvals of System Safety Risk Assessments, issuance of hazard classifications and safety releases, insensitive munitions approvals and waivers, and independent oversight and support in the areas of reliability, availability, and maintainability (RAM) and quality assurance.</p> <p><b>Title:</b> Program Operations</p> <p><b>Description:</b> Program Operations provides for management of the THAAD program. Included in this effort is program and business management, program administration, technical and testing oversight, verification of hardware and software development, quality/safety/mission assurance, and government manpower and infrastructure to develop and test the THAAD system and components.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Provided technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities, to provide the Program Director with critical program status and decision quality data</li> <li>-Ensured Terminal High Altitude Area Defense (THAAD) program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</li> <li>-Conducted internal Baseline Execution Reviews to measure program progress against the six Missile Defense Agency approved baselines</li> <li>-Continued a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</li> <li>-Provided Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities, to provide the Program Director with critical program status and decision quality data</li> <li>-Ensure Terminal High Altitude Area Defense (THAAD) program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</li> <li>-Conduct internal Baseline Execution Reviews to measure program progress against the six Missile Defense Agency approved baselines</li> </ul>	<p>44.227</p> <p align="right"><b>Articles:</b></p> <p align="center">-</p>	<p>43.372</p> <p align="center">-</p>	<p>44.552</p> <p align="center">-</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</p> <p>-Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter</p> <p><b>FY 2017 Plans:</b> -Continue providing Program Office activities as noted in FY 2016.</p>				
<p><b>Title:</b> Project Redwood- Details at a Higher Classification</p> <p><b>Description:</b> See Description Below</p> <p><b>FY 2015 Accomplishments:</b> This project is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress.</p> <p><b>FY 2016 Plans:</b> This project is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress.</p> <p><b>FY 2017 Plans:</b> This project is reported in accordance with Title 10, United States Code, Section 119 (a)(1) in the Special Access Program Annual Report to Congress.</p>		4.921	4.400	4.212
		<b>Articles:</b>	-	-
<p><b>Title:</b> THAAD Follow-On</p> <p><b>Description:</b> The proposed THAAD Follow-On effort includes extended range, integrated battle command system, and threat upgrades to the THAAD 2.0 system. It begins with a risk reduction effort to mature the design concept, validate the threat assessment, and develop a life cycle cost estimate for a proposed future capability improvement. MDA will assess the technical merits of increasing THAAD's interoperability with other air and missile defense system, and expanding the battlespace and defended area of the THAAD baseline weapon system. The risk reduction activities include trade studies to develop preliminary requirements, functional allocations, and interface definitions for the follow-on design, and initial planning for THAAD Follow-On system testing. The Program Office will also develop a life cycle cost estimate for the proposed THAAD Follow-On program. The decision to undertake the full follow-on program will depend on the outcome of the technical evaluation of the expanded capabilities' ability to address the evolving threat, and an assessment of the program's affordability.</p>		0.000	12.860	17.043
		<b>Articles:</b>	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b> N/A</p> <p><b><i>FY 2016 Plans:</i></b>                      - Fund and conduct Weapon System trade studies to draft key system requirements, functional allocations, and interface definitions to address the BMDS emergent threat.                      - Conduct performance analyses of system and ground component design concepts to characterize capabilities, limitations, risk and areas for improvement / correction.                      - Begin trade studies to assess configuration and performance requirements of interceptor components such as the boost motor, kick motor, canister, and kill vehicle.                      - Begin master test plan analysis to identify range requirements and flight test instrumentation requirements; document potential flight and ground test program requirements and objectives; assess courses of action; and coordinate with stakeholders.</p> <p><b><i>FY 2017 Plans:</i></b>                      - The increase in cost from FY 2016 and FY 2017 is due to a \$4M investment in development of models and simulations for the THAAD Follow-On Development which can be used to predict performance and design trades during the development.                      - Continue Weapon System trade studies to draft key system requirements, functional allocations, and interface definitions to address the BMDS emergent threat.                      - Continue performance analyses of system and ground component design concepts to characterize capabilities, limitations, risk and areas for improvement/correction.                      - Continue trade studies to assess configuration and performance requirements of interceptor components such as the boost motor, kick motor, canister, and kill vehicle.                      - Continue master test plan analysis to identify range requirements and flight test instrumentation requirements; document potential flight and ground test program requirements and objectives; assess courses of action; and coordinate with stakeholders.                      - Initiate THAAD Follow-On Development to include advanced capabilities against emerging threats, complex scenes and countermeasures.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	140.019	200.395	192.699

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0208866C: O&M	402.462	424.069	446.975	-	446.975	470.884	496.702	533.236	541.432	0	3,315.760
• 0208866C: MD07: <i>THAAD Procurement</i>	449.824	464.067	373.901	-	373.901	340.057	329.221	292.896	308.805	0.001	2,558.772

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0604876C: <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	109.394	26.225	63.444	-	63.444	69.959	79.497	72.950	59.271	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The THAAD program awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development (ACD) contract for THAAD 2.0 development. The discrete task orders allow management and tracking of Development work.

**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				R-1 Program Element (Number/Name)					Project (Number/Name)						
0400 / 4				PE 0603881C / Ballistic Missile Defense Terminal Defense Segment					MD07 / THAAD						
Product Development (\$ 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
Terminal High Altitude Area Defense (THAAD) Development - Advanced Capability Development	SS/IDIQ	LMSSC : Sunnyvale, CA/Huntsville, AL	96.485	31.252		62.157	Oct 2015	82.368	Oct 2016	-		82.368	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - IT Program Support	C/CPAF	Northrup Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		2.353	Oct 2015	1.889	Oct 2016	-		1.889	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Lockheed Martin	SS/CPFF	LMSSC : Sunnyvale, CA/Huntsville, AL	421.660	19.249		27.763	Oct 2015	12.995	Oct 2016	-		12.995	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - MDA Program Support	MIPR	Missile Defense Agency (MDA) : Ft. Belvoir, VA/ Huntsville, AL	91.277	3.564		3.593	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Models & Simulations	MIPR	US Army Research, Development, Engineering Command (RDECOM) : Huntsville, AL	130.315	17.214		28.000	Oct 2015	25.000	Oct 2016	-		25.000	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Requirements and Design	C/CPAF	Boeing : AL	0.000	5.879		4.633	Dec 2015	1.153	Dec 2016	-		1.153	Continuing	Continuing	Continuing
Terminal High Altitude Area Defense (THAAD) Development - Verification and Assessment	C/CPFF	Parsons : AL / CO	0.000	5.000		5.123	Oct 2015	1.211	Oct 2016	-		1.211	Continuing	Continuing	Continuing
THAAD Follow-On - THAAD Follow-On Risk Reduction	SS/CPIF	Lockheed Martin : CA, TX, AL	0.000	0.000		12.860	Jul 2016	17.043	Oct 2016	-		17.043	Continuing	Continuing	Continuing
<b>Subtotal</b>			739.737	82.158		146.482		141.659		-		141.659	-	-	-



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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<b>Product Development (\$ in Millions)</b>				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			

**Remarks**

- Increase in FY 2016 R-3 Cost Category Item "Advanced Capability Development" is primarily related to initiation of software developments efforts in FY 2016, some of which were deferred from FY 2015 such as Launch on Link 16 and J7.7 messaging. Additional increase is due to the acquisition of testbeds to support multiple THAAD battery configurations.
- Increase in FY 2017 R-3 Cost Category Item "Advanced Capability Development" is primarily related to initiation of software developments efforts in FY 2017, such as Regional Peer to Peer Engagement Coordination. Additional increase is due to the acquisition of testbeds to support multiple THAAD battery configurations.
- Increase in FY 2016 R-3 Cost Category Item "Lockheed Martin" is primarily related to requirements to develop and deliver tactical software functionality to support BMDS incremental capability deliveries.
- New R-3 Cost Category Items "Requirements and Design" and "Verification and Assessment" are further breakouts of funds previously included in MDA Program Support.
- Decrease in FY 2017 R-3 Cost Category Item "Lockheed Martin" is due to the movement of funding for the support of software previously fielded to O&M funding and the movement of cyber security and information assurance vulnerability assessment into budget project MC07.
- Award dates are shown as October as they are the continuation of task orders or MIPRs from previous FYs.

<b>Support (\$ in Millions)</b>				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			
THAAD Program Support - Army Cell to Hybrid Program Office	MIPR	Integrated Material Management Center, AMCOM : Huntsville, AL	17.625	0.000		0.000		0.000		-		0.000	0	17.625	0
THAAD Program Support - MDA Program Support	Various	Missile Defense Agency (MDA) : Huntsville, AL	8.249	0.000		0.000		0.000		-		0.000	0	8.249	0
THAAD Program Support - Mission Support	MIPR	ATEC / OTC / MDA : WSMR, NM / Huntsville, AL	1.912	8.713		6.141	Oct 2015	2.276	Oct 2016	-		2.276	Continuing	Continuing	Continuing
Program Operations - Program Operations	Various	Missile Defense Agency (MDA) :	99.460	44.227		43.372	Oct 2015	44.552	Oct 2016	-		44.552	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>
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<b>Support (\$ in Millions)</b>				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			
		Ft. Belvoir, VA/ Huntsville, AL													
Project Redwood- Details at a Higher Classification - Special Programs	SS/FP	N/A : N/A	61.266	4.921		4.400	Oct 2015	4.212	Oct 2016	-		4.212	Continuing	Continuing	Continuing
<b>Subtotal</b>			188.512	57.861		53.913		51.040		-		51.040	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	928.249	140.019	200.395	192.699	-	192.699	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>			<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</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
Flexible Threat Package Engineering Design Review (EDR)	▲																											
Complete Institutional Training Devices		▲																										
Debris Mitigation Phase II Engineering Design Review (EDR)		▲																										
Reliability Growth Test		▲																										
Initiate THAAD Follow-On Risk Reduction						△																						
Launch on Link 16 Engineering Requirements Review (ERR)								△																				
Regional Peer to Peer Engagement Engineering Requirements Review (ERR)								△																				
Launch on Link 16 Design Review												△																
Regional Peer to Peer Engagement Design Review												△																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD07 / <i>THAAD</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Flexible Threat Package Engineering Design Review (EDR)	1	2015	1	2015
Complete Institutional Training Devices	2	2015	2	2015
Debris Mitigation Phase II Engineering Design Review (EDR)	2	2015	2	2015
Reliability Growth Test	2	2015	2	2015
Initiate THAAD Follow-On Risk Reduction	1	2016	1	2016
Launch on Link 16 Engineering Requirements Review (ERR)	3	2016	3	2016
Regional Peer to Peer Engagement Engineering Requirements Review (ERR)	3	2016	3	2016
Launch on Link 16 Design Review	2	2017	2	2017
Regional Peer to Peer Engagement Design Review	2	2017	2	2017

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>				<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC07: <i>Cyber Operations</i>	0.799	0.389	0.652	3.367	-	3.367	3.325	4.117	3.964	4.069	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Funding in this project sustains MDA Risk Management Framework (RMF) and Controls Validation Testing (CVT) 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 C2BMC mission systems. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Authorizing Official (AO) accreditation decisions) and POA&M on all MDA information systems. This project supports THAAD certification to operate in the BMD System. Cyber Operations includes non-recurring requirements in FY 2015 to FY 2017 to transition all THAAD information systems from DIACAP to DoD directed RMF.

This project supports the monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security POA&Ms. Activities include preparation of RMF documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/Certification Authority (CA) and AO. 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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Network / System Certification and Accreditation (C&A)	0.389	0.652	3.367
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- Conducted cyber security / information assurance engineering and architecture planning for THAAD information technology systems			
- Developed and test cyber security/information assurance control measures for Ballistic Missile Defense System (BMDS) THAAD systems			
- Developed THAAD DIACAP certification and accreditation packages			
- Supported Controls Validation Testing (CVT) of THAAD mission, test, and training systems			
- Developed Plan of Action and Milestones (POA&Ms) to resource and remediate information assurance deficiencies			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Conducted annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct cyber security / information assurance engineering and architecture planning for THAAD information technology systems</li> <li>- Develop and test cyber security/information assurance control measures for Ballistic Missile Defense System (BMDS) THAAD systems</li> <li>- Develop THAAD DIACAP certification and accreditation packages</li> <li>- Support Controls Validation Testing (CVT) of THAAD mission, test, and training systems</li> <li>- Develop Plan of Action and Milestones (POA&amp;Ms) to resource and remediate information assurance deficiencies</li> <li>- Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls</li> <li>- Transition THAAD systems to Risk Management Framework for DoD IT IAW new DoD cybersecurity direction</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- The increase in cost between FY 2016 and FY 2017 is primarily due to movement of \$2.7 million of cyber security and information assurance vulnerability assessment from MD07: THAAD, R-2a THAAD Development to MC07: Cyber Operations, Network/System Certification and Accreditation (C&amp;A ) to better depict cyber security funding.</li> <li>- Perform Information Assurance Vulnerability Assessments (IAVA) to mitigate potential system vulnerabilities and to ensure continued performance and operation of fielded batteries</li> <li>- Update THAAD software and hardware to ensure compliance with DoD Weapon System Information Assurance Programs and guidance</li> <li>- Conduct cyber security/information assurance engineering and architecture planning for THAAD information technology systems</li> <li>- Develop and test cyber security/information assurance control measures for BMDS THAAD systems</li> <li>- Develop THAAD Risk Management Framework for DoD IT certification and accreditation packages</li> <li>- Support CVT of THAAD mission, test, and training systems</li> <li>- Develop POA&amp;Ms to resource and remediate information assurance deficiencies</li> <li>- Conduct annual information assurance reviews on the THAAD enclaves to assess compliance in implementing and maintaining IA controls</li> <li>- Complete transition of THAAD systems to Risk Management Framework for DoD IT IAW new DoD cybersecurity direction</li> </ul>				
<b>Accomplishments/Planned Programs Subtotals</b>		0.389	0.652	3.367

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0901598C: <i>Management HQ - MDA</i>	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing
• D1300639: <i>Fort Drum, New York, IDT Complex</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	0

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A



**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>
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<b>Support (\$ in Millions)</b>				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) - CND/IA Advisory and Assistance Services	C/CPFF	Torch Technologies : Various MDA Locations	0.799	0.389		0.652	Oct 2015	0.664	Oct 2016	-		0.664	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Security Engineering	SS/CPFF	LMSSC : Sunnyvale, CA/Huntsville, AL	0.000	0.000		0.000		2.703	Oct 2016	-		2.703	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.799	0.389		0.652		3.367		-		3.367	-	-	-

**Remarks**  
The increase in cost between FY 2016 and FY 2017 in the R3 category Security Engineering is due to movement of cyber security and information assurance vulnerability assessment into budget project MC07 from the budget project MD07, R3 category Lockheed Martin beginning in FY 2017. Award dates are shown as October as they are the continuation of task orders or MIPRs from previous FYs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.799	0.389	0.652	3.367	-	3.367	-	-	-

**Remarks**  
N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <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
MC07 Cyber Operations					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MC07 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC07 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</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
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	5.526	0.960	1.154	1.130	-	1.130	1.168	1.186	1.248	1.267	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

PAC-3 is an operational, land-based weapon built upon the proven U.S. Army PATRIOT air and missile defense infrastructure.

The Army is responsible for production and further development of the PAC-3 System; MDA remains responsible for any BMDS interoperability and integration efforts.

Lower Tier Project Office (LTPO) will utilize MDA funds to further the integration of PATRIOT with the BMDS.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> General Support	0.960	1.154	1.130
<b>Articles:</b>	-	-	-
<b>Description:</b> PATRIOT Advanced Capability (PAC-3) is a U.S. Army short range missile defense system that interfaces with the BMDS. MDA funds PATRIOT participation in BMDS interoperability integration efforts.			
<b>FY 2015 Accomplishments:</b> -Supported the day-to-day tasking that is leveraged upon Lower Tier Project Office (LTPO) by MDA based on the Transfer and Transition Plan Annex L.			
<b>FY 2016 Plans:</b> -Support the day-to-day tasking that is leveraged upon LTPO by MDA based on the Transfer and Transition Plan Annex L.			
<b>FY 2017 Plans:</b> -Support the day-to-day tasking that is leveraged upon LTPO by MDA based on the Transfer and Transition Plan Annex L.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.960	1.154	1.130

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**

The planned acquisition strategy for PATRIOT (Phased Array Tracking Radar Intercept on Target) support awards Task Orders on multiple contract vehicles and memorandum of Agreements with other government agencies. The program is considering opportunities for potential competitive awards.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
General Support - General Support	C/FFP	Intuitive Research and Technology / Wyle CAS / SAIC : Huntsville, AL	5.526	0.960		1.154		1.130		-		1.130	Continuing	Continuing	Continuing
<b>Subtotal</b>			5.526	0.960		1.154		1.130		-		1.130	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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			

**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
<b>Project Cost Totals</b>	5.526	0.960	1.154	1.130	-	1.130	-	-	-

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</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
MD06 Patriot Advanced Capability-3 (PAC-3)					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD06 / <i>Patriot Advanced Capability-3 (PAC-3)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD06 Patriot Advanced Capability-3 (PAC-3)	1	2016	4	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> 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>	45.752	19.930	10.029	9.638	-	9.638	11.195	10.012	12.846	13.738	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes as a result of decreases in Ballistic Missile Defense Terminal Defense Segment. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts and Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Program Wide Support	19.930	10.029	9.638
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	19.930	10.029	9.638

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various : VA	0.911	2.589		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	4.538	0.629		0.000		0.195	Jul 2017	-		0.195	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	C/CPAF	Various : Multi: AL, CA, CO, VA	2.795	0.000		0.000		0.720	Jul 2017	-		0.720	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	Various : MDA Multi: AL, CO, CA, VA,	14.049	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support International and Materiel and Readiness	MIPR	Various : Multi: AL, VA, Aust, Japan	1.099	0.546		0.428	Oct 2015	0.605	Jul 2017	-		0.605	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	22.065	15.691		9.006	Jan 2016	7.619	Jan 2017	-		7.619	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	Various : Multi: AL, VA	0.295	0.475		0.595	Aug 2016	0.499	Aug 2017	-		0.499	Continuing	Continuing	Continuing
<b>Subtotal</b>			45.752	19.930		10.029		9.638		-		9.638	-	-	-

**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
<b>Project Cost Totals</b>	45.752	19.930	10.029	9.638	-	9.638	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603881C / <i>Ballistic Missile Defense Terminal Defense Segment</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</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	1,517.287	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
MD08: <i>Ground Based Midcourse</i>	1,389.583	801.930	1,209.006	815.796	-	815.796	658.613	546.271	560.488	497.613	Continuing	Continuing
MC08: <i>Cyber Operations</i>	3.373	3.475	4.394	4.563	-	4.563	4.762	4.972	5.195	5.417	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	124.331	58.560	56.513	41.721	-	41.721	37.936	33.836	35.027	32.584	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 budget request is lower than the FY 2016 budget due to the fact that the FY 2016 budget provided a significant increase to historical funding to improve the overall reliability and performance, and extend the service life of the GMD system.

**A. Mission Description and Budget Item Justification**

The Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense System (BMDS) provides combatant commanders with a continuously available (24 hours a day, 7 days a week, 365 days a year) capability to defend the Homeland against limited Intercontinental Ballistic Missile (ICBM) attacks. The GMD capability consists of Ground Based Interceptors (GBI), GMD Fire Control system (GFC), GMD Communications Network (GCN), In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) and all of the ground Launch Support Systems (LSS) (silos, silo interface vaults (SIVs), environmental control systems, command launch equipment (CLE), firing circuits and safety systems). By the end of 2017, the Missile Defense Agency (MDA) will have 44 operationally deployed GBIs located at Fort Greely, Alaska (40 GBIs) and Vandenberg Air Force Base, California (4 GBIs). FY 2017 funding is critical to the Department's commitment to deploy 44 GBIs. Each GBI delivers a single Exoatmospheric Kill Vehicle (EKV) to defeat threat warheads in space during the midcourse phase of the ballistic trajectory. The GFC consists of fire control nodes in Fort Greely, Alaska and Missile Defense Integration and Operations Center (MDIOC) Colorado Springs, Colorado. IDTs are currently located in Fort Greely, Alaska; Vandenberg Air Force Base, California; Eareckson Air Station, Alaska; and Fort Drum, New York. The GMD capability leverages integration of BMDS sensors in Alaska, California, United Kingdom, Japan, and Greenland. Development objectives for GMD include: improving homeland defensive capability against an evolving threat that is increasing both in number of missiles and complexity of threat payloads, testing and validating the performance of the Capability Enhancement I and II (CE-I and CE-II) GBIs, development and testing of capability upgrades, manufacturing additional GBIs in support of operational requirements, flight testing, upgrading fielded GBIs, and conducting comprehensive component ground testing that will improve GBI reliability and minimize the number of GBIs required to destroy each ICBM threat.

MD08 Ground Based Midcourse includes development, production, and deployment of additional GBIs, enhancements to Ground Systems hardware and software, Program Management, Systems Engineering and Integration, and improvements to Ground-based Midcourse models and simulations that improve the effectiveness, reliability and capacity of the Homeland missile defense system. This project also includes discrimination improvement efforts, which aim to develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture that is more capable of discriminating and destroying a re-entry vehicle with a high degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near-term, Mid-term, and Far-term discrimination improvements capability fielding. The discrimination improvements require a coordinated effort between

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>
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Systems Engineering (PE 0603890C), Ground-based Midcourse Defense, BMD Sensors (PE 0603884C), C2BMC (PE 0603896C), Aegis BMD (PE 0603892C) and Advanced C4ISR (PE 0603179C).

MC08 Cyber Operations sustains the MDA DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of Plans of Action and Milestones (POA&Ms) for MDA Ground-based Midcourse Defense (GMD) mission systems.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	873.923	1,284.891	936.425	-	936.425
Current President's Budget	863.965	1,269.913	862.080	-	862.080
Total Adjustments	-9.958	-14.978	-74.345	-	-74.345
• Congressional General Reductions	0.000	-1.078			
• Congressional Directed Reductions	0.000	-13.900			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	4.480	0.000			
• SBIR/STTR Transfer	-14.438	0.000			
• Other Adjustment	0.000	0.000	-74.345	-	-74.345

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</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
MD08: <i>Ground Based Midcourse</i>	1,389.583	801.930	1,209.006	815.796	-	815.796	658.613	546.271	560.488	497.613	Continuing	Continuing
Quantity of RDT&E Articles	11	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Ground-based Midcourse Defense (GMD) includes development, production, and deployment of additional Ground Based Interceptors (GBIs), enhancements to Ground Systems hardware and software, Program Management, Systems Engineering and Integration, and enhancements to GMD models and simulations that improve the effectiveness, reliability and capacity of the Homeland missile defense system.

The successful Controlled Test Vehicle-01 (CTV-01) flight test and the successful intercept of a threat representative target during Flight Test Ground-based Midcourse Defense-06b (FTG-06b) demonstrated the effectiveness of design changes that remedied failures experienced in three previous flight tests and test anomalies occurring since 2002. GMD incorporated these configuration changes in new FY 2015 Capability Enhancement (CE)-II interceptors and delivered them to the operational fleet. GMD is currently upgrading previously emplaced CE-II interceptors to the FTG-06b configuration and will deliver them back to the operational fleet in FY 2017. GMD will complete development of alternate thrusters for the Divert and Attitude Control System (DACS) that have undergone extensive ground tests and will flight test the improved DACS as part of the non-intercept CTV-02+ Flight Test in second quarter FY 2016. GMD will complete modifications to address near term obsolescence and improve avionics performance of the integrated boost vehicle. GMD will integrate these modifications into a CE-II Block 1 configuration. Following a successful (FTG-15) intercept test in first quarter FY 2017, GMD will deliver eight CE-II Block 1 interceptors to the operational fleet by the end of calendar year (CY) 2017, achieving a total of 44 operationally deployed GBIs.

GMD plans to confirm and improve the reliability of GBIs by instituting a Configuration 2 (C2) Booster Reliability Demonstration Testing Program, and expanding the Stockpile Reliability Program (SRP). GMD will conduct flight and ground tests, analyze performance trends, and identify reliability improvements for GBI component hardware. Testing of deployed GBIs will demonstrate current reliability while companion SRP efforts on assemblies and components will ensure that ongoing fleet upgrades are effective.

GMD will complete the refurbishment, upgrade, blast shielding, and High Altitude Electromagnetic Pulse (HEMP) hardening of Missile Field 1 at Fort Greeley, Alaska in FY 2016. GMD will continue improvements to the GMD Ground Systems hardware and software to improve system performance and reliability. GMD completed testing and fielding GMD Fire Control system (GFC) 6B2.2 in FY 2015. GMD will continue development of GFC 6B3, testing in FY 2015 /FY 2016 and fielding in FY 2017. GFC 6B3 will provide enhanced utilization of Ballistic Missile Defense System (BMDS) sensors and provide additional discrimination data to interceptors in flight. GMD also delivered an In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) at Fort Drum, New York.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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GMD will perform systems engineering required for defining, developing, testing, and verifying capabilities to defeat the evolving threat. GMD will conduct Independent Verification and Validation (IV&V) of GMD Interceptor and Ground System software. GMD will update Modeling and Simulation capabilities with new system configurations and conduct Verification, Validation, and Accreditation (VV&A) of GMD models. GMD will continue the effort to develop and field improved stand-alone and integrated BMDS discrimination capabilities, both of which will improve the BMD System's ability to identify lethal and non-lethal objects for enhanced intercept performance.

GMD will complete design and development discrimination techniques, continue with EKV and GFC software upgrades and continue the development of the Redesigned Kill Vehicle (RKV).

For addressing the evolving threat and improving the reliability of Ground Based Interceptors, the Redesigned Kill Vehicle with emphasis on reliability, producibility, testability, and affordability will continue its development for increasing the homeland defensive capability of the GMD system.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Ground Based Interceptor Development</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Ground Based Interceptor (GBI) Program will continue to develop improvements to enhance reliability, counter emerging threats, eliminate obsolescence and incorporate available technologies.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Completed Exoatmospheric Kill Vehicle (EKV) Divert and Attitude Control System (DACs) Alternate Divert Thruster design qualification to increase GBI reliability</li> <li>-Developed and ground tested EKV software supporting near term discrimination (NTD) capability</li> <li>-Completed capability improvements for BMDS-level near-term discrimination improvements</li> <li>-Completed integration phase of near-term discrimination improvements ground testing via Ground Test Integrated-06 (GTI-06)</li> <li>-Incorporated Flight Test Ground-based Midcourse Defense-07 (FTG-07) flight test failure mitigations into the CE-II Block 1 design and into the fielded CE-I GBIs</li> <li>-Continued Controlled Test Vehicle (CTV-02) interceptor integration utilizing a Capability Enhancement II (CE-II) Exoatmospheric Kill Vehicle (EKV) with Divert and Attitude Control System (DACs) Alternate Divert Thrusters (ADT)</li> <li>-Continued flight test rotation program of fielded GBIs by upgrading kill vehicles and boosters and adding the necessary non-tactical equipment to support the Integrated Master Test Plan (IMTP) requirements</li> <li>-Continued development of Configuration 2 (C2) integrated boost vehicle with Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</li> <li>-Continued EKV software development in accordance with the Software Development Plan (SDP) to implement enhancements and defect corrections for multiple versions of EKV software for fielded and Flight Test Rotation interceptors</li> </ul>	<p>89.156</p> <p align="center">-</p>	<p>109.521</p> <p align="center">-</p>	<p>53.130</p> <p align="center">-</p>

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Continued acquisition of EKV, Booster Avionics Module (BAM), and Booster Stack limited life item replacement units, operational spares, repair parts and materials required for interceptor repair and Flight Test Rotation upgrade activities</p> <p><b>FY 2016 Plans:</b></p> <p>-Initiate development of an All Up Round (AUR) and an integrated boost vehicle (Configuration 3) that incorporates enhanced lightning protection, power transient protection, survivability enhancements, two-way communication enhancements, kill assessment enhancements, and selectable 2/3-stage mode capability for integration into operational fleet</p> <p>-Continue development of Configuration 2 (C2) integrated boost vehicle with Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</p> <p>-Continue flight test rotation program of fielded GBIs by upgrading kill vehicles and boosters and adding the necessary non-tactical equipment, equipment to support the Integrated Master Test Plan (IMTP) requirements</p> <p>-Conduct Controlled Test Vehicle (CTV-02) flight test utilizing a Capability Enhancement II (CE-II) Exoatmospheric Kill Vehicle (EKV) with Divert and Attitude Control System (DACS) Alternate Divert Thruster (ADT) ) and new EKV discrimination algorithms</p> <p>-Continue acquisition of EKV, Booster Avionics Module (BAM), and Booster Stack limited life item replacement units, operational spares, repair parts and materials required for interceptor repair and Flight Test Rotation upgrade activities</p> <p>-Continue Exoatmospheric Kill Vehicle (EKV) Divert and Attitude Control System (DACS) Alternate Divert Thruster acquisition to increase GBI reliability and initiated production</p> <p>-Continue EKV software development in accordance with the Software Development Plan (SDP) to implement enhancements and defect corrections for multiple versions of EKV software for fielded and Flight Test Rotation interceptors</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease from FY 2016 to FY 2017 due to the realignment of the Configuration 3 Booster Development effort to PE 0604874C: Improved Homeland Defense (HLD) Interceptors and completion of the Consolidated Booster Avionics Upgrade (CBAU) and Alternate Propellant Tank development efforts.</p> <p>-Complete development of Configuration 2 (C2) integrated boost vehicle with Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</p> <p>-Continue flight test rotation program of fielded GBIs by upgrading kill vehicles and boosters, adding the necessary non-tactical equipment to support the Integrated Master Test Plan (IMTP) requirements</p> <p>-Complete delivery of EKV, Booster Avionics Module (BAM), and Booster Stack limited life item replacement units, operational spares, repair parts and materials required for interceptor repair and Flight Test Rotation upgrade activities</p> <p>-Continue EKV software development in accordance with the Software Development Plan (SDP) to implement enhancements and defect corrections for multiple versions of EKV software for fielded and Flight Test Rotation interceptors</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Field Near-term discrimination improvements capability and test Mid-term capability</p> <p>-Complete delivery of the Divert Attitude Control System Alternate Propellant Tank to support fielding 44 GBIs by the end of CY 2017 and to provide improved reliability, manufacturability, and consistency in performance over the expected life span of a GBI</p> <p><b>Title:</b> Ground Based Interceptor Manufacturing</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Ground Based Interceptor (GBI) Program will continue to manufacture GBIs to support the DoD mandate of 44 fielded GBIs by 2017.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Continued acquisition of remaining CE-II (Legacy) Ground Based Interceptors (GBIs 34-44)</p> <p>-Continued acquisition of Configuration 2 (C2) integrated boost vehicle with Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</p> <p><b>FY 2016 Plans:</b></p> <p>-Complete integration and delivery of remaining CE-II (Legacy) Ground Based Interceptors (GBIs) (34-44 )</p> <p>-Continue acquisition of CE-II Configuration 2 (C2) integrated boost vehicle with Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</p> <p>-Initiate acquisition of two additional boosters for Redesigned Kill Vehicle (RKV) testing</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease from FY 2016 to FY 2017 due to completion and delivery of Ground Based Interceptors (GBIs) 34-44 (CE-II) and associated requirements/costs on the Boeing GMD Prime Contract HQ0006-01-C-0001 and reduced funding required for the acquisition of CE-II Block I GBIs 48-58 and for the acquisition of the two Boosters required for Redesigned Kill Vehicle (RKV) flight testing.</p> <p>-Continue acquisition of Configuration 2 (C2) integrated boost vehicle with the Consolidated Booster Avionics Upgrade (CBAU) and CE-II Block I Exoatmospheric Kill Vehicles (EKV) Ground Based Interceptors (GBIs 48-58) to support both operations and testing, including a flight test (FTG-15) to demonstrate the capability of the CE-II Block 1 with C2 CBAU booster GBIs</p> <p>-Continue acquisition of two additional boosters for Redesigned Kill Vehicle (RKV) testing</p>		358.065	391.797	241.637
		-	-	-
<b>Title:</b> Ground Based Interceptor Reliability		43.560	181.840	50.826
		-	-	-

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Description:</b> The Ground Based Interceptor (GBI) reliability program conducts the analysis and testing necessary to characterize the reliability and service life of the GBI Fleet. The data generated from the reliability program allows the Program Office to manage the GBI fleet, develop design improvements, develop fleet maintenance strategies, and extend interceptor service life. The data is also used by MDA engineering to develop battle simulations for the ground test program; and by the Warfighter in developing tactics, techniques, and procedures.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Continued Ground Based Interceptor (GBI) Fleet Upgrade program to include upgrade of the fielded Capability Enhancement II (CE-II) GBIs to the proven Flight Test Ground-based Midcourse Defense-06b (FTG-06b) configuration</li> <li>-Continued development of the probabilistic risk assessment model to characterize the reliability of the GBI fleet</li> <li>-Developed a GBI system level Failure Modes, Effects and Criticality Analysis (FMECA) using the probabilistic risk assessment model</li> <li>-Conducted rocket motor static firings to gain performance data on aged motors</li> <li>-Performed a process failure modes and effects analysis on GBI production</li> <li>-Continued to conduct aging, surveillance, and reverse flow testing on the Stockpile Reliability Program (SRP) GBIs removed from the fleet</li> <li>-Evaluated Acceptance Test Procedure strategy and test levels for each GBI configuration</li> <li>-Continued to collect Reliability, Availability, Maintainability and Test (RAM-T) data and calculated and tracked performance metrics on the Operational System</li> <li>-Developed an All-Up Round (AUR) acquisition strategy that incorporated integrated boost vehicle improvements and the Redesigned Kill Vehicle (RKV)</li> <li>-Initiated Booster Avionics Module (BAM) level qualification testing and power on re-set trade study to address known flight test anomalies</li> <li>-Established GBI All-Up Round (AUR) system-level Failure Modes, Effects and Criticality Analysis</li> <li>-Initiated the evaluation of Acceptance Test Procedure strategy and test levels for each GBI AUR configuration</li> <li>-Continued Probabilistic Risk Assessment (reliability model) development to help prioritize future engineering efforts</li> <li>-Continued Ground Based Interceptor (GBI) Fleet Upgrade program</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Continue Ground Based Interceptor (GBI) Fleet Upgrade program to include upgrade of the fielded Capability Enhancement II (CE-II) GBIs to the proven Flight Test Ground-based Midcourse Defense-06b (FTG-06b) configuration</li> <li>-Initiate the Probabilistic Risk Assessment for the Redesigned Kill Vehicle (RKV)</li> <li>-Continue to collect Reliability, Availability, Maintainability and Test (RAM-T) data and calculate and track performance metrics on the Operational System</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Continue the Reliability and Systems Engineering (RSE) and the GBI Design and Reliability Characterization (D&amp;RC) program that includes:</p> <ul style="list-style-type: none"> <li>--Design upgrades studies, Booster Avionics Module (BAM) level qualification testing and power on re-set trade study to address known flight test anomalies</li> <li>--Configuration 2 (C2) Booster Reliability Demonstration Testing, electromagnetic interference/compatibility testing to quantify system performance and capability</li> <li>--GBI All-Up Round (AUR) system-level Failure Modes, Effects and Criticality Analysis. Evaluate Acceptance Test Procedure strategy and test levels for each GBI AUR configuration.</li> <li>--Probabilistic Risk Assessment (reliability model) development to help prioritize future engineering efforts</li> <li>--Establish AUR physical design schematics &amp; electrical grounding control plans. Conduct key engineering assessments including integrated sneak circuit analyses, Worst Case Circuit Analysis, and electrical/thermal derating analyses to document current performance/capability and identify potential risk areas</li> <li>-Initiate functional testing of naturally aged GBI subsystems and components removed during upgrade/modification to understand performance and aging characteristics in order to establish life limits</li> <li>-Initiate and maintain electronic As-Built/As-Fielded GBI configuration database for real-time access to GBI configuration data across the production and maintenance organization</li> <li>-Continue rocket motor static firings and initiate motor dissections</li> <li>-Conduct reliability demonstration testing and initiate highly accelerated life testing on a Stockpile Reliability Program (SRP) Exoatmospheric Kill Vehicles (EKV) removed from the fleet</li> <li>-Continue Ground Based Interceptor (GBI) Fleet Upgrade program</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Decrease from FY 2016 to FY 2017 due to completion of upgrades to the currently fielded CE-II GBIs.</li> <li>-Complete upgrade and delivery of the fielded CE-II GBIs in the proven Flight Test Ground-based Midcourse Defense-06b (FTG-06b) configuration</li> <li>-Continue Ground Based Interceptor (GBI) Fleet Upgrade program</li> <li>-Continue to collect Reliability, Availability, Maintainability and Test (RAM-T) data and calculate and track performance metrics on the Operational System</li> <li>-Continue the Reliability and Systems Engineering (RSE) and the GBI Design and Reliability Characterization (D&amp;RC) program that includes:</li> <li>--Configuration 2 (C2) Booster Reliability Demonstration Testing, to quantify system performance and capability</li> <li>--GBI All-Up Round (AUR) system-level Failure Modes, Effects and Criticality Analysis. Evaluate Acceptance Test Procedure strategy and test levels for each GBI AUR configuration.</li> </ul>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>--Probabilistic Risk Assessment (reliability model) development to help prioritize future engineering efforts</p> <p>--AUR physical design schematics &amp; electrical grounding control plans. Conduct key engineering assessments including integrated sneak circuit analyses, Worst Case Circuit Analysis, and electrical/thermal derating analyses to document current performance/capability and identify potential risk areas</p> <p>-Continue functional testing of naturally aged GBI subsystems and components removed during upgrade/modification to understand performance and aging characteristics in order to establish life limits</p> <p>-Maintain electronic As-Built/As-Fielded GBI configuration database for real-time access to GBI configuration data across the production and maintenance organization</p> <p>-Continue rocket motor static firings and initiate motor dissections, which are both required to produce data that is needed to extend the service life of limited life items</p> <p>-Initiate design reliability analysis for the Redesigned Kill Vehicle (RKV) and the Configuration 3 (C3) boost vehicle to ensure that their design will meet its reliability requirements</p> <p>-Continue Probabilistic Risk Assessment for the RKV and initiate analysis for the C3 boost vehicle</p>			
<p><b>Title:</b> Systems Engineering and Program Management</p> <p align="right"><b>Articles:</b></p>	147.877	265.925	267.195
<p><b>Description:</b> GMD Systems Engineering and Program Management provide essential services for the development and fielding of the GMD hardware and software and Industry Program Management operations. Included in this effort are concept definition, requirements and interfaces, system design, integration, test planning and verification efforts. Key products are development and maintenance of the technical baseline and critical engineering processes for implementation and delivery of an integrated GMD element capability.</p> <p>Program Management provides for prime contractor management of the GMD program. Included in this effort is program and business management, program administration, technical and testing oversight, verification of hardware and software development, quality/safety/mission assurance, integrated logistics support, and infrastructure to develop, test and sustain the GMD system and components.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Continued requirements development, engineering analysis, capability integration, and performance verification for GMD development and BMDS integration</p> <p>-Continued effort to assess the current GMD capabilities against the evolving threat</p> <p>-Continued sustainment of core information technology data and unified communications services to accomplish research and development activities</p>	-	-	-

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Continued modeling and simulation development and integration to assess component and system performance in support of annual technical assessments</p> <p>-Continued the development of modeling and simulation wrapped tactical code to reduce the life cycle cost and increase the fidelity of the results, and begin integrating the code into a single BMDS framework to facilitate interoperability between BMDS elements</p> <p>-Continued modeling and simulation verification and validation to establish high confidence for Warfighter assessments</p> <p>-Supported Component Requirements Reviews and Preliminary Design Reviews (PDR) for the GMD contribution to the BMDS Enhanced Homeland Defense including the Ground System Fire Control and Communications software development and GBI hardware (e.g., CE-II Block 1) and software capabilities development to ensure delivery of a successful capability</p> <p>-Continued design, planning, and pre- and post-flight test analysis for current and future flight and ground tests to assess system performance and implement a rigorous test plan for verifying successful operation of capabilities delivered to the Warfighter</p> <p>-Utilized Exoatmospheric Kill Vehicle (EKV) HWIL 10-foot vacuum space chamber (10V Chamber) for operational analysis of emerging threats, assessment of performance improvements, and Pre-Mission Testing and Post Flight analysis and reconstruction in accordance with the Integrated Master Test Plan (IMTP) to reduce execution risks and gain confidence that capabilities performed as expected</p> <p>-Provided contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight to ensure the program meets all cost, schedule, and performance requirements</p> <p>-Continued development, testing and fielding of a near term discrimination (NTD) capability through GMD Fire Control system (GFC) and Exoatmospheric Kill Vehicle (EKV) software</p> <p>-Continued Near-Term discrimination improvement capability developments</p> <p>-Continued integration phase of Near-Term discrimination improvements ground testing via Ground Test Integrated-06 (GTI-06)</p> <p>-Conducted Mid-term discrimination planning, assessment, and specification work to keep pace with emerging threat</p> <p>-Developed preliminary BMDS functional and performance requirements for Mid-term discrimination improvements capability</p> <p><b>FY 2016 Plans:</b></p> <p>-Continue requirements development, engineering analysis, capability integration, and performance verification for GMD development and BMDS integration for the evolving threat</p> <p>-Continue sustainment of core information technology data and unified communications services to accomplish research and development activities.</p> <p>-Continue Technical Direction Agent activities to provide the technical expertise and program execution experience required to offer independent assessment/analysis, unbiased and objective defensive weapon system level-oriented advice on technical issues and product development, and recommendations on technical issues and product development challenges facing in the GMD Program</p>			



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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>-Continue modeling and simulation development and integration to assess component and system performance in support of annual technical assessments</li> <li>-Continue the development of modeling and simulation wrapped tactical code to reduce the life cycle cost and increase the fidelity of the results and integrate GMDSim into the new Objective Simulation Framework (OSF)</li> <li>-Continue modeling and simulation verification, validation, and accreditation (VV&amp;A) to establish high confidence for Warfighter assessments</li> <li>-Continue design, planning, and pre- and post-flight test analysis for current and future flight and ground tests to assess system performance and implement a rigorous test plan for verifying successful operation of capabilities delivered to the Warfighter</li> <li>-Utilize Exoatmospheric Kill Vehicle (EKV) Hardware in the loop (HWIL) 10-foot vacuum space chamber (10V Chamber) for operational analysis of emerging threats, discrimination improvements performance and Pre-Mission Testing and Post Flight analysis and reconstruction in accordance with the Integrated Master Test Plan (IMTP) to reduce execution risks from additional data and gaining confidence that capabilities performed as expected</li> <li>-Provide contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight to ensure the program meets all cost, schedule, and performance requirements</li> <li>-Field Near-term discrimination improvements capability</li> <li>-Complete Near-term discrimination improvements ground testing via ground test distributed (GTD-06)</li> <li>-Initiate top-down and bottoms-up requirements audit to include: functional decomposition / traceability, bottoms-up verification sufficiency audit, and establish detailed performance requirement error budgets and allocations to ensure complete understanding of system capability and potential gaps</li> <li>-Initiate Cybersecurity Operations Upgrade Program consisting of efforts to enhance the cybersecurity posture of the GMD operational information systems and its supporting information systems and components</li> <li>-Initiate a rigorous independent verification and validation (IV&amp;V) and system engineering analysis of GMD software to increase Warfighter confidence in the tactical system performance and reliability</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Continue requirements development, engineering analysis, capability integration, and performance verification for GMD development and BMDS integration</li> <li>-Continue effort to assess the current GMD capabilities against the evolving threat</li> <li>-Continue sustainment of core information technology data and unified communications services to accomplish research and development activities.</li> <li>-Continue Technical Direction Agent activities to provide the technical expertise and program execution experience required to offer independent assessment/analysis, unbiased and objective defensive weapon system level-oriented advice on technical issues and product development, and providing recommendations on technical issues and product development challenges facing in the GMD Program</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Continue modeling and simulation development and integration to assess component and system performance in support of annual technical assessments</li> <li>-Continue the development of modeling and simulation wrapped tactical code to reduce the life cycle cost and increase the fidelity of the results and integrate GMDSim into the new Objective Simulation Framework (OSF)</li> <li>-Continue modeling and simulation verification, validation, and accreditation (VV&amp;A) to establish high confidence in Warfighter assessments</li> <li>-Continue design, planning, and pre- and post-flight test analysis for current and future flight and ground tests to assess system performance and implement a rigorous test plan for verifying successful operation of capabilities delivered to the Warfighter</li> <li>-Utilize Exoatmospheric Kill Vehicle (EKV) Hardware in the loop (HWIL) 10-foot vacuum space chamber (10V Chamber) for operational analysis of emerging threats, discrimination improvements performance and pre-mission testing and post flight analysis and reconstruction in accordance with the Integrated Master Test Plan (IMTP) to reduce execution and gain confidence that capabilities performed as expected</li> <li>-Provide contractor program management, subcontract management, quality assurance, verification of hardware and software design, and technical and testing oversight to ensure the program meets all cost, schedule, and performance requirements</li> <li>-Continue top-down and bottoms-up requirements audit to include: functional decomposition / traceability, bottoms-up verification sufficiency audit, and establishment of detailed performance requirement error budgets and allocations to ensure complete understanding of system capability and potential gaps</li> <li>-Continue a rigorous independent verification and validation (IV&amp;V) and system engineering analysis of GMD software to increase Warfighter confidence in the tactical system performance and reliability</li> <li>-Complete design and development of Mid-term discrimination improvements techniques</li> <li>-Continue test planning for discrimination improvements capabilities</li> <li>-Conduct Far-term discrimination and countermeasure mitigation capability development</li> <li>-Develop definition of fire control/weapon handover improvements and initiate preliminary design</li> <li>-Conduct analysis and reporting for Flight Test Ground-based Midcourse Defense-15 (FTG-15), a 3-stage Capability Enhancement II (CE-II) C2/CBAU intercept engagement using a GBI launched from Vandenberg Air Force Base, California against an Intercontinental Ballistic Missile (ICBM) target with associated objects, launched from Reagan Test Site (RTS)</li> <li>-Continue planning and readiness for Flight Test Ground-based Midcourse Defense-11 (FTG-11), a 3-stage CE-I and 3-stage CE-II Salvo intercept using GBIs launched from Vandenberg Air Force Base, California against a target with associated objects, launched from RTS</li> <li>-Initiate planning and readiness for Flight Test Ground-based Midcourse Defense-Controlled Test Vehicle-03 (GM CTV-03), a non-intercept mission with Redesigned Kill Vehicle (RKV) to collect RKV flight environment data using a GBI launched from Vandenberg Air Force Base, California</li> <li>-Continue Cybersecurity Operations Upgrade Program consisting of efforts to enhance the cybersecurity posture of the GMD operational information systems and its supporting information systems and components</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Implement vulnerability mitigation activities for the Power Control and Monitoring System (PCMS) and Site Control and Monitoring System (SCMS) that are required to maintain their Authority to Operate (ATO)</p> <p>-Train and certify contractor Information Assurance Workforce personnel involved in developing GMD test, training, and mission support information systems</p>				
<p><b>Title:</b> Program Operations</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Program Operations provides for government management of the GMD program. Included in this effort is program and business management, program administration, technical and testing oversight, verification of hardware and software development, quality / safety / mission assurance, integrated logistics support, and government manpower and infrastructure to develop, test and sustain the GMD system and components.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Conducted technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities to ensure program met cost, schedule, and performance goals</p> <p>-Ensured GMD program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</p> <p>-Conducted internal Director's Program Review (DPR) to measure program progress against the six Missile Defense Agency (MDA) approved baselines</p> <p>-Continued a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</p> <p>-Provided Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability to ensure high quality products are delivered to the Warfighter</p> <p>-Continued sustainment of core information technology data and unified communications services to accomplish research and development activities</p> <p><b>FY 2016 Plans:</b></p> <p>-Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities to ensure program met cost, schedule, and performance goals</p> <p>-Ensure Ground-based Midcourse Defense (GMD) program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</p>		88.307 -	98.045 -	85.639 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Conduct internal Director's Program Review (DPR) to measure program progress against the six Missile Defense Agency (MDA) approved baselines</p> <p>-Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</p> <p>-Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered to the Warfighter</p> <p>-Continue sustainment of core information technology data and unified communications services to accomplish research and development activities.</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease from FY 2016 to FY 2017 due to all test personnel costs moving to PE 0604887C: Ballistic Missile Defense Midcourse Defense Segment Test in the Program Operations accomplishment.</p> <p>-Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities to ensure program met cost, schedule, and performance goals</p> <p>-Ensure GMD program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process</p> <p>-Conduct internal Director's Program Review (DPR) to measure program progress against the six Missile Defense Agency (MDA) approved baselines</p> <p>-Continue a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management, Manufacturing, Engineering, and Safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</p> <p>-Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability to ensure high quality products are delivered to the Warfighter</p> <p>-Continue sustainment of core information technology data and unified communications services to accomplish research and development activities</p>				
<b>Title:</b> Ground Systems & Fire Control		74.965	161.878	117.369
		<b>Articles:</b>	-	-
<b>Description:</b> The GMD Ground Systems enable control and operation of the GMD Element as part of the Ballistic Missile Defense System (BMDS). Ground Systems consists of the GMD Fire Control system, GMD Communications Network, In-Flight Interceptor				

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Communications System (IFICS) Data Terminal (IDT), Launch Site Components (LSC) (silos, silo interface vaults [SIVs]), and the Launch Support Systems (LSS) (Command and Launch Equipment (CLE), which includes Launch Support Equipment (LSE).</p> <p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>-Completed Near-term BMDS discrimination improvements for Homeland Defense (DIHD) Near-Term capability developments</li> <li>-Initiated testing Ground Systems suite 6B3 software upgrade for Near-Term Discrimination (NTD) capability, and Near-term BMDS discrimination improvements capability, including limited Reliability/Obsolescence/Technology Refresh of the Ground System hardware</li> <li>-Completed integration phase of Near-Term discrimination improvements ground testing via Ground Test Integrated-06 (GTI-06)</li> <li>-Continued integration efforts for an In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) at Fort Drum, NY that will increase system performance in specific engagement scenarios</li> <li>-Continued the Ground Systems Technology Refresh for limited IDT components and GFC Workstations which provides upgrades to the Ground Systems components by reducing life cycle costs and ensuring sustainability</li> <li>-Continued the refurbishment, upgrade, blast shielding, and hardening of Missile Field 1 at Fort Greely, Alaska</li> <li>-Continued design and development of Command Launch Equipment (CLE) software 6B3.1 and hardware to interface with the tactical 3 Stage Configuration 2 (C2) (CBAU) Ground-Based Interceptor (GBI)</li> <li>-Initiated requirements and preliminary design efforts for Ground Systems suite 7B</li> <li>-Continued the Command Launch Equipment (CLE)/GFC Re-architecture Phase 1 to mitigate obsolescence, and increase reliability, sustainability, and availability of the CLE with added failover capability</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <ul style="list-style-type: none"> <li>-Initiate requirements and preliminary design efforts for IDT technology upgrades to support enhanced data rates and message sets required for the On-Demand Communications to the Redesigned Kill Vehicle</li> <li>-Test Ground Systems suite 6B3 in CTV-02+ flight test and ground tests, and initiate fielding of software upgrade for Near-Term Discrimination (NTD) capability, and Near-term BMDS discrimination improvements capability, including limited Reliability/Obsolescence/Technology Refresh of the Ground System hardware to the Warfighter</li> <li>-Continue design and development for Ground Systems suite 7A to integrate limited IDT component upgrades, and CLE/GFC Re-architecture Phase I, and interface with C2BMC build 8.2</li> <li>-Continue Ground Systems suite 7B upgrades for mid-term discrimination improvements to provide data aggregation, update salvo-logic, midterm threat set, 2-stage interceptor capability, on-demand communications supporting Redesigned Kill Vehicle capabilities (RKV), and integration of data from BMDS Overhead Persistent Infra-red (OPIR) Architecture (BOA) assets into the GMD configuration</li> <li>-Continue Technology Refresh to address obsolescence issues to support improved availability, reliability, sustainability, and Cybersecurity posture</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Complete integration efforts for an In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) at Fort Drum, NY to provide increased system performance in specific engagement scenarios -Complete the refurbishment, upgrade, blast shielding, and hardening of Missile Field 1 at Fort Greely, Alaska -Continue the Command Launch Equipment (CLE)/GFC Re-architecture Phase 1 to mitigate obsolescence, and increase reliability, sustainability, and availability of the CLE with added failover capability  <b>FY 2017 Plans:</b> -Decrease from FY 2016 to FY 2017 due to completion of the Missile Field 1 repair and refurbishment and reduced funding required for Command Launch Equipment (CLE) Re-Architecture and Ground Systems Technology Refresh.  -Continue the CLE/ GMD Fire Control system (GFC) Re-architecture Phase 1 to mitigate obsolescence, and increase reliability, sustainability, and availability of the CLE with added failover capability -Complete fielding of Ground Systems suite 6B3 software upgrade for Near-Term Discrimination (NTD) capability, and Near-term BMDS discrimination improvements capability, including limited Reliability/Obsolescence/Technology Refresh of the Ground System hardware to the Warfighter -Complete design and development for Ground Systems suite 6B3.2 to integrate limited In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT) component upgrades, and CLE/GFC Re-architecture Phase I, and interface with Command & Control, Battle Management, Communications (C2BMC) build 8.2 -Continue Ground Systems suite 7B upgrades for Mid-Term discrimination improvements capabilities in addition to the 2 stage options using Energy Maneuvers and Zero Pulse, and 2/3 stage Battle Management; upgrade interfaces to IDT to support On-Demand Communications and Warfighter Enhancements. The 7B suite will also include improved Nuclear Weapons Effects (NWE) planning, Missile Order of Battle (MOB) updates, Boost Phase Cueing from AN/TPY-2 radars, and Risk Management Framework (RMF) start up -Continue detailed design development of the IDT technology upgrades to support the On-Demand Communications capability for systems discrimination data, directed engagements and hit assessments -Continue GMD Communications Network (GCN) Modernization efforts to support GMD system expansion and emerging requirements, enhance/maintain Cyber Security posture, and mitigate hardware and software obsolescence			
<b>Accomplishments/Planned Programs Subtotals</b>	801.930	1,209.006	815.796

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	49.606	137.564	162.012	-	162.012	310.347	76.843	98.874	102.320	Continuing	Continuing
• 0604874C: <i>Improved Homeland Defense (HLD) Interceptors</i>	97.739	278.944	274.148	-	274.148	321.441	479.049	508.198	580.239	Continuing	Continuing
• 0604887C: <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	78.463	64.618	56.481	-	56.481	86.709	76.205	74.776	87.415	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The GMD program will continue to follow testing, development, and evolutionary acquisition through incremental development. The Agency acquisition strategy ensures that the GMD components are upgraded to improve both All-Up System (AUS) performance and All-Up Round (AUR) performance in order to retain the proven GMD contribution to the Integrated Ballistic Missile Defense System (BMDS). This acquisition approach reduces obsolescence risk, provides opportunities for incremental capability improvements, and allows decision makers to make informed trades between cost, schedule, and performance while exploring improved operational and technological capabilities.

GMD awarded a competitive Development and Sustainment Contract (DSC) on December 30, 2011. This contract continues development, fielding, test, systems engineering, integration, and configuration management; equipment manufacturing and upgrade; training, operations and sustainment of the GMD system and associated support facilities. The DSC emphasizes the application of performance-based tenets to provide timely high quality support of the core GMD system while reducing life cycle and long-term ownership costs. GMD's acquisition strategy for transition of the legacy content into the DSC provides uninterrupted field operations; development of both Ground Systems and Interceptor (GBI) products, including manufacturing additional interceptors to support both operations and testing and the requirement to demonstrate war fighting capability through a rigorous ground and flight test program.

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

<b><u>E. Performance Metrics</u></b> N/A
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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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<b>Product Development (\$ in Millions)</b>				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			
Ground Based Interceptor Development - Configuration 2 CBAU Booster Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	11.906		3.928	Nov 2015	0.116	Nov 2016	-		0.116	Continuing	Continuing	Continuing
Ground Based Interceptor Development - Configuration 3 Booster Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		61.820	Nov 2015	0.000		-		0.000	0	61.820	0
Ground Based Interceptor Development - EKV New & Modified Component Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.363		16.126	Nov 2015	2.365	Nov 2016	-		2.365	Continuing	Continuing	Continuing
Ground Based Interceptor Development - FTG-07 Mitigations	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	35.541		0.000		0.000		-		0.000	0	35.541	0
Ground Based Interceptor Development - Flight Rotations for Ballistic Missile Defense System Level Testing	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	13.441		11.550	Nov 2015	25.866	Nov 2016	-		25.866	Continuing	Continuing	Continuing
Ground Based Interceptor Development - Operational Spares	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	12.155		5.268	Nov 2015	13.751	Nov 2016	-		13.751	Continuing	Continuing	Continuing
Ground Based Interceptor Development - Software Maintenance & Updates	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	15.750		10.829	Nov 2015	11.032	Nov 2016	-		11.032	Continuing	Continuing	Continuing
Ground Based Interceptor Manufacturing - GBI Prime Product Support	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	66.987		78.879	Nov 2015	84.754	Nov 2016	-		84.754	Continuing	Continuing	Continuing
Ground Based Interceptor Manufacturing - Interceptor Manufacturing Support	MIPR	NASA MSFC& AMRDEC, HSV, AL : Draper Laboratory, MA; Vanguard, HSV, AL	0.000	5.917		8.094	Nov 2015	6.542	Nov 2016	-		6.542	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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<b>Product Development (\$ in Millions)</b>				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			
Ground Based Interceptor Manufacturing - Prime Ground Based Interceptors 34-44 (CE-II)	C/CPAF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	99.644		50.368	Nov 2015	0.000		-		0.000	0	150.012	0
Ground Based Interceptor Manufacturing - Prime Ground Based Interceptors 48-58 (CE-II Block 1)	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	185.517		213.038	Nov 2015	135.470	Nov 2016	-		135.470	Continuing	Continuing	Continuing
Ground Based Interceptor Manufacturing - Two Additional Boosters for Flight Testing	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		41.418	Nov 2015	14.871	Nov 2016	-		14.871	Continuing	Continuing	Continuing
Ground Based Interceptor Reliability - Government Reliability Program	MIPR	AMRDEC / Redstone Arsenal, AL : NSWC Crane, IN	0.000	6.470		8.738	Nov 2015	8.499	Nov 2016	-		8.499	Continuing	Continuing	Continuing
Ground Based Interceptor Reliability - Prime Currently Fielded CE-II Upgrades	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	12.497		117.880	Nov 2015	10.297	Nov 2016	-		10.297	Continuing	Continuing	Continuing
Ground Based Interceptor Reliability - Prime GBI Functional Testing	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	1.175		20.039	Nov 2015	9.002	Nov 2016	-		9.002	Continuing	Continuing	Continuing
Ground Based Interceptor Reliability - Prime Reliability & Systems Engineering	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	5.318		6.556	Nov 2015	2.661	Nov 2016	-		2.661	Continuing	Continuing	Continuing
Ground Based Interceptor Reliability - Prime Reliability Program	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	18.100		28.627	Nov 2015	20.367	Nov 2016	-		20.367	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Government Fort Drum IDT	MIPR	MDA/AL : VA/NY	0.375	0.189		0.356	Nov 2015	0.420	Nov 2016	-		0.420	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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<b>Product Development (\$ in Millions)</b>				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			
Ground Systems & Fire Control - Government Software Development	MIPR	AMRDEC : Redstone Arsenal, AL	0.000	0.000		2.346	Nov 2015	1.320	Nov 2016	-		1.320	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime CLE Re-Architecture	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	3.177	7.124		22.092	Nov 2015	14.217	Nov 2016	-		14.217	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime Communications Infrastructure	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	1.726	0.643		2.016	Nov 2015	3.191	Nov 2016	-		3.191	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime Fort Drum IDT	C/CPIF	Boeing AL : CO/NY/VA	6.330	2.754		0.959	Nov 2015	0.000		-		0.000	0	10.043	0
Ground Systems & Fire Control - Prime Ground Systems Software Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	197.231	36.196		64.550	Nov 2015	60.372	Nov 2016	-		60.372	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime MF-1 Repair and Refurbishment	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	0.271	17.222		19.627	Nov 2015	0.000		-		0.000	0	37.120	0
Ground Systems & Fire Control - Prime On Demand Communications	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	0.000	0.000		16.563	Nov 2015	19.551	Nov 2016	-		19.551	Continuing	Continuing	Continuing
Ground Systems & Fire Control - Prime Technology Refresh	C/CPIF	Boeing AL/AK/AZ : CA/CO/VA	4.620	10.837		33.369	Nov 2015	18.298	Nov 2016	-		18.298	Continuing	Continuing	Continuing
<b>Subtotal</b>			213.730	565.746		845.036		462.962		-		462.962	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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<b>Support (\$ in Millions)</b>				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
Systems Engineering and Program Management - Cyber Security	MIPR	MDA : AL/VA	0.000	0.000		8.975	Nov 2015	9.010	Nov 2016	-		9.010	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Discrimination Engineering & Analysis	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		3.000	Nov 2015	9.643	Nov 2016	-		9.643	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Discrimination Improvements	MIPR	FFRDC/UARC : AL	0.000	2.091		3.520	Nov 2015	6.000	Nov 2016	-		6.000	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government EKV HWIL Tests in Space Chamber	MIPR	AEDC : Tullahoma, TN	9.463	4.989		6.942	Nov 2015	7.088	Nov 2016	-		7.088	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Modeling and Simulation	MIPR	SED and Morrow Labs : Redstone Arsenal/AL	29.294	14.799		27.398	Nov 2015	29.744	Nov 2016	-		29.744	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Government Systems Engineering & Integration	MIPR	AMRDEC : HSV/AL	0.000	4.501		18.184	Nov 2015	18.303	Nov 2016	-		18.303	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Information Management & Technology Ops	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	3.209		13.513	Nov 2015	9.269	Nov 2016	-		9.269	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Model & Simulations Support	Allot	MDA : AL/VA	11.603	9.875		10.237	Oct 2015	10.651	Oct 2016	-		10.651	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Design, Readiness, Analysis and Reporting	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		0.000		14.729	Nov 2016	-		14.729	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 0603882C / Ballistic Missile Defense Midcourse Defense Segment						MD08 / Ground Based Midcourse					
Support (\$ 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
Systems Engineering and Program Management - Prime Discrimination Improvements	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	6.575		27.706	Nov 2015	13.100	Nov 2016	-		13.100	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime EKV HWIL Tests in Space Chamber	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	63.572	1.729		1.614	Nov 2015	1.645	Nov 2016	-		1.645	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Modeling and Simulation	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	135.187	16.163		17.161	Nov 2015	13.864	Nov 2016	-		13.864	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime Program Management	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	83.273	39.215		55.026	Nov 2015	51.722	Nov 2016	-		51.722	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Prime System Engineering and Integration	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	263.038	33.996		36.886	Nov 2015	43.579	Nov 2016	-		43.579	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis	MIPR	Various : AL/VA	9.607	6.945		6.940	Nov 2015	3.299	Nov 2016	-		3.299	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis - CSS Support	C/CPFF	CSC : AL	0.000	0.000		5.092	Nov 2015	2.945	Nov 2016	-		2.945	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering & Analysis - FFRDC / UARC	MIPR	Various : AL/VA	0.000	0.583		1.205	Nov 2015	1.019	Nov 2016	-		1.019	Continuing	Continuing	Continuing
Systems Engineering and Program Management - Systems Engineering	C/CPAF	Boeing : AL	5.093	3.207		6.959	Nov 2015	5.876	Nov 2016	-		5.876	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>
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<b>Support (\$ in Millions)</b>				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			
& Analysis – Industry Support															
Systems Engineering and Program Management - Technical Direction Agent	MIPR	AL/CA/GA/MA : MD/NM/UT/VA	0.000	0.000		15.567	Oct 2015	15.709	Oct 2016	-		15.709	Continuing	Continuing	Continuing
Program Operations - Contract Support Services	C/CPFF	Various : AL/AK/CA/CO/VA	319.745	43.569		44.664	Oct 2015	37.338	Oct 2016	-		37.338	Continuing	Continuing	Continuing
Program Operations - FFRDC Support	MIPR	MIT/LL : AL/VA/CO	36.419	5.546		8.531	Oct 2015	8.525	Oct 2016	-		8.525	Continuing	Continuing	Continuing
Program Operations - Government Civilian Salaries	MIPR	MDA : AL/VA	172.721	31.375		35.501	Oct 2015	30.263	Oct 2016	-		30.263	Continuing	Continuing	Continuing
Program Operations - Information Technology Services	MIPR	MDA : AL/CA/VA/CO/AK	2.095	0.828		1.193	Nov 2015	1.227	Nov 2016	-		1.227	Continuing	Continuing	Continuing
Program Operations - Other Govt Agencies	MIPR	Various : AL/VA/FL/CO	29.645	5.493		6.550	Oct 2015	6.654	Oct 2016	-		6.654	Continuing	Continuing	Continuing
Program Operations - Safety and Quality	MIPR	MDA : AL/AK/CA/VA	0.440	0.063		0.079	Nov 2015	0.081	Nov 2016	-		0.081	Continuing	Continuing	Continuing
Program Operations - Travel	MIPR	MDA : AL/VA	4.658	1.433		1.527	Oct 2015	1.551	Oct 2016	-		1.551	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,175.853	236.184		363.970		352.834		-		352.834	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</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			

**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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	1,389.583	801.930	1,209.006	815.796	-	815.796	-	-	-

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

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</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
Deliver GBIs (34-35)	+	+																										
Deliver GBIs (36-40)			+	+																								
Ground Systems 6B3 (FQT)				+																								
Fort Drum, NY IDT	+	+	+	+	+																							
Missile Field 1 Refurbishment and Upgrade	+	+	+	+	+	+	+	+																				
Ground Based Interceptors Rotation and Upgrades	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Deliver GBI 41				+																								
Deliver GBIs (48-50)								+	+																			
Ground Systems 7A Mid Term (FQT)								+																				
Deliver GBIs (51-53)											+	+																
Deliver GBIs (54-58)												+	+	+														
Ground Systems 7B Mid Term DIHD (FQT)												+																



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD08 / <i>Ground Based Midcourse</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Deliver GBIs (34-35)	1	2015	2	2015
Deliver GBIs (36-40)	3	2015	4	2015
Ground Systems 6B3 (FQT)	4	2015	4	2015
Fort Drum, NY IDT	1	2015	1	2016
Missile Field 1 Refurbishment and Upgrade	1	2015	4	2016
Ground Based Interceptors Rotation and Upgrades	1	2015	4	2021
Deliver GBI 41	1	2016	1	2016
Deliver GBIs (48-50)	4	2016	1	2017
Ground Systems 7A Mid Term (FQT)	1	2017	1	2017
Deliver GBIs (51-53)	2	2017	4	2017
Deliver GBIs (54-58)	4	2017	2	2018
Ground Systems 7B Mid Term DIHD (FQT)	1	2018	1	2018

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <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
MC08: <i>Cyber Operations</i>	3.373	3.475	4.394	4.563	-	4.563	4.762	4.972	5.195	5.417	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The funding in this project sustains MDA DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) 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 GMD mission systems. 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&Ms 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 (SIAO)/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
<b>Title:</b> Network / System Certification and Accreditation (C&A)	3.475	4.394	4.563
<b>Articles:</b>	-	-	-
<b>Description:</b> The Network/Systems Certification and Accreditation project sustains the MDA DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) 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 Command and Control Battle Management and Communications (C2BMC) mission systems. 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.			
<b>FY 2015 Accomplishments:</b>			
-Provided Ground-based Midcourse Defense (GMD) Information Assurance Manager (IAM) civilian salaries			
-Conducted cyber security / Information Assurance (IA) engineering and architecture planning for GMD information technology systems			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <i>Cyber Operations</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Planned and test the IA controls for Ballistic Missile Defense System (BMDS) GMD systems</li> <li>-Developed GMD DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages</li> <li>-Conducted Controls Validation Testing (CVT) of GMD mission systems and provide Plan of Action and Milestones to mitigate IA deficiencies</li> <li>-Conducted annual information assurance reviews on the GMD enclaves to assess compliance in implementing and maintaining IA controls</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Provide GMD Information Assurance Manager (IAM) civilian salaries</li> <li>-Conduct cyber security / Information Assurance (IA) engineering and architecture planning for GMD information technology systems</li> <li>-Plan and test the IA controls for BMDS GMD systems</li> <li>-Develop GMD DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages</li> <li>-Conduct Controls Validation Testing (CVT) of GMD mission systems and provide Plan of Action and Milestones to mitigate IA deficiencies</li> <li>-Conduct annual information assurance reviews on the GMD enclaves to assess compliance in implementing and maintaining IA controls</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Provide GMD Information Assurance Manager (IAM) civilian salaries</li> <li>-Conduct cyber security / Information Assurance (IA) engineering and architecture planning for GMD information technology systems</li> <li>-Plan and test the IA controls for BMDS GMD systems</li> <li>-Develop GMD DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages</li> <li>-Conduct Controls Validation Testing (CVT) of GMD mission systems and provide Plan of Action and Milestones to mitigate IA deficiencies</li> <li>-Conduct annual information assurance reviews on the GMD enclaves to assess compliance in implementing and maintaining IA controls</li> </ul>				
<b>Accomplishments/Planned Programs Subtotals</b>		3.475	4.394	4.563

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <i>Cyber Operations</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> N/A		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <i>Cyber Operations</i>
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<b>Support (\$ in Millions)</b>				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) - Civilian Salaries	MIPR	MDA : AL/VA	0.737	0.800		0.815	Oct 2015	0.826	Oct 2016	-		0.826	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Contract Support Services	C/CPFF	Booz Allen Hamilton, AI : Torch Technologies, AI	2.636	2.675		3.579	Nov 2015	3.737	Nov 2016	-		3.737	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.373	3.475		4.394		4.563		-		4.563	-	-	-

**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
<b>Project Cost Totals</b>	3.373	3.475	4.394	4.563	-	4.563	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <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
GMD Cybersecurity Mitigation Monitoring and Tracking	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
GMD Cybersecurity Program Policy / Risk Management	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
GMD Information Assurance Certification and Accreditation (C&A) Package Preparation/Submission	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
GMD Transition to Cybersecurity Risk Management Framework (CRMF)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
BMDS Cybersecurity Policy Development	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <i>Cyber Operations</i>

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MC08 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GMD Cybersecurity Mitigation Monitoring and Tracking	1	2015	4	2021
GMD Cybersecurity Program Policy / Risk Management	1	2015	4	2021
GMD Information Assurance Certification and Accreditation (C&A) Package Preparation/ Submission	1	2015	4	2021
GMD Transition to Cybersecurity Risk Management Framework (CRMF)	1	2015	4	2021
BMDS Cybersecurity Policy Development	1	2015	4	2021



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	124.331	58.560	56.513	41.721	-	41.721	37.936	33.836	35.027	32.584	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes as a result of decreases in Ballistic Missile Defense Midcourse Defense Segment. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

**A. Mission Description and Budget Item Justification**

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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	58.560	56.513	41.721
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	58.560	56.513	41.721

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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	C/CPAF	Various : Multi: AL, CA, CO, VA	11.458	1.227		0.010	Mar 2016	0.750	Jul 2017	-		0.750	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	MDA : Multi: AK, AL, CA, CO, VA	95.406	37.437		42.928	Oct 2015	30.681	Oct 2016	-		30.681	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (FFP)	C/FFP	PHACIL, INC : Multi: AK, AL, CA, CO, VA	0.420	12.010		1.568	Nov 2015	10.290	Jul 2017	-		10.290	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPR)	MIPR	Various : Multi: AK, AL, CO, CA, HI, VA	10.875	6.569		0.010	Apr 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AK, AL, CA, CO, HI, VA	1.912	0.345		11.997	Feb 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Sustainment Transportation	Reqn	Various : AK, AL, CA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPFF	Utah St Univ; JHU/ APL LLC : Multi: MD, UT	1.260	0.112		0.000		0.000		-		0.000	3.500	4.872	0
Program Wide Support - Facilities and Maintenance	MIPR	Various : Multi: AK, AL, CA, VA	3.000	0.860		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			124.331	58.560		56.513		41.721		-		41.721	-	-	-

**Remarks**  
Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>										<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>					
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	124.331	58.560		56.513		41.721		-		41.721	-	-	-

**Remarks**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603882C / <i>Ballistic Missile Defense Midcourse Defense Segment</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</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	672.539	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
MD11: <i>BMDs Radars</i>	627.519	236.819	216.880	219.503	-	219.503	137.144	134.259	161.902	148.004	Continuing	Continuing
MC11: <i>Cyber Operations</i>	1.543	1.132	1.239	1.045	-	1.045	1.067	1.089	1.111	1.133	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	43.477	22.396	10.273	9.529	-	9.529	6.682	6.467	8.631	9.284	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Beginning in FY 2015, funding for the BMDs Radars Test (MT11) Budget Project was realigned to the Ballistic Missile Defense Sensor Test Program Element (0604879C).

Beginning in FY 2015, funding for the Long Range Discrimination Radar (MD96) Budget Project was realigned to the Long Range Discrimination Radar Program Element (0604873C).

**A. Mission Description and Budget Item Justification**

The Ballistic Missile Defense System (BMDS) network of layered Sensors provides essential situational awareness and fire control data for the command and control of BMDS weapon systems, such as Ground-based Midcourse Defense (GMD), Aegis Ballistic Missile Defense, and Terminal High Altitude Area Defense (THAAD). The suite of remote ground-based sensors provide early warning, midcourse and terminal ballistic missile defense threat data enabling layered detection and tracking of ballistic missile targets, providing fire-control quality position, velocity, and discrimination data through Ground-Based Midcourse Defense Fire Control (GFC), or Command and Control, Battle Management, Communications (C2BMC).

Overlapping coverage of geographically diverse sensors provides improved threat track data, reduces the impact of the loss of any one sensor, and reduces the potential impact of countermeasures. The extended coverage and accuracy provided by a network of layered sensors increases the defensive footprint and reduces the number of target engagements required, thereby conserving interceptor inventory and maintaining a high probability of successful engagement. Networked forward-based sensors enable C2BMC to pair the best sensor coverage with the best available weapon system to provide the most effective defense against ballistic missile threats.

This Program Element includes discrimination improvement efforts, to develop and field an integrated set of capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture more capable of discriminating and destroying a re-entry vehicle with a high degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near-term, Mid-term, and Far-term discrimination improvements capability fielding. The discrimination improvements require a coordinated effort between Systems Engineering (PE 0603890C), Ground-based Midcourse Defense (PE 0603882C), BMD Sensors, C2BMC (PE 0603896C), Aegis BMD (PE 0603892C) and Advanced C4ISR (PE 0603179C).

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>
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The BMD Sensors Program contributes to regional missile defense through the following activities:

- Development, delivery and deployment/redeployment of remote, forward based Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) radars for operations or tests. Radars provide early warning, track, and discrimination data through all phases of ballistic missile flight. Through the BMDS C2BMC and coalition data links, the AN/TPY-2 provides fire control data to enable remote Standard Missile (SM)-3 engagements by Aegis BMD, to allow earlier engagement by the Arrow Weapon System, and to cue deployed THAAD and U.S. and partner PATRIOT batteries.
- Enhancements/development of AN/TPY-2 software across the fleet of radars. Lessons learned from each radar are addressed in new software builds that are developed, tested, and subsequently installed at each radar.

AN/TPY-2 radars can be configured to operate either as a THAAD Fire Unit Radar (terminal mode) or Forward-Based Radar. These radars are transportable, adding flexibility to respond to geographical changes in threats. The AN/TPY-2 used in a Forward-Based role detects and acquires ballistic missile threats and provides precision track and discrimination data during the boost and midcourse phases of flight. The BMDS C2BMC provides this track and discrimination data for cueing and engagements to GFC for GMD defense of the homeland and to C2BMC for Aegis BMD and other regional missile defense systems to support defense of U.S., deployed forces, friends, and allies. This track and discrimination data identifies the lethal object, significantly reduces the target uncertainty, and provides additional reaction time to increase the probability of successful BMDS engagements. The AN/TPY-2 used in terminal mode is an integral component of the THAAD Battery. The THAAD battery radar is capable of tracking multiple threats and multiple interceptors during engagements in the terminal phase. It provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The current and planned utilization of the AN/TPY-2 radars supports GMD, THAAD, and the Aegis Weapon System.

The BMDS sensor network also includes the COBRA DANE Radar at Eareckson Air Force Station, Alaska, and the Upgraded Early Warning Radars (UEWRs) at Beale Air Force Base, CA; Fylingdales Royal Air Force, United Kingdom, and Thule Air Force Base in Greenland.

The Ultra High Frequency Early Warning Radars (EWRs) have been upgraded to include missile defense functionality against long-range threats in addition to their existing Missile Warning and Space Surveillance missions.

The Clear EWR, located at Clear Air Force Station, AK, and the Cape Cod EWR, Located at Cape Cod Air Force Station, MA, are also being upgraded to include missile defense functionality. Upgrade activities began in CY 2012 and are expected to be completed in FY 2017. The addition of the Clear UEWR and Cape Cod UEWRs to the BMDS sensor architecture will improve BMDS sensor coverage and provide new engagement options against long-range missile threats.

The BMD Vision Study, conducted by MDA with USSTRATCOM, identified the need to enhance the discrimination capabilities of our sensors and weapon systems. There is an Enhanced Discrimination and sensors program that will improve discrimination capabilities of the AN/TPY-2, COBRA DANE, Sea Based X-Band, and the UEWR radars against the long range missile threat.



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>
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The BMDS Sensors Program also contributes to the testing and proving of the U.S. missile defense systems through Modeling and simulation (M&S) efforts, including: enhanced sensor models, development of Radio Frequency scene generators, integration of digital simulations into the BMDS M&S architecture, and Verification, Validation, and Accreditation of radar models.

MDA is conducting studies to determine optimal radar site locations for defense of the U.S. from Intercontinental Ballistic Missiles (ICBMs). The locations would include a site for deployment of a long-range discrimination radar and a potential homeport for the Sea-Based X-Band Radar (SBX) on the East Coast of the United States. The initial analysis will determine the operational areas where sensors could be placed to meet the sensor needs of the BMD system. Once this analysis is complete MDA will begin development of site scoring criteria and, in the case of the SBX, assessments of transit time and time on station for candidate home port options. MDA will then develop initial screening criteria for operations and maintenance. This will be the basis for selection of at least three sites for more detailed examination, including environmental impact studies.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	270.901	233.588	228.437	-	228.437
Current President's Budget	260.347	228.392	230.077	-	230.077
Total Adjustments	-10.554	-5.196	1.640	-	1.640
• Congressional General Reductions	0.000	-0.196			
• Congressional Directed Reductions	0.000	-5.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-6.176	0.000			
• SBIR/STTR Transfer	-4.378	0.000			
• Other Adjustment	0.000	0.000	1.640	-	1.640

**Change Summary Explanation**

The FY 2017 increase reflects the realignment of funds from the Operations and Maintenance appropriation for concept development and analysis of new discrimination capabilities for a medium range BMD sensor to improve the defensive coverage of Hawaii.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD11: <i>BMDS Radars</i>	627.519	236.819	216.880	219.503	-	219.503	137.144	134.259	161.902	148.004	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Activities in this project include:

- Development of future Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) and Upgraded Early Warning Radar (UEWR) capabilities
- Development of radar discrimination advanced algorithms for X-Band radars and selectable X-Band software for AN/TPY-2 radars to address evolving threats
- System engineering, software development, and testing support for X-Band, COBRA DANE, and UEWR sensors
- Modeling and Simulation (M&S) efforts to include: enhanced sensor models, development of Radio Frequency scene generators, integration of digital simulations into the Ballistic Missile Defense System (BMDS), M&S architecture, and Verification, Validation, and Accreditation of radar models
- Participation in Ballistic Missile Defense System (BMDS) element ground test campaigns

The discrimination improvement effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. Sensors will continue development of discrimination improvement Mid-term design and test support for SBX and Far-term trade analysis and planning.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Basic Development Program	46.695	38.014	35.279
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
-Conducted ground test and flight test for Phase Adaptive Approach (PAA) Phase II and conducted Materiel Release Analysis for the hardware and software delivery			
-Completed closure of several conditions as part of the Materiel Release Closure Plan for Forward Based Mode (FBM) and Terminal Mode (TM) Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2)			
-Obtained Conditional Materiel Release for the Common X-Band software and hardware configuration to support transition of FBM radars to Army for Soldier operation			
-Developed and deployed the Common X-Band software and hardware to address Reliability, Availability, and Maintainability conditions; to promote reliability growth; and to enhance acquisition and discrimination capability in the suite of AN/TPY-2 radars; deployed capability to CENTCOM and EUCOM FBM sites			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Continued performing Upgrade Early Warning Radar (UEWR) development such as the reinforcement of the surveillance fence that results in the increased probability of acquisition</li> <li>-Continued to conduct Information Assurance (IA) certification and accreditation of all Sensors systems</li> <li>-Continued to support Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Complete ground test and flight test for Phased Adaptive Approach (PAA) Phase II and begin Materiel Release Analysis for software delivery</li> <li>-Complete closure of several conditions as part of the Materiel Release Closure Plan for Forward Based Mode (FBM) and Terminal Mode (TM) Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2)</li> <li>-Continue software development of a new discrimination architecture that supports the addition of new algorithms that will support EPAA Phase III and THAAD Threat Development required to provide enhanced capability to the Warfighter in a tactical environment</li> <li>-Optimize software to take advantage of new increased processing capability</li> <li>-Continue performing Upgrade Early Warning Radar (UEWR) development such as improving the probability of threat acquisition</li> <li>-Continue to conduct Information Assurance (IA) certification and accreditation of all Sensors systems</li> <li>-Continue to support Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Decrease due to completion of UEWR development for the reinforcement of the surveillance fence resulting in increased probability of acquisition and the scheduled transition of the Ground Based Radar Prototype (GBR-P)</li> <li>-Continue analysis of software performance during flight and ground testing of Phased Adaptive Approach (PAA) Phase II and conduct Materiel Release Analysis for software delivery</li> <li>-Continue Materiel Release Closure Plan for Forward Based Mode (FBM) and Terminal Mode (TM) Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) radars. Materiel Release Closure Plan includes Reliability, Availability, and Maintainability Program to promote reliability growth in the suite of AN/TPY-2 radars via product improvements and Electronic Equipment Unit (EEU) depot upgrade for computer processing improvements</li> <li>-Continue software development of a new discrimination architecture that supports the addition of new algorithms required to provide enhanced capability to the Warfighter in a tactical environment for EPAA Phase III and THAAD Threat Development</li> <li>-Continue to optimize software to take advantage of new increased processing capability</li> <li>-Continue to conduct Information Assurance (IA) certification and accreditation of all Sensors systems</li> <li>-Continue to support Bi-Annual IA testing for vulnerabilities and Third Party IA assessment of the systems</li> </ul>				
<b>Title:</b> BMDS Radars Modeling & Simulation (M&S)		33.316	37.343	26.456
<b>Articles:</b>		-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Continued to maintain digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/ Transportable Radar Surveillance and Control (AN/TPY2)(CX1.2/2.0), Sea Based X-Band Radar (SBX) 2.3, Upgraded Early Warning Radar (UEWR) 11-1, and Cobra Dane Upgrade(CDU) 2.6.9 and Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME)</li> <li>-Continued updates to the Objective Stimulation Framework (OSF)-E interfaces allowing for future events utilizing the OSF-E test architecture</li> <li>-Continued to support Warfighter games and exercises</li> <li>-Executed FY 2015 element-level ground test campaign to support anchoring M&amp;S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME)</li> <li>-Supported technical assessments and performance assessments, using OSM and other models/tools, as appropriate</li> <li>-Continued full development of replacement RF scene generator for AN/TPY-2, Sea Based X-Band Radar (SBX), and Upgraded Early Warning Radars (UEWR)</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Continue to maintain digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/ Transportable Radar Surveillance and Control (AN/TPY2)(CX 2.x), Sea Based X-Band Radar (SBX) 3.x, Upgraded Early Warning Radar (UEWR) 11-1, and Cobra Dane Upgrade(CDU) 2.7.1</li> <li>-Continue updates to the Objective Simulation Framework (OSF)-E interfaces allowing for future events utilizing the OSF-E test architecture</li> <li>-Continue to support Warfighter games and exercises</li> <li>-Execute FY 2016 element-level ground test campaign to support anchoring M&amp;S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME)</li> <li>-Support technical assessments and performance assessments, using OSM and other models/tools, as appropriate</li> <li>-Continue full development of replacement RF scene generator for AN/TPY-2, Sea Based X-Band Radar (SBX), Upgraded Early Warning Radars (UEWR), and Cobra Dane</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Decrease due to completion of updates to the (OSF)-E interface and completed development of replacement RF scene generator</li> <li>-Continue to maintain digital and Hardware in the Loop (HWIL) representations of the tactical versions of Army Navy/ Transportable Radar Surveillance and Control (AN/TPY-2)(CX 3.0.0), Sea Based X-Band Radar (SBX) 3.x/4.x, Upgraded Early Warning Radar (UEWR) 11-1, and COBRA DANE Upgrade(CDU) 2.7.2.</li> </ul>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Continue to support Warfighter games, exercises and training</li> <li>-Support technical assessments and performance assessments, using OSM and other models/tools, as appropriate</li> <li>-Maintain replacement RF scene generator for AN/TPY-2, Sea Based X-Band Radar (SBX), and Upgraded Early Warning Radars (UEWR)</li> </ul>			
<p><b>Title:</b> Capability Development Program</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Upgraded the entire AN/TPY-2 fleet (Forward-based and THAAD Modes) with a common secure hardware and software configuration</li> <li>-Continued providing engineering support to enable compliance with BMD System Specification Threat Capabilities</li> <li>-Initiated X86 Performance Optimization &amp; Requirements to enhance and increase X86 processing speed</li> <li>-Tested and conducted Materiel Release Analysis on PAA Phase 2 Capability to address regional threats</li> <li>-Conducted software development to support THAAD Debris Mitigation Updates</li> <li>-Continued to perform object classification performance updates to Cobra Dane and UEWR radars</li> <li>-Continued development of new discrimination capabilities for X-Band Radar</li> <li>-Completed Near-term discrimination improvements capability development and Element level testing of sensor database improvements for the Sea Based X-Band Radar, AN/TPY-2 forward based radar, and Cobra Dane</li> <li>-Completed integration phase of Near-term discrimination improvements ground testing via GTI-06</li> <li>-Conducted data collection and analysis for final assessment of discrimination technology candidates planned for Mid-term discrimination improvements</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Upgrade the entire AN/TPY-2 fleet (Forward-based and THAAD Modes) with a common secure hardware and software configuration</li> <li>-Continue providing engineering support to enable compliance with BMD System Specification Threat Capabilities</li> <li>-Continue X86 Performance Optimization &amp; Requirements to enhance and increase X86 processing speed</li> <li>-Continue PAA Phase III capability development to address the advanced threats prevalent in 2016 and beyond</li> <li>-Continue testing and Materiel Release Analysis on PAA Phase 2 Capability to address the advanced threats prevalent in 2016 and beyond</li> <li>-Continue software development to support THAAD Launch on Remote, Debris Mitigation Updates, and Threat Updates</li> <li>-Complete transition of Debris Mitigation to Objective Debris Mitigation Phase II</li> <li>-Complete capability fielding of Sea Based X-Band Radar and AN/TPY-2 Forward Based Near-term discrimination improvements</li> </ul>	<p>63.035</p> <p><b>Articles:</b> -</p>	<p>53.090</p> <p>-</p>	<p>70.527</p> <p>-</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Continue development of new Mid-Term discrimination improvements for X-Band radars</li> <li>-Continue to perform object classification performance updates to UEWR radars</li> <li>-Participate in Far-term discrimination improvement threat models specification</li> <li>-Develop model of Far-term technologies in support of the Far-term discrimination improvements program</li> <li>-Participate in planning and conduct technology trades and analysis to refine capabilities to mitigate the Far-term discrimination improvement threats</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Increase due to Electronic Protection development efforts and concept develop and analysis for a a medium range BMD sensor to improve the defensive coverage of Hawaii</li> <li>-Continue development of new Mid-Term discrimination improvements for X-Band radars</li> <li>-Continue to perform object classification performance updates to UEWR radars</li> <li>-Continue development of sensor discrimination improvements:                             <ul style="list-style-type: none"> <li>--Continue design, development and test planning of SBX threat discrimination improvements</li> <li>--Conduct Far-term discrimination and countermeasure mitigation capability development</li> <li>--Define decision logic improvement solutions which are sufficiently mature to initiate preliminary design</li> <li>--Complete definition of fire control/weapon handover improvements and initiate preliminary design</li> <li>--Execute system requirements review for radar electronic protection improvements</li> </ul> </li> <li>-Continue X86 Performance Optimization &amp; Requirements to enhance and increase X86 processing speed</li> <li>-Continue PAA Phase III capability development to address the advanced threats prevalent in 2017 and beyond</li> <li>-Continue upgrading the entire AN/TPY-2 fleet (Forward-based and THAAD Modes) with a common secure hardware and software configuration</li> <li>-Continue testing and Materiel Release Analysis on PAA Phase II Capability to address the advanced threats prevalent in 2017 and beyond</li> <li>-Continue software development to support THAAD Launch on Remote, Debris Mitigation Updates, and Threat Updates</li> <li>-Continue development efforts for Objective Debris Mitigation</li> <li>-Continue Electronic Protection development efforts to reduce or eliminate the effect of electronic attack on sensors</li> <li>-Initiate the concept development and analysis of new discrimination capabilities for a medium range BMD sensor to improve the defensive coverage of Hawaii</li> </ul>				
<b>Title:</b> Sensors Directorate Operations		65.043	66.883	71.983
		<b>Articles:</b>	-	-
<b>Description:</b> N/A				
<b>FY 2015 Accomplishments:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Continued to provide operations support</p> <p><b>FY 2016 Plans:</b></p> <p>-Continue to provide operations support</p> <p><b>FY 2017 Plans:</b></p> <p>-Increase due to the addition of the Long Range Discrimination Radar (LRDR) program office</p> <p>-Continue to provide operations support</p>				
<p><b>Title:</b> Upgrade Clear Early Warning Radar</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Continued upgrade of Clear and Cape Cod Early Warning Radars to include but not limited to:</p> <p>-Purchased and manufactured Upgraded Early Warning Radar (UEWR) Receiver/Exciters</p> <p>-Purchased non-original manufacturer equipment</p> <p>-Continued adaptation of hardware and software to UEWR infrastructure</p> <p>-Continued to support Ballistic Missile Defense Systems communications and architecture work</p> <p>-Continued facility design and work</p> <p>-Continued upgrade of UEWR Huntsville System Test Lab with Clear and Cape Cod capability</p> <p><b>FY 2016 Plans:</b></p> <p>-Continue upgrade of Clear and Cape Cod Early Warning Radars to include but not limited to:</p> <p>-Continue manufacturing of Upgraded Early Warning Radar (UEWR) Receiver/Exciter</p> <p>-Continue purchase of non-original manufacturer equipment</p> <p>-Continue adaptation of hardware and software to UEWR infrastructure</p> <p>-Continue to support Ballistic Missile Defense Systems communications and architecture work</p> <p>-Continue facility design and work and installation/test at Cape Cod and Clear sites</p> <p>-Complete upgrade of UEWR Huntsville System Test Lab with Clear and Cape Cod capability</p> <p>-Prepare for removal of legacy equipment at Clear site</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease due to scaling back of deployment activities, removing of legacy equipment, and contractor performing interim logistics support of prime mission equipment in preparation for missile defense certification</p> <p>-Continue upgrade of Clear and Cape Cod Early Warning Radars to include but not limited to:</p>		28.730	21.550	15.258
		<b>Articles:</b>	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-Continue adaptation of hardware and software to UEWR infrastructure -Continue to support BMDS communications and architecture work -Continue installation/test at Cape Cod site -Prepare for removal of legacy equipment at Cape Cod site			
<b>Accomplishments/Planned Programs Subtotals</b>	236.819	216.880	219.503

**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
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	49.606	137.564	162.012	-	162.012	310.347	76.843	98.874	102.320	Continuing	Continuing
• 0604879C: <i>Ballistic Missile Defense Sensor Test</i>	60.048	83.597	83.250	-	83.250	87.346	100.132	100.073	86.937	Continuing	Continuing
• 13999903: <i>Planning and Design, Defense Wide</i>	38.704	0.000	8.233	-	8.233	8.397	8.525	8.822	0.000	Continuing	Continuing

**Remarks**



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>

**D. Acquisition Strategy**

The Radar Sustainment Contract (RSC) was awarded in 2012 to sustain all the X-Band Radars including the Army Navy/Transportable Radar Surveillance (AN/TPY-2); the Sea Based X-Band (SBX) Radar; and the Ground Based Radar Prototype (GBR-P). The contract provides sustainment of previously developed X-Band radar products, such as: 1) Software -maintenance of existing software developed to support the X-Band Radars; 2) Models & Simulation; (a) development, maintenance, and verification of high fidelity models, (b) support for war games and exercises, (c) support for performance assessment events; 3) Engineering Services -engineering support for deployed radars to facilitate maintenance efforts which may include but are not limited to hardware obsolescence studies, hardware redesign, technology insertion, and refurbishment efforts; 4) BMDS Test Planning, Execution, and Analysis -planning, execution and analysis of BMDS test requirements for previously developed hardware and software in accordance with the MDA Integrated Master Test Plan (IMTP). The contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract.

MDA conducted a full and open competition for the Clear Early Warning Radar (EWR) Upgrade. MDA issued a Request for Proposal (RFP) on this effort in 2nd quarter FY 2012 with award in 4th quarter FY 2012. The Cape Cod EWR upgrade option under this contract was awarded in 1st quarter FY 2013.

The BMDS Communications System Complex-Transportable (BCSC-T) Program Plan addresses the design, development, acquisition, testing, integration, activation, and fielding of the BCSC-T. The overall executing agent is the Program Manager - Communications and Transmission Systems (PMDCATS). Lockheed Martin Mission Systems (C2BMC prime contractor) via an Other Transaction Agreement provides on-site support.

**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				R-1 Program Element (Number/Name)				Project (Number/Name)							
0400 / 4				PE 0603884C / Ballistic Missile Defense Sensors				MD11 / BMDS Radars							
Product Development (\$ 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
Basic Development Program - Ground Based Radar Prototype (GBR-P) Caretaker	MIPR	SMDC : AL	3.700	2.139		2.725	Nov 2015	0.000		-		0.000	0	8.564	0
Basic Development Program - Information Assurance AN/TPY-2	SS/CPFF	Raytheon : MA	5.499	5.050		5.332	Nov 2015	4.708	Nov 2016	-		4.708	Continuing	Continuing	Continuing
Basic Development Program - Information Assurance SBX	SS/CPFF	Raytheon : MA	0.219	0.222		0.215	Nov 2015	0.221	Nov 2016	-		0.221	Continuing	Continuing	Continuing
Basic Development Program - Material Release Get Well Plan	SS/CPFF	Raytheon : MA	1.015	8.060		1.892	Nov 2015	4.796	Nov 2016	-		4.796	Continuing	Continuing	Continuing
Basic Development Program - Sys Integration & Tech Assessments	SS/CPFF	Raytheon : MA/AL	5.758	6.555		5.163	Nov 2015	4.581	Nov 2016	-		4.581	Continuing	Continuing	Continuing
Basic Development Program - X-Band Software Enhancements/ Development	SS/CPFF	Raytheon : AL	29.100	24.669		22.687	Nov 2015	20.973	Nov 2016	-		20.973	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - M&S Development	SS/CPFF	Raytheon, Northrup Grumman : MA, CO	67.974	25.974		25.780	Nov 2015	19.525	Nov 2016	-		19.525	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - VV&A of Models	MIPR	AMRDEC : AL	29.359	5.627		9.640	Nov 2015	4.971	Nov 2016	-		4.971	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) - Warfighter Exercises	SS/CPFF	Raytheon : MA	4.494	1.715		1.923	Nov 2015	1.960	Nov 2016	-		1.960	Continuing	Continuing	Continuing
Capability Development Program - Advanced Technology Discrimination	SS/CPAF	Raytheon : MA	0.000	5.860		7.322	Nov 2015	16.475	Nov 2016	-		16.475	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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<b>Product Development (\$ in Millions)</b>				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			
Capability Development Program - Electronic Protection	SS/CPAF	Raytheon : MA	0.000	0.000		0.000		12.889	Nov 2016	-		12.889	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Defense of Hawaii Radar (EDHR) Studies and Analysis	MIPR	TBD : TBD	0.000	0.000		0.000		3.000	Nov 2016	-		3.000	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination	C/CPAF	USAF, Raytheon : Hanscom AFB MA	39.984	22.943		15.905	Nov 2015	6.203	Nov 2016	-		6.203	Continuing	Continuing	Continuing
Capability Development Program - Enhanced Discrimination Studies and Analysis Support	MIPR	SED/AMRDEC, MIT/LL/JHU/APL : AL/MA/VA	7.204	0.000		0.000		0.000		-		0.000	0	7.204	0
Capability Development Program - Program AN/TPY-2 Capability Development	SS/CPAF	Raytheon : MA	13.833	34.232		29.863	Nov 2015	31.960	Nov 2016	-		31.960	Continuing	Continuing	Continuing
Capability Development Program - UEWR Capability Development	TBD	USAF : Hanscom AFB MA	3.770	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sensors Directorate Operations - Army Hybrid Program Office	MIPR	SMDC : AL	1.725	1.323		1.987	Nov 2015	1.741	Nov 2016	-		1.741	Continuing	Continuing	Continuing
Sensors Directorate Operations - Govt Salaries, Travel, Training (MDA Sensors)	MIPR	MDA : AL, VA, MA	88.725	21.996		22.203	Nov 2015	23.198	Nov 2016	-		23.198	Continuing	Continuing	Continuing
Sensors Directorate Operations - MiDAESS, FFRDC/UARC	SS/CPAF	CSS, APL, LL, OGA : AL/MA/VA/MD	176.788	37.234		34.522	Nov 2015	38.884	Nov 2016	-		38.884	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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<b>Product Development (\$ in Millions)</b>				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			
Sensors Directorate Operations - Network and Infrastructure Services	SS/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	23.705	1.663		5.595	Oct 2015	4.872	Nov 2016	-		4.872	Continuing	Continuing	Continuing
Sensors Directorate Operations - Other Govt Agencies	MIPR	SMDC/AL, Hanscom AFB : MA	24.898	2.827		2.576	Nov 2015	3.288	Nov 2016	-		3.288	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - BCN Upgrades	MIPR	MDA C2BMC / DISA : MA, AK	16.863	0.511		0.489	Nov 2015	0.330	Nov 2016	-		0.330	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - Facilities Site Activation/Admin Comms	MIPR	MDA C2BMC : MA, AK	3.448	0.499		1.775	Nov 2015	1.197	Nov 2016	-		1.197	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - GMD Fire Control Integration	SS/CPAF	Boeing/AK/AL, Raytheon : MA	5.139	0.215		0.588	Nov 2015	0.383	Nov 2016	-		0.383	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - Program Office - OGA	MIPR	USAF : Hanscom AFB, MA	1.755	0.000		0.000		0.000		-		0.000	0	1.755	0
Upgrade Clear Early Warning Radar - Radar Upgrade -- Prime Contractor	C/CPAF	Raytheon : MA	66.594	26.221		16.096	Nov 2015	13.348	Nov 2016	-		13.348	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar - SPA Upgrade & Processor Rehost	MIPR	USAF : Hanscom AFB, MA	1.848	0.000		0.000		0.000		-		0.000	0	1.848	0
Upgrade Clear Early Warning Radar - UEWR System Test Lab Upgrades	SS/CPAF	Raytheon : MA/AL	4.122	1.284		2.602	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			627.519	236.819		216.880		219.503		-		219.503	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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<b>Product Development (\$ in Millions)</b>				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			

**Remarks**  
Note: Clear Early Warning Upgrade Program includes upgrade of the Cape Cod EWR.

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
Operations and sustainment of Upgraded Early Warning Radar (UEWR), COBRA DANE (CD), and Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) Radars Contract Logistics Support (CLS) are Operations and Maintenance (O&M) Defense-Wide appropriations and are described in the Missile Defense Agency (MDA) O- Documents.

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016					
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>			<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>					
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	627.519	236.819		216.880		219.503		-	219.503	-	-	-

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</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
(EX) European Air & Missile Defense Exercise Alliance 15			▲																									
SNG-C-H-1			✦	✦	✦																							
(WG) Huntsville Wargames 15				▲																								
(EX) Vigilant Shield/Global Thunder 16				△																								
(EX) Host Nation 16					✦	✦																						
SNG-S-D1					✦	✦	✦																					
SNG-A-H-1					✦	✦	✦	✦																				
SNG-U-H-1					✦	✦	✦	✦																				
(EX) Fleet Synthetic Training-Joint 16					△																							
(EX) Key Resolve 16					△																							
(EX) Steadfast Alliance 16					✦	✦																						
SNG-S-H-1					✦	✦	✦	✦																				
(WG) Ronald Reagan Forum 16						△																						
(EX) European Air & Missile Defense Exercise Alliance 16						△																						
SNG-C-D-1						✦	✦																					
SNG-U-D-1						✦	✦	✦																				
(WG) Demonstration, Table-top Exercises & Experiments 16						✦	✦	✦																				
(WG) Huntsville Wargames 16							△																					
SNG C-H-2						✦	✦																					
(WG) BMDS Wargames 17						✦	✦	✦	✦																			
(EX) EPOCH PLANEX 18								△																				
(EX) Global Response Exercise (GREx) 16								△																				
(EX) Fleet Synthetic Training-Joint 17									△																			
(EX) Key Resolve 17									△																			
(EX) Austere Challenge 17									✦	✦	✦	✦	✦	✦														
(EX) Steadfast Alliance 17									✦	✦																		
(EX) European Air & Missile Defense Exercise Alliance 17										△																		

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</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
(WG) Demonstration, Table-top Exercises & Experiments 17										✦	✦	✦																
SNG-A-D-1										✦	✦	✦																
(EX) KEEN Edge 18										✦	✦	✦	✦															
(WG) Huntsville Wargames 17											△																	
SNG-H-2										✦	✦																	
SNG-C-H-3										✦	✦																	
SND-A-H-2										✦	✦	✦																
(EX) Air and Missile Defense Exercise Series 18											△																	
(EX) EPOCH PLANEX 19											△																	
(EX) Vigilant Shield/Global Thunder 17											△																	
(EX) Global Lightning 18											✦	✦																
SNG-S-D-2											✦	✦																
SNG-U-D-2											✦	✦																
(EX) Key Resolve 18												△																
(EX) Host Nation 18												✦	✦															
(EX) Global Response Exercise (GREx) 18												✦	✦															
(EX) Steadfast Alliance 18												✦	✦															
(EX) European Air & Missile Defense Exercise Alliance 18													△															
SNG-D-3												✦	✦															
(WG) Demonstration, Table-top Exercises & Experiments 18												✦	✦	✦														
(WG) Huntsville Wargames 18													△															
(WG) BMDS Wargames 19													✦	✦	✦	✦												
(WG) Nimble Titan Year 1 20													✦	✦	✦	✦												
(EX) Air and Missile Defense Exercise Series 19														△														
(EX) EPOCH PLANEX 20														△														
(EX) Vigilant Shield/Global Thunder 18														△														
SNG-A-D-2														✦	✦													
(EX) Global Lightning 19														✦	✦													
SNG-A-H-3														✦	✦													
(EX) EPOCH PLANEX 21														✦	✦	✦	✦	✦										
(EX) Fleet Synthetic Training-Joint 18															△													



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</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
(EX) Fleet Synthetic Training-Joint 19																												
(EX) Key Resolve 19																												
(EX) Austere Challenge 19																												
(EX) Steadfast Alliance 19																												
(EX) European Air & Missile Defense Exercise Alliance 19																												
SNG-U-H-2																												
SNG-C-D-2																												
(WG) Demonstration, Table-top Exercises & Experiments 19																												
(EX) KEEN Edge 20																												
(WG) Huntsville Wargames 19																												
SNG-C-H-4																												
(EX) Air and Missile Defense Exercise Series 20																												
(EX) Vigilant Shield/Global Thunder 19																												
(EX) Global Lightning 20																												
SNG-U-D-3																												
SNG-S-H-4																												
(EX) Fleet Synthetic Training-Joint 20																												
(EX) Global Response Exercise (GREx) 20																												
(EX) Key Resolve 20																												
(EX) Steadfast Alliance 20																												
(EX) Host Nation 20																												
(EX) European Air & Missile Defense Exercise Alliance 20																												
SNG-S-D-4																												
(WG) Demonstration, Table-top Exercises & Experiments 20																												
(WG) Huntsville Wargames 20																												
(WG) BMDS Wargames 21																												
(EX) EPOCH PLANEX 22																												
(EX) Air and Missile Defense Exercise Series 21																												
(EX) Vigilant Shield/Global Thunder 20																												
(EX) Global Lightning 21																												

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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Significant Event Complete ▲  
 Significant Event Planned △  
 Milestone Decision Complete ★  
 Milestone Decision Planned ☆  
 Element Test Complete ◆  
 Element Test Planned ◇  
 System Level Test Complete ●  
 System Level Test Planned ○  
 Complete Activity ✦  
 Planned Activity ✧

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
(EX) Fleet Synthetic Training-Joint 21																																		
(EX) Key Resolve 21																																		
(EX) Austere Challenge 21 (Continues into FY 2022)																																		
(EX) Steadfast Alliance 21																																		
(EX) European Air & Missile Defense Exercise Alliance 21																																		
(WG) Demonstration, Table-top Exercises & Experiments 21																																		
(EX) KEEN Edge 22																																		
(WG) Huntsville Wargames 21																																		

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) European Air & Missile Defense Exercise Alliance 15	3	2015	3	2015
SNG-C-H-1	3	2015	1	2016
(WG) Huntsville Wargames 15	4	2015	4	2015
(EX) Vigilant Shield/Global Thunder 16	1	2016	1	2016
(EX) Host Nation 16	1	2016	2	2016
SNG-S-D1	1	2016	3	2016
SNG-A-H-1	1	2016	4	2016
SNG-U-H-1	1	2016	4	2016
(EX) Fleet Synthetic Training-Joint 16	2	2016	2	2016
(EX) Key Resolve 16	2	2016	2	2016
(EX) Steadfast Alliance 16	2	2016	3	2016
SNG-S-H-1	2	2016	1	2017
(WG) Ronald Reagan Forum 16	3	2016	3	2016
(EX) European Air & Missile Defense Exercise Alliance 16	3	2016	3	2016
SNG-C-D-1	3	2016	4	2016
SNG-U-D-1	3	2016	1	2017
(WG) Demonstration, Table-top Exercises & Experiments 16	3	2016	1	2017
(WG) Huntsville Wargames 16	4	2016	4	2016
SNG C-H-2	4	2016	1	2017
(WG) BMDS Wargames 17	4	2016	3	2017
(EX) EPOCH PLANEX 18	1	2017	1	2017
(EX) Global Response Exercise (GREx) 16	1	2017	1	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) Fleet Synthetic Training-Joint 17	2	2017	2	2017
(EX) Key Resolve 17	2	2017	2	2017
(EX) Austere Challenge 17	2	2017	3	2018
(EX) Steadfast Alliance 17	2	2017	3	2017
(EX) European Air & Missile Defense Exercise Alliance 17	3	2017	3	2017
(WG) Demonstration, Table-top Exercises & Experiments 17	3	2017	1	2018
SNG-A-D-1	3	2017	1	2018
(EX) KEEN Edge 18	3	2017	2	2018
(WG) Huntsville Wargames 17	4	2017	4	2017
SNG-H-2	4	2017	1	2018
SNG-C-H-3	4	2017	1	2018
SND-A-H-2	4	2017	2	2018
(EX) Air and Missile Defense Exercise Series 18	1	2018	1	2018
(EX) EPOCH PLANEX 19	1	2018	1	2018
(EX) Vigilant Shield/Global Thunder 17	1	2018	1	2018
(EX) Global Lightning 18	1	2018	2	2018
SNG-S-D-2	1	2018	2	2018
SNG-U-D-2	1	2018	2	2018
(EX) Key Resolve 18	2	2018	2	2018
(EX) Host Nation 18	2	2018	3	2018
(EX) Global Response Exercise (GREx) 18	2	2018	3	2018
(EX) Steadfast Alliance 18	2	2018	3	2018
(EX) European Air & Missile Defense Exercise Alliance 18	3	2018	3	2018
SNG-D-3	3	2018	4	2018
(WG) Demonstration, Table-top Exercises & Experiments 18	3	2018	1	2019

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Huntsville Wargames 18	4	2018	4	2018
(WG) BMDS Wargames 19	4	2018	3	2019
(WG) Nimble Titan Year 1 20	4	2018	3	2019
(EX) Air and Missile Defense Exercise Series 19	1	2019	1	2019
(EX) EPOCH PLANEX 20	1	2019	1	2019
(EX) Vigilant Shield/Global Thunder 18	1	2019	1	2019
SNG-A-D-2	1	2019	2	2019
(EX) Global Lightning 19	1	2019	2	2019
SNG-A-H-3	1	2019	2	2019
(EX) EPOCH PLANEX 21	1	2019	1	2020
(EX) Fleet Synthetic Training-Joint 18	2	2019	2	2019
(EX) Fleet Synthetic Training-Joint 19	2	2019	2	2019
(EX) Key Resolve 19	2	2019	2	2019
(EX) Austere Challenge 19	2	2019	3	2020
(EX) Steadfast Alliance 19	2	2019	3	2019
(EX) European Air & Missile Defense Exercise Alliance 19	3	2019	3	2019
SNG-U-H-2	3	2019	4	2019
SNG-C-D-2	3	2019	4	2019
(WG) Demonstration, Table-top Exercises & Experiments 19	3	2019	1	2020
(EX) KEEN Edge 20	3	2019	2	2020
(WG) Huntsville Wargames 19	4	2019	4	2019
SNG-C-H-4	4	2019	1	2020
(EX) Air and Missile Defense Exercise Series 20	1	2020	1	2020
(EX) Vigilant Shield/Global Thunder 19	1	2020	1	2020
(EX) Global Lightning 20	1	2020	2	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD11 / <i>BMDS Radars</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
SNG-U-D-3	1	2020	2	2020
SNG-S-H-4	1	2020	2	2020
(EX) Fleet Synthetic Training-Joint 20	2	2020	2	2020
(EX) Global Response Exercise (GREx) 20	2	2020	2	2020
(EX) Key Resolve 20	2	2020	2	2020
(EX) Steadfast Alliance 20	2	2020	3	2020
(EX) Host Nation 20	3	2020	3	2020
(EX) European Air & Missile Defense Exercise Alliance 20	3	2020	3	2020
SNG-S-D-4	3	2020	4	2020
(WG) Demonstration, Table-top Exercises & Experiments 20	3	2020	1	2021
(WG) Huntsville Wargames 20	4	2020	4	2020
(WG) BMDS Wargames 21	4	2020	3	2021
(EX) EPOCH PLANEX 22	1	2021	1	2021
(EX) Air and Missile Defense Exercise Series 21	1	2021	1	2021
(EX) Vigilant Shield/GlobalThunder 20	1	2021	1	2021
(EX) Global Lightning 21	1	2021	2	2021
(EX) Fleet Synthetic Training-Joint 21	2	2021	2	2021
(EX) Key Resolve 21	2	2021	2	2021
(EX) Austere Challenge 21 (Continues into FY 2022)	2	2021	3	2022
(EX) Steadfast Alliance 21	2	2021	3	2021
(EX) European Air & Missile Defense Exercise Alliance 21	3	2021	3	2021
(WG) Demonstration, Table-top Exercises & Experiments 21	3	2021	1	2022
(EX) KEEN Edge 22	3	2021	2	2022
(WG) Huntsville Wargames 21	4	2021	4	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <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
MC11: <i>Cyber Operations</i>	1.543	1.132	1.239	1.045	-	1.045	1.067	1.089	1.111	1.133	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The funds in this project will be utilized to complete transitioning to and the sustainment of the new DoDI 8510.01 Risk Management Framework (RMF) for DoD Information Technology (IT) requirement for the MDA Sensors Directorate and conduct Security Control Assessments (SCA) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plans of Action and Milestones for MDA Sensors mission systems. It also includes support for external cybersecurity assessments and penetration testing of the Sensors mission systems, both in laboratory-based Enterprise Cyber Range Experiments and in ground test activities, in accordance with the Director, Operational Test and Evaluation (DOT&E) directive. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, Cybersecurity Risk Assessment results, cybersecurity scorecard, and Authorizing Official (AO) authorization decisions) and POA&Ms for all MDA information systems.

This project supports the monitoring, prioritization, 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 (SIAO)/Security Control Assessor (SCA) and Authorizing Official (AO). 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
<b>Title:</b> Network / System Certification and Accreditation (C&A)	1.132	1.239	1.045
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
<ul style="list-style-type: none"> <li>- Continued to fund Sensors Directorate Information Assurance Manager (IAM) civilian salaries</li> <li>- Continued cyber security / information assurance engineering and architecture planning for Sensors information technology systems</li> <li>- Continued to plan and test the IA controls for Ballistic Missile Defense System (BMDS) Sensors systems</li> <li>- Continued to develop Sensors DIACAP certification and accreditation packages</li> <li>- Continued to conduct Controls Validation Testing (CVT) of Sensors mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <i>Cyber Operations</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Continued to conduct annual information assurance reviews on the Sensors enclaves to assess compliance in implementing and maintaining IA controls</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue to fund Sensors Directorate Information System Security Manager (ISSM) civilian salaries</li> <li>- Continue cybersecurity / information assurance engineering and architecture planning for Sensors information technology systems</li> <li>- Continue to plan and test the cybersecurity / information assurance controls for Ballistic Missile Defense System (BMDS) Sensors systems</li> <li>- Continue to maintain Sensors DIACAP certification and accreditation packages and begin the transition to the new Risk Management Framework (RMF) accreditation paradigm for Sensors-managed information systems.</li> <li>- Continue to conduct Controls Validation Testing (CVT) / Security Controls Assessment (SCA) of Sensors mission and support systems and provide and maintain Plans of Action and Milestones to mitigate cybersecurity / information assurance deficiencies</li> <li>- Continue to conduct annual cybersecurity / information assurance reviews on the Sensors enclaves to assess compliance in implementing and maintaining IA controls</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Continue to fund Sensors Directorate Information System Security Manager (ISSM) civilian salaries</li> <li>-Continue cybersecurity / information assurance engineering and architecture planning for Sensors information technology systems</li> <li>-Continue to plan and test the cybersecurity / information assurance controls for BMDS Sensors systems</li> <li>-Continue to maintain Sensors DIACAP certification and accreditation packages and continue transitioning to the new Risk Management Framework (RMF) accreditation paradigm for Sensors-managed information systems.</li> <li>-Continue to conduct Controls Validation Testing (CVT) / Security Controls Assessment (SCA) of Sensors mission and support systems and provide and maintain Plans of Action and Milestones to mitigate cybersecurity / information assurance deficiencies</li> <li>-Continue to support increasingly complex DOT&amp;E-directed cybersecurity assessments in both ECRE and upcoming ground test events</li> <li>-Continue to conduct annual cybersecurity / information assurance program reviews on the Sensors enclaves to assess compliance in implementing and maintaining IA controls</li> </ul>				
<b>Accomplishments/Planned Programs Subtotals</b>		1.132	1.239	1.045



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <i>Cyber Operations</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0901598C: <i>Management HQ - MDA</i>	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing
• 13999903: <i>Planning and Design, Defense Wide</i>	38.704	0.000	8.233	-	8.233	8.397	8.525	8.822	0.000	Continuing	Continuing
• D1300630: <i>Deveselu, Romania AA Missile Defense System Complex</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	0
• D1600640: <i>Poland, AA Missile Defense System</i>	0.000	170.597	0.000	-	0.000	0.000	0.000	0.000	0.000	0	170.597

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <i>Cyber Operations</i>
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<b>Support (\$ in Millions)</b>				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) - CND/IA Advisory and Assistance Services (Booz Allen)	C/CPFF	Booz Allen Hamilton : AL, CO, VA	0.727	0.570		0.569	Jul 2016	0.492	Jul 2017	-		0.492	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services (Torch Technologies)	C/CPFF	Torch Technologies : AL, CO, VA	0.645	0.375		0.507	Jul 2016	0.388	Jul 2017	-		0.388	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - Civilian Salaries	Various	MDA : AL, CO, VA	0.171	0.187		0.163	Jul 2016	0.165	Jul 2017	-		0.165	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.543	1.132		1.239		1.045		-		1.045	-	-	-

**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
<b>Project Cost Totals</b>	1.543	1.132	1.239	1.045	-	1.045	-	-	-

**Remarks**  
N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <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
SN Transition to Cyber Security Risk Management Framework (CRMF)	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
SN Information Assurance Certification and Accreditation (C&A) Package Preparation / Submission	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
SN Cyber Security Program Policy / Risk Management	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
SN Cyber Security Mitigation Monitoring and Tracking	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
BMDS Cyber Security Policy Development	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MC11 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SN Transition to Cyber Security Risk Management Framework (CRMF)	1	2015	4	2021
SN Information Assurance Certification and Accreditation (C&A) Package Preparation / Submission	1	2015	4	2021
SN Cyber Security Program Policy / Risk Management	1	2015	4	2021
SN Cyber Security Mitigation Monitoring and Tracking	1	2015	4	2021
BMDS Cyber Security Policy Development	1	2015	4	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> 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>	43.477	22.396	10.273	9.529	-	9.529	6.682	6.467	8.631	9.284	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes as a result of decreases to the Ballistic Missile Defense Sensors program element. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts and Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Program Wide Support	22.396	10.273	9.529
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	22.396	10.273	9.529

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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	C/CPAF	Various : Multi: AL, CA, CO, VA	4.268	1.717		0.000		0.192	Jul 2017	-		0.192	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	MIPR	Various : Multi: AL, CO, NM, VA, VARIOUS	0.000	8.251		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi:AL,VA	5.099	5.978		0.550	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (Reqn)	Reqn	Department of Labor : Washington, DC	0.000	0.063		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CO, CA, VA	32.033	2.759		9.473	Jan 2016	9.086	Aug 2017	-		9.086	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support civilian Salaries, Travel, Training	Allot	MDA : Multi:AK, AL,CA, CO, VA	0.000	3.388		0.250	Nov 2015	0.251	Nov 2016	-		0.251	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	C/CPAF	JRDC : JRDC	0.347	0.240		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	Allot	Various : Multi: AL, CO, CA, VA	1.730	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			43.477	22.396		10.273		9.529		-		9.529	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016					
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>					
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	43.477	22.396		10.273		9.529	-		9.529	-	-	-

**Remarks**

N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</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
MD40 Program-Wide Support					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603884C / <i>Ballistic Missile Defense Sensors</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</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	923.629	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
MD24: <i>System Engineering &amp; Integration</i>	368.362	126.625	141.368	133.166	-	133.166	135.296	137.233	139.846	141.901	Continuing	Continuing
MT23: <i>Enabling - Test</i>	-	32.792	16.611	17.449	-	17.449	25.501	26.040	24.704	25.077	Continuing	Continuing
MD28: <i>Intelligence &amp; Security</i>	69.469	38.485	40.263	41.254	-	41.254	45.192	45.654	48.462	49.348	Continuing	Continuing
MD30: <i>BMD Information Management Systems</i>	151.415	90.761	95.650	92.628	-	92.628	81.212	80.427	86.691	87.939	Continuing	Continuing
MC30: <i>Cyber Operations</i>	12.314	19.189	20.017	22.881	-	22.881	21.019	21.184	23.922	24.396	Continuing	Continuing
MD31: <i>Modeling &amp; Simulation</i>	85.843	39.589	42.668	44.458	-	44.458	47.278	47.837	50.226	50.984	Continuing	Continuing
MC31: <i>M&amp;S Cyber Operations</i>	-	0.204	0.225	0.253	-	0.253	0.258	0.263	0.268	0.274	Continuing	Continuing
MD32: <i>Quality, Safety, and Mission Assurance</i>	148.024	29.358	29.986	31.022	-	31.022	29.582	29.970	31.470	31.967	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	88.202	18.924	17.992	18.483	-	18.483	19.655	20.873	22.014	22.982	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The increase in Project MC30 of \$2.864 million between FY 2016 to FY 2017 provides for compliance with expanding White House, Secretary of Defense, U.S. Cyber Command DoD-wide Cybersecurity Initiatives, and the Federal Information Security Management Act (FISMA). The most significant increase effort includes: \$2.550 million for the tri-annual license renewal of ArcSight. This aids in the safeguarding of MDA data by providing complete visibility into activity across the Information Technology (IT) infrastructure to include but not limited to: external threats such as malware and hackers; internal threats such as data breaches and fraud; risks from application flaws and configuration changes; and compliance pressures from failed audits. This software enables MDA to collect, analyze, and assess IT security, enterprise security and non-security events for rapid identification, prioritization and response.

**A. Mission Description and Budget Item Justification**

The BMDS Enabling Programs provide critical products and processes needed to combine element missile defense systems into a single, integrated and layered BMDS to provide new defensive capabilities and evaluate existing capabilities against the emerging threats. Specifically, the Enabling Programs:

- Define BMDS architectures and functional requirements, conduct Analyses of Alternatives for the DoD, and provide engineering requirements, execution support, and pre- and post-mission analysis for BMD System tests
- Provide validated models and simulations for BMD System assessment
- Assess BMDS performance and deliver capabilities to the Warfighter

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	
<ul style="list-style-type: none"> <li>- Provide multi-disciplinary security and intelligence support for BMDS acquisition, development, test, and deployment</li> <li>- Provide Information Management tools and products supporting the development of BMDS capabilities while safeguarding networks and critical program information</li> <li>- Evaluate quality, technical safeguards, and mission assurance effectiveness</li> <li>- Assess System ability to maintain integrity and superiority with advances in technology development</li> </ul> <p>This Program Element includes support for discrimination improvement efforts, which aim to develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture more capable of discriminating and destroying a re-entry vehicle with a higher degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near-term, Mid-term, and Far-term discrimination improvements capability fielding. The discrimination improvements require a coordinated effort between Systems Engineering, Ground-based Midcourse Defense (PE 0603882C), BMD Sensors (PE 0603884C), C2BMC (PE 0603896C), Aegis BMD (PE 0603892C) and Advanced C4ISR (PE 0603179C).</p> <p>MDA is conducting studies to determine optimal radar site locations for defense of the U.S. from Intercontinental Ballistic Missiles (ICBMs). The locations would include a site for deployment of a long-range discrimination radar and a potential homeport for the Sea-Based X-Band Radar (SBX) on the East Coast of the United States. The initial analysis will determine the operational areas where sensors could be placed to meet the sensor discrimination needs of the BMD system. Once this analysis is complete MDA will begin development of site scoring criteria and, in the case of the SBX, assessments of transit time and time on station for candidate home port options. MDA will then develop initial screening criteria for operations and maintenance. This will be the basis for selection of at least three sites for more detailed examination, including environmental impact studies.</p> <p>MD24 Systems Engineering and Integration (SE&amp;I) defines required system-wide behavior, validates Element system designs, and verifies and assesses BMD System capability to defend the U.S. and its friends, allies, and deployed forces from ballistic missile attacks. SE&amp;I develops technical roadmaps, knowledge points, and capability trades at the BMDS level to balance integration and capability improvement efforts.</p> <p>MT23 Enabling-Test provides BMDS test planning, execution and post-test assessment, and provides critical data for proving that missile defense works.</p> <p>MD28 Intelligence and Security integrates multiple technical intelligence disciplines, such as intelligence, counterintelligence, cyber security, RDA security, and threat engineering, to identify potential threats and vulnerabilities to MDA and the BMDS and develop and implement strategies to mitigate those risks.</p> <p>MD30 Information Management Systems is a critical support element to MDA's RDT&amp;E mission. This effort provides secure and affordable enterprise information capabilities in support of the Agency's global mission. These IT functions consist of MDA secure communication networks, IT systems, special purpose processing nodes, operations and monitoring centers, and disaster recovery and continuity of operations requirements. These capabilities support the rapid deployment of the BMDS while complying with DoD initiatives of the Joint Information Environment (JIE) and the Unified Capabilities Framework to ensure MDA remains compatible with the DoD Information Network (DODIN).</p> <p>MC30 Cyber Operations sustains MDA's DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) activities. It also funds the MDA Security Operations Center (SOC), responsible for monitoring, managing, patching, and maintaining MDA network and core Information Technology (IT) services; issuing and tracking Technical Compliance Orders; and coordinating overarching Enterprise NetOps. The MDA Computer</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>
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Emergency Response Team (CERT), funded in this project, monitors the classified and unclassified information technology MDA administrative IT networks and report vulnerabilities. The MDA CERT coordinates with U.S. Cyber Command to identify and implement network vulnerability updates and patches to comply with U.S. Cyber Command vulnerabilities identified for DoD networks. The project also funds Information Assurance (IA) governance management and administrative management support, annual Agency-wide computer-based IA training and metrics reporting, implementation of Public Key Infrastructure and Enabling and Communications Security (COMSEC) related activities.

MD31 Modeling and Simulation (M&S) develops system-level models, simulations, and environments as missile defense technologies continually advance and the threat changes, and evaluates performance of the Elements, Components, and overall BMD System in support of verification, validation and accreditation. MDA's M&S program provides a cost effective means to assess and explore the performance space of the BMDS beyond what can be physically tested under current test range conditions and within the Agency's fiscal constraints. M&S conceptual simulation activities provide the capability to design and develop technologies to hedge against future missile threats.

MC31 M&S Cyber Operations provides the network/system certification and accreditation of M&S related information technology networks and systems necessary to comply with the Federal Information Security Management Act.

MD32 Quality, Safety, and Mission Assurance improves quality, safety, and mission assurance throughout the product life cycle of design, manufacturing, test and system operation, in order to achieve a safe and reliable BMD System.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	401.971	409.088	423.092	-	423.092
Current President's Budget	395.927	404.780	401.594	-	401.594
Total Adjustments	-6.044	-4.308	-21.498	-	-21.498
• Congressional General Reductions	0.000	-0.343			
• Congressional Directed Reductions	0.000	-3.965			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.651	0.000			
• SBIR/STTR Transfer	-6.695	0.000			
• Other Adjustment	0.000	0.000	-21.498	-	-21.498

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD24 / System Engineering & Integration			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD24: System Engineering & Integration	368.362	126.625	141.368	133.166	-	133.166	135.296	137.233	139.846	141.901	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

SE&I continues to develop and improve integrated BMDS architectures, engineer major improvements to homeland and regional BMD capabilities, and conduct the BMDS level assessments necessary to deliver new capabilities to the Warfighter. SE&I applies its technical expertise and tools across many disciplines and specialties to define, design, test and integrate the BMDS. SE&I develops technical roadmaps, knowledge points, and capability trades at the BMDS level to balance integration and capability improvement efforts. The SE&I workforce, including Industry and Contractor Support Services (CSS), also provides analysis, decision support and planning activities for real-world operations to the National Command Authority, Joint Staff, Military Services, Combatant Commanders, Operational Test Agencies, Director of Operational Test and Evaluation, Allies, and others.

Fundamental to the SE&I approach is development, coordination, and dissemination of fully vetted products at each stage of the engineering process. These products communicate key information such as: technical goals and objectives; design trades and resulting decisions to update system design and interface requirements; integration plans and schedules; test objectives that ensure the collection of data needed to anchor the system representative models and simulations and enable independent verification and validation; assessment of system performance based on ground and flight test results; and fielding plans.

SE&I defines required system-wide behavior, validates Element system designs, and verifies and assesses system capabilities. The system engineering projects that accomplish these functions include: Future Concepts and Planning; Requirements and Design; and System Level Verification and Assessment. Additional engineering efforts cross multiple stages of the system engineering process: Discrimination, BMDS Assessment, Engineering Analysis and Quick Response Team, Knowledge Centers, Risk Management, Anti-Tamper, Manufacturing and Producibility, and Integrated Air and Missile Defense (IAMD).

The discrimination improvement effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. SE&I will perform BMDS performance analysis and requirements engineering activities to specify the BMDS requirements and interfaces to achieve the improved capability. For Mid-term and Far-term SE&I will establish performance goals for the technology development phase; develop functional, performance, and interface requirements to address the Mid-term and Far-term threat sets. SE&I will establish ground and flight test requirements for the Mid-term and Far-term phases, and generate threat data to support analysis and testing activities.

The SE&I Major Program Goals are:

- Develop, design, test and integrate a layered BMDS that provides the required BMD performance

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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- Provide system-level engineering support to the Elements, and lead collaborative cross-Element, cross-Component engineering
- Lead the engineering required to achieve Enhanced Homeland Defense capability
- Develop architectures and requirements to respond to the proliferation of short and medium range ballistic missiles
- Provide a more effective missile defense capability for U.S. deployed forces, allies, and partners, and enhance homeland defense
- Develop discrimination improvements for the Homeland and Regional Defense missions
- As technical authority for IAMD, provide a consistent, disciplined systems engineering process using a multi-Service team to integrate Joint IAMD systems
- Provide technical direction to Element and Component developers and provide System-level forums to track, assess, and improve hardware and software reliability
- Identify BMDS capabilities and limitations
- Develop performance assessment requirements, verify BMDS performance through testing, and conduct assessments to form the basis for technical capability declarations in support of fielding decisions
- Identify Critical Engagement Conditions and data required to develop the test campaigns to demonstrate BMDS performance
- Define the test objectives necessary to anchor BMDS-level models and simulations, enable independent verification and validation
- Identify System issues occurring in ground and flight tests and lead the effort to resolve them
- Analyze architecture alternatives and new technologies to establish technical roadmaps for future capabilities
- Ensure the BMDS is complementary to and interoperable with NATO and other theater systems
- Provide detailed analysis to support MDA leadership and US policy decisions
- Develop anti-tamper approaches to enable international fielding of the BMDS

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Future Concepts and Planning</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This activity funds the BMDS architecture and future concept development, and efforts and studies to address the BMDS emergent threat, including DoD Analysis of Alternatives (AoA). The BMDS Architect develops and improves the integrated BMDS architecture by analyzing and proposing architecture alternatives and new technologies. The architecture and concepts team incorporates these alternatives and technologies into the BMDS future capabilities Systems Engineering effort by establishing and documenting initial system-level requirements.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Identified architecture alternatives that improve the BMD System's performance and are complementary to and interoperable with NATO systems and theaters around the world.</li> <li>- Analyzed architecture alternatives and new technologies, including new radar concepts, and participated in a BMD Sensors AoA.</li> <li>- Conducted BMDS Program of Record gap assessment and concept alternatives assessments in support of the budget development process.</li> <li>- Updated concept capability documentation based on the results of the architectural trade studies and technology development experiments.</li> </ul>	11.097	13.285	12.486
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD24 / <i>System Engineering &amp; Integration</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Developed and documented integrated requirements for improvements to, or augmentations of, current system capabilities in the form of a Phased Implementation Plan.</li> <li>- Supported Warfighter development of the Prioritized Capabilities List (PCL).</li> <li>- Developed the Achievable Capabilities List (ACL) to respond to the PCL.</li> <li>- Developed and refined Capability Planning Specifications for future BMDS Elements/Components.</li> <li>- Supported technology development reviews for future/follow-on BMDS Element development efforts.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct studies to address Ballistic Missile Defense System capability gaps and keep pace with emergent regional and homeland threats.</li> <li>-- Analyze and document architecture alternatives and new technologies to address the gaps, including directed energy, Electro-Optical/Infrared sensors and multiple object kill vehicles</li> <li>-- Develop initial functional, performance and integration planning requirements for the next generation weapons and sensors</li> <li>-- Identify architecture alternatives that improve the BMD System's performance and are complementary to and interoperable with NATO systems and theaters around the world.</li> <li>- Assess cost and capability implications of integrating existing or planned sensor capabilities such as the Navy's Air and Missile Defense radar (AMDR), and potential allied partner assets.</li> <li>- Update concept capability documentation based on architectural options, trade studies, and technology development experiments.</li> <li>- Develop and document integrated requirements for improvements to, or augmentations of, current system capabilities in the form of a Phased Implementation Plan.</li> <li>- Provide BMD System data to inform Warfighter development of the Prioritized Capabilities List (PCL), and develop the Achievable Capabilities List (ACL) to respond to the Warfighters' needs.</li> <li>- Develop and refine Initial Requirements Documentation and Preliminary Specification Change Notices for future BMDS Elements/Components.</li> <li>- Support technology development reviews for future/follow-on BMDS Element development efforts.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Analyze BMDS capability gaps, and conduct studies to identify and document architecture alternatives and new technologies to address the gaps and keep pace with emerging threat, to include Enhanced Defense of Hawaii, advanced sensor concepts, potential space layer technologies, and Electro Magnetic Rail Gun applications</li> <li>-- Develop Initial Requirements Documents (IRDs) to establish functional, performance and integration planning requirements for next generation BMD weapons and sensors</li> <li>-- Identify architecture alternatives that improve BMDS performance and are complementary to and interoperable with NATO systems and theaters around the world</li> <li>-- Support technology development reviews for future/follow-on BMDS Element development efforts.</li> </ul>			



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Update concept capability documentation based on architectural options, trade studies, and technology development experiments.</li> <li>- Maintain and update Phased Implementation Plan to document integrated requirements for improvements to, or augmentations of, current system capabilities.</li> <li>- Develop Preliminary Specification Change Notices for selected future BMDS capabilities and technologies.</li> <li>- Maintain a dialog with the warfighter community for all BMDS engineering and technical issues</li> <li>-- Inform Warfighter development of the PCL by providing relevant BMD System data</li> <li>-- Develop yearly update to the ACL to respond to Warfighter needs.</li> <li>- Lead collaborative effort to improve foreign partners' understanding of existing system capabilities, architectural performance and operational concepts of the BMDS.</li> </ul>			
<p><b>Title:</b> Requirements and Design</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Requirements and Design effort develops the BMD System level requirements and specifications for the PAA Phases and beyond, and drives the integration of the BMDS. Requirements and Design allocates requirements to BMDS Elements and adjudicates Element level specifications to provide optimized capabilities for the Warfighter.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Developed functional performance, interface, and design suitability requirements in collaboration with BMDS element engineers to flow-down and allocate requirements to Programs.</li> <li>- Developed updates to the BMD System Description Document, BMD System Specification, and BMD System Interface Control Documents to document integrated system build content, such as discrimination, approved for design, development and integration.</li> <li>- Conducted System/Subsystem Requirements Reviews to ensure correct technical execution and understanding to realize the Phased Adaptive Approach (PAA) and increase the flexibility and capability of the BMDS.</li> <li>- Conducted engineering analyses and performed trade studies for system design and development products.</li> <li>- Completed the engineering work to finalize System Change Notices for PAA Phase 3 requirements changes, to include BMDS Discrepancy Reports mitigation strategies.</li> <li>- Developed BMDS-level requirements for mid-term discrimination improvements for Homeland and Regional Defense to flow down to executing elements, in collaboration with BMDS Program Elements.</li> <li>- Developed requirements language for Redesigned Kill Vehicle (RKV) Requests for Proposals (RFP).</li> <li>- Conducted Redesigned Kill Vehicle System Requirements Review (SRR).</li> <li>- Provided updated requirements traceability and certification guidance and conducted detailed System/Element requirements reconciliation to resolve technical disconnects and ensure common requirements interpretation.</li> </ul> <p><b>FY 2016 Plans:</b></p>	25.941 -	28.391 -	29.100 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Develop functional performance, interface, and design suitability requirements in collaboration with BMDS element engineers to flow-down and allocate requirements to Programs.</li> <li>- Develop updates to the BMD System Description Document, BMD System Specification, and BMD System Interface Control Documents to document integrated system build content, such as discrimination, approved for design, development and integration.</li> <li>- Conduct Requirements Reviews to ensure correct technical execution and understanding to realize Enhanced Homeland Defense (EHD) and Phased Adaptive Approach (PAA) and increase the flexibility and capability of the BMDS.</li> <li>- Conduct engineering analyses and perform trade studies for system design and development products.</li> <li>- Develop Specification Change Notices for post- PAA Phase 3 requirements changes, to include mitigation strategies to address BMDS Discrepancy Reports.</li> <li>- Deliver requirements language for Mid Term discrimination improvement capabilities to executing elements, in collaboration with BMDS Program Elements.</li> <li>- Refine Redesigned Exoatmospheric Kill Vehicle (RKV) requirements for Enhanced Homeland Defense.</li> <li>- Provide updated requirements traceability and certification guidance and conduct detailed System/Element requirements reconciliation to resolve technical disconnects and ensure common requirements interpretation.</li> <li>- Assess and add emerging threats to MDA's lethality prediction models.</li> <li>- Produce and execute the BMDS Lethality Program Plan to encompass updates to lethality assessments, collateral effects and consequences.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Define BMDS technical content expectations and develop system requirements, to include integration of new capabilities, such as the Navy's Air and Missile Defense Radar (SPY-6).</li> <li>- Allocate functional performance, interface, and design suitability requirements to Programs, in collaboration with BMDS element engineers.</li> <li>- Deliver system technical baseline updates to document integrated system build content: BMD System Description Document, BMD System Specification, and BMD System Interface Control Documents.</li> <li>- Identify and resolve technical disconnects through the requirements trace process and element certifications; conduct engineering analyses and perform trade studies</li> <li>- Participate in Element Requirements Reviews.</li> <li>- Develop Specification Change Notices for future requirements changes, to include mitigation strategies to address BMDS Discrepancy Reports.</li> <li>- Develop initial requirements for Far-term BMD content to pace the evolving threat.</li> <li>- Deliver requirements for Far-Term discrimination improvements to executing elements.</li> <li>- Provide Master Integration Plan and ensure reporting of Element functionality and software / hardware integration in the BAR and Director's Program Reviews.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Assess and add emerging threats to MDA's lethality prediction models.</li> <li>- Incorporate updates to lethality assessments, collateral effects, and consequences of intercept into the BMDS Lethality Program Plan.</li> </ul>			
<p><b>Title:</b> Systems Engineering, Engineering Analysis and Quick Response Team</p> <p align="right"><b>Articles:</b></p>	8.743	9.504	9.865
<p><b>Description:</b> This task provides rapid response, high quality systems engineering analysis products and supporting technical data to address external and internal Agency inquiries and decisions; produces complex weapon system performance data; develops responses to Warfighter requests for information and analysis (RFI/RFA); updates Element/Component Characteristics for Analysis (E/CCA) database; supports Real World Events; and maintains the Effectiveness Metrics Standard to ensure consistent and accurate analyses.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Provided performance analysis to support the development Homeland Defense system architecture options.</li> <li>- Conducted system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts:                             <ul style="list-style-type: none"> <li>-- Analyzed and predicted the performance of potential future BMDS capabilities, such as new sensor concepts.</li> <li>-- Provided technical assessments in critical areas, such as technical performance measures.</li> </ul> </li> <li>- Responded to Warfighter, Combatant Command (CCMD) and other RFI/RFAs; provided analytical support for real-world events.</li> <li>- Updated E/CCA database with Element data changes to ensure consistent capability predictions and analyses.</li> <li>- Maintained the Effectiveness Metrics Standard (EMS) necessary for systematic presentation of alternatives to MDA senior leaders and the Combatant Commanders.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue performance analysis to support the development of Homeland Defense system architecture development and employment options.</li> <li>- Conduct system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts:                             <ul style="list-style-type: none"> <li>-- Analyze and predict the performance of future BMDS capabilities, such as Long Range Discrimination Radar and other advanced sensors.</li> <li>-- Provide technical assessments in critical areas, and collaborate with BMDS Elements to define and track technical performance measures.</li> </ul> </li> <li>- Conduct site studies for additional Missile Defense sensor coverage.</li> <li>- Respond to Warfighter, Combatant Command (CCMD) and other requests for analyses and requests for information; provide analytical support for real-world events.</li> <li>- Provide updated Element/Component Characteristics for Analysis (E/CCA) Element data to ensure consistent capability predictions and analyses.</li> </ul>	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Maintain the Effective Metric Standard (EMS) necessary for systematic presentation of alternatives to MDA senior leaders and the Combatant Commanders.</p> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct system level analyses to support ongoing BMDS Architecture and Systems Engineering efforts.</li> <li>- Analyze expected performance of options for Enhanced Homeland Defense system architecture</li> <li>-- Analyze and predict the performance of future BMDS capabilities</li> <li>-- Provide technical assessments in critical areas, and collaborate with BMDS Elements to define and track technical performance measures.</li> <li>- Respond to Warfighter, CCMD and Congressional RFIs/RFAs; provide analytical support for real-world events.</li> <li>- Provide periodic E/CCA database updates to ensure consistent analysis inputs.</li> <li>- Maintain the Effectiveness Metrics Standard to ensure consistent performance analysis methodology.</li> <li>- Develop analytical data to respond to information requests from MDA and DoD leadership.</li> </ul>			
<p><b>Title:</b> Anti-Tamper &amp; Engineering Manufacturing Readiness Level Development</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This task develops anti-tamper approaches to enable international fielding of the BMDS by providing protection against reverse engineering of critical technologies, supporting coalition warfare, and extending the effective operational life of the system. Engineering and Manufacturing Readiness Levels (EMRLs) are used to assess BMDS element, component, or system maturity.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Developed anti-tamper approaches to enable international fielding, support coalition warfare, and extend the effective operational life of the BMDS.</li> <li>- Assisted BMDS Programs in developing and implementing Anti-Tamper detection and response technologies to mitigate risk.</li> <li>- Evaluated engineering and manufacturing maturity of BMDS elements, systems, and components.</li> <li>- Assessed and reported readiness of MDA development efforts for transition to production.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop and implement anti-tamper approaches to enable international fielding, support coalition warfare, and extend the effective operational life of the BMDS.</li> <li>- Assist BMDS Programs in developing and implementing Anti-Tamper detection and response technologies to mitigate risk.</li> <li>- Monitor application of Engineering and Manufacturing Readiness Levels (EMRLs) to evaluate engineering and manufacturing maturity of BMDS elements, systems, and components.</li> <li>- Assess and report readiness of MDA development efforts for transition to production.</li> </ul> <p><b>FY 2017 Plans:</b></p>	5.003 -	5.382 -	5.353 -

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Develop anti-tamper approaches to enable international fielding, support coalition warfare, and extend the effective operational life of the BMDS.</li> <li>- Engage and support the Services in understanding and transitioning BMDS Element Anti-Tamper activities.</li> <li>- Participate in Element reviews to assess proposed Anti-Tamper solutions and assist programs in developing and implementing Anti-Tamper detection and response technologies to mitigate risk.</li> <li>- Monitor application of EMRLs to evaluate engineering and manufacturing maturity of BMDS elements, systems, and components.</li> <li>- Assess and report readiness of MDA development efforts for transition to production.</li> </ul>			
<p><b>Title:</b> System-Level Verification and Assessment</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The activity determines assessment requirements, identifies opportunities for data collection, and uses data obtained during BMDS ground and flight tests and analysis events to anchor models and simulation, verify performance, and provide technical assessments of BMDS capabilities. This effort also provides subject matter expertise to support high priority BMDS studies and reviews.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Provided technical assessments of the BMD System performance with the addition of THAAD, Patriot Post Deployment Build, AN/TPY-2, Aegis BMD, Cobra Dan, Sea-Based X-Band radar, and GMD Fire Control upgrades to the Operational Capacity Baseline (OCB).</li> <li>- Assessed the technical capability of Aegis BMD, AN/TPY-2, and C2BMC components to defend Europe, in support of the December 2015 European Phased Adaptive Approach Phase 2 Technical Capability Declaration.</li> <li>-- Conducted an Assessment Requirements Review with EPAA Phase 2 stakeholders to ensure that the testing and assessment objectives satisfied the EPAA Phase 2 TCD.</li> <li>-- Conducted, developed, and coordinated assessment execution plans to analyze test results.</li> <li>-- Synthesized test-level analysis to assess performance across the areas of system engagement, system acquisition / tracking / discrimination, and system integration.</li> <li>-- Coordinated the technical assessment with Element / Component program offices and Warfighting stakeholders.</li> <li>- Developed, tested and implemented a process to verify the BMDS information exchange requirements and provide comprehensive evidence that the BMD system represents its conceptual design and meets technical specifications.</li> <li>- Conducted non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Defense of the Homeland, Defense of Israel and Theater/Regional BMD)</li> <li>- Conducted extensive analysis of data collected in BMD test events (digital, hardware-in-the-loop, and flight test), instrumental to understanding BMD operations and performance</li> <li>- Identified mitigation approaches for system performance issues uncovered during the course of analysis and assessment</li> </ul>	14.208 -	14.686 -	15.196 -

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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- Conducted non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Defense of Homeland and Defense of Europe)

- Analyzed Test Event Data As Part of Assessment Process and Reported Key Observations at GTI-06 Part 1 and GTD-06 Part 1 Mission Data Reviews (MDRs) and FTG-06b and GTI-04e Part 2 (Strategic and Theater) Executive Mission Data Reviews (EMDRs)

- Collaborated across DE on technical assessments in support of Operational Capacity Baseline board decisions

- Led the Risk Assessment Working Group for the Homeland Defense AoA and Sensors AoA

- Performed independent studies and analyses, including TPY-2 Acquisition Performance and Search Fence Comparison, Inert GBI Third Stage Analysis, and Trailing EKV and Post Intercept Debris Study

- Monitored development and recommended improvements to the digital simulation enterprise based on an evaluation of the validity of Component, Element and System-level models (and frameworks) and participation in performance assessment activities and digital Modeling and Simulation events.

**FY 2016 Plans:**

- Define requirements to assess current planned BMDS capabilities and emerging capabilities, such as new sensors, and map requirements to data collection venues (i.e., ground tests, flight tests, exercises).

-- Evaluate current Modeling & Simulation (M&S) capability to address assessment requirements for new capabilities, and provide recommendations for new or improved M&S.

- Conduct extensive analysis of data collected in BMDS ground and flight test events, instrumental to understanding BMD operations and performance and anchoring models and simulations.

- Identify mitigation approaches for system performance issues uncovered during the course of analysis and assessment.

- Monitor development and recommend improvements to the simulation enterprise based on an evaluation of the validity of Component, Element and System-level models (and frameworks) and participation in assessment activities and Modeling and Simulation events.

- Conduct assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Homeland Defense improvements and European Phased Adaptive Approach (EPAA) Phases).

- Produce independent assessments of each Capability Delivery for THAAD, PATRIOT, Aegis BMD, AN/TPY-2 and C2BMC to support determination of fielding readiness for EPAA capabilities.

- Perform non-advocate analyses and assessments for MDA Leadership, including investment prioritization, system architecture studies, design reviews, and failure investigations.

**FY 2017 Plans:**

- Develop and manage assessment requirements for EPAA Phase 3, Redesigned Kill Vehicle (RKV), Long Range Discrimination Radar (LRDR), and Enhanced Aegis BMD Engage on Remote capabilities.

-- Map assessment requirements to data collection venues (i.e., ground tests, flight tests, and exercises).

<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>-- Evaluate current M&amp;S capability to address assessment requirements, and provide recommendations for new or improved M&amp;S.</li> <li>- Maintain and update the Integrated Master Assessment Plan (IMAP).</li> <li>- Conduct extensive analysis of data collected in BMDS ground and flight test events, instrumental to understanding BMD operations and performance and anchoring models and simulations.</li> <li>- Identify mitigation approaches for system performance issues uncovered during the course of analysis and assessment.</li> <li>- Monitor development and recommend improvements to the simulation enterprise based on an evaluation of the validity of Component, Element and System-level models (and frameworks) and participation in assessment activities and Modeling and Simulation events.</li> <li>- Conduct assessments of BMD System capabilities and limitations prior to capability delivery decisions (including Enhanced Homeland Defense and EPAA Phase 3).</li> <li>- Produce independent assessments of each Capability Delivery for THAAD, PATRIOT, Aegis BMD, AN/TPY-2 and C2BMC to support determination of fielding readiness for EPAA capabilities.</li> <li>- Verify BMDS performance, and produce BMDS verification status reports.</li> <li>- Maintain M&amp;S Verification, Validation and Accreditation (VV&amp;A) database, and verification data for BMD System Specification Change Notices.</li> <li>- Develop, maintain, and update the M&amp;S VV&amp;A tool kit.</li> <li>- Provide recommendations for improving assessment confidence, including M&amp;S and testing issue resolutions.</li> </ul>			
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<b>Title:</b> Knowledge Centers	11.457	14.252	14.142
<b>Articles:</b>	-	-	-

**Description:** Knowledge Centers serve as independent technical advisors to BMDS program offices in the C2BMC, Interceptor, Space, and Sensor areas to support development of technical approaches and improve reliability.

**FY 2015 Accomplishments:**

- Provided FFRDC and UARC reach-back capability for Element program managers:
  - Supported BMDS and Element Independent Review Teams
  - Identified and provided recommendations to mitigate technical risks: incorporated out-of-the-box concepts for Risk Mitigation and Reduction
  - Provided independent technical analysis to support Knowledge Point definitions, system and element performance assessments, and risk management
  - Provided subject matter expertise for Mission Assurance assessments, Failure Review Boards and Failure Investigation teams
  - Conducted assessments of emerging technologies, including focal plane array development, radiation-hardened components, and improvements to modeling and simulation.

**FY 2016 Plans:**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provide subject matter expertise, to include reach-back capability as needed (Federally Funded Research and Development Centers and University Affiliated Research Centers) for Element program managers:                             <ul style="list-style-type: none"> <li>-- Support BMDS and Element Independent Review Teams</li> <li>-- Identify and provide recommendations to mitigate technical risks: incorporate out-of-the-box concepts for Risk Mitigation and Reduction</li> <li>-- Promote knowledge sharing from external technical sources to MDA</li> <li>-- Provide analysis and support for mission assurance assessments, Failure Review Boards and Failure Investigation teams.</li> </ul> </li> <li>- Provide independent technical analysis:                             <ul style="list-style-type: none"> <li>-- Support Knowledge Point definition for new programs (i.e., LRDR, RKV)</li> <li>-- Continue to provide system and element performance assessments for BMDS programs.</li> </ul> </li> <li>- Conduct assessments of emerging technologies as required.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Provide FFRDC and UARC subject matter expertise, to include reach-back capability as needed), for Element program managers:                             <ul style="list-style-type: none"> <li>-- Provide Subject Matter Expertise and analytical support for Independent Review Teams, mission assurance assessments, Failure Review Boards and Failure Investigation Teams</li> <li>-- Identify and provide recommendations to mitigate technical risks, including innovative and unconventional approaches</li> <li>-- Promote knowledge sharing between external technical sources and MDA.</li> </ul> </li> <li>- Perform independent technical assessments of critical BMDS and Element program issues:                             <ul style="list-style-type: none"> <li>-- Define element knowledge points (KPs), establish closure criteria, and provide closure recommendations</li> <li>-- Continue to provide BMD System and Element performance assessments.</li> </ul> </li> <li>- Conduct assessments of emerging technologies as required.</li> </ul>				
<p><b>Title:</b> Risk Management</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Risk Management task identifies BMDS element and component technical risks, and tracks status and risk mitigation progress.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Convened and chaired Risk Management Working Group.</li> <li>- Executed the risk management and mission readiness working group process.</li> <li>- Established and maintained a risk database using the Failure Reporting and Corrective Action System (FRACAS).</li> <li>- Reviewed and approved program element risks, on quarterly basis.</li> </ul> <p><b>FY 2016 Plans:</b></p>		5.704	7.272	7.619
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4		<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs		<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Convene and chair Risk Management Working Group.</li> <li>- Execute the risk management and mission readiness working group process.</li> <li>- Maintain a risk database using the Failure Reporting and Corrective Action System (FRACAS).</li> <li>- Review and approve program element risks, on quarterly basis.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Convene and chair Risk Management Working Group.</li> <li>- Execute the risk management and mission readiness working group process.</li> <li>- Maintain a risk database using the Failure Reporting and Corrective Action System.</li> <li>- Review and approve program element risks, on quarterly basis.</li> </ul>				
<p><b>Title:</b> Manufacturing and Producibility</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This activity supports a system-level manufacturing and producibility team to address materials, key component, and subsystem design and development to reduce cycle time, part count, and risk. This activity also supports a system-level reliability team to reduce risk of test failures and performance shortcomings and drive reliability into system and component designs.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Assessed the effectiveness of reliability programs for each MDA Product (Radar, Launcher, Missile/Interceptor, etc.) to achieve/sustain required reliability.</li> <li>- Identified failure trends/modes</li> <li>-- Evaluated impact on the Probability of Mission Success</li> <li>-- Evaluated Return on Investment (ROI) from implementing corrective actions.</li> <li>- Reviewed the Stockpile Reliability Programs for all MDA Missiles/Interceptors for effectiveness, and identified opportunities for efficiencies by sharing test resources or test results/analysis for common/comparable components.</li> <li>- Implemented supply chain risk identification and mitigation tracking system across the BMDS.</li> <li>- Conducted deep dive into critical component supply base.</li> <li>- Utilized tracking system to mitigate manufacturing supply issues with critical components.</li> <li>- Supported the development of a cost-effective and producible Redesigned Kill Vehicle (RKV).</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Manufacturing and Producibility:</p> <ul style="list-style-type: none"> <li>- Continue Implementation of supply chain risk identification and mitigation tracking system across the BMDS.</li> <li>- Conduct assessment into critical component supply base.</li> <li>- Conduct technical assessments of critical manufacturing technologies and collaborate investment strategies with national security space components.</li> </ul>		3.955	4.441	4.662
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD24 / <i>System Engineering &amp; Integration</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Utilize tracking system to mitigate manufacturing supply issues with critical components.</li> <li>Reliability:             <ul style="list-style-type: none"> <li>- Assess the effectiveness of reliability programs for each MDA Product (Radar, Launcher, Missile/Interceptor, etc.) to achieve/sustain required reliability.</li> <li>- Provide Reliability Analysis In Support Of Risk and Mission Success Assessments For BMDS Flight Test.</li> <li>- Identify failure trends/modes</li> <li>-- Evaluate impact on the Probability of Mission Success</li> <li>-- Evaluate Return on Investment (ROI) from implementing corrective actions.</li> <li>- Work with Logistics Support to develop MDA Reliability and Logistic Policies/Plans that are synergistic and promote an integrated Sustainability effort within the Elements.</li> <li>- Ensure that BMDS products have achieved the required maturity in RAM to support the transition from MDA to the appropriate service organization.</li> </ul> </li> <li><b>FY 2017 Plans:</b></li> <li>Manufacturing and Producibility:             <ul style="list-style-type: none"> <li>- Assess BMDS industrial base and determine critical manufacturing technologies</li> <li>-- Conduct assessments of critical component supply base and update critical technologies database</li> <li>-- Collaborate with national security space components on investment strategies for critical technologies</li> <li>-- Develop engineering management tool to characterize industrial base risks.</li> <li>- Utilize tracking system to mitigate manufacturing supply issues for critical components.</li> <li>- Continue Implementation of supply chain risk identification and mitigation tracking system across the BMDS</li> </ul> </li> <li>Reliability:             <ul style="list-style-type: none"> <li>- Assess the effectiveness of reliability programs for each MDA Product (Radar, Launcher, Missile/Interceptor, etc.) to achieve/sustain required reliability.</li> <li>- Perform reliability, composite risk, and probability of mission success assessments for flight tests.</li> <li>- Identify failure trends/modes</li> <li>-- Evaluate impact on the Probability of Mission Success</li> <li>-- Evaluate Return on Investment from implementing corrective actions</li> <li>-- Provide element/program scorecard data to support reliability evaluations/assessments.</li> <li>- Work with Logistics Support to develop MDA Reliability and Logistic Policies/Plans that promote an integrated Sustainability effort within the Elements.</li> <li>- Ensure that BMDS products have achieved the required maturity in Reliability, Availability, and Maintainability (RAM) to support the transition from MDA to the appropriate service organization.</li> <li>- Provide updates to MDA RAM policy and guidance and provide technical expertise/reach back support.</li> </ul> </li> </ul>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Provide RAM expertise where proficiency is not maintained within Element Program Offices.			
<p><b>Title:</b> Discrimination</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The discrimination improvement effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. SE&amp;I will perform BMDS performance analysis and requirements engineering activities to specify the BMDS requirements and interfaces to achieve the improved capability. For Mid-term and Far-term SE&amp;I will establish performance goals for the technology development phase; develop functional, performance, and interface requirements to address the Mid-term and Far-term threat sets. SE&amp;I will establish ground and flight test requirements for the Mid-term and Far-term phases, and generate threat data to support analysis and testing activities.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued integration phase for Near-term discrimination improvements ground testing via GTI-06.</li> <li>- Conducted planning, assessment, and specification work to keep pace with emerging threat.</li> <li>- Continued development of software upgrades to C2BMC to report information from multiple sensors to improve identification of lethal targets to fire control.</li> <li>- Continued development of AN/TPY-2 sensor and interface upgrades required to pass sensor generated features to C2BMC needed for improving identification of lethal targets.</li> <li>- Conducted data collection and analysis for final assessment of discrimination technologies candidates planned for Mid-term delivery.</li> <li>- Down selected development ready technologies for the Mid-term phase content.</li> <li>- Completed preliminary BMDS functional and performance requirements for Mid-term discrimination improvements capability.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete integration phase for Near-Term ground testing via GTI-06.</li> <li>- Monitor Near-term ground testing via GTI-06 and GTD-06 and analyze test results.</li> <li>- Assess Near-Term capability readiness for fielding.</li> <li>- Support Element Mid-Term discrimination improvement requirements definition in support of Element design refinement.</li> <li>- Complete system testing environment Objective Simulation Framework updates for Mid-term capabilities.</li> <li>- Assist in development of data collection requirements for of Mid-Term capability flight tests.</li> <li>- Define &amp; develop Far-term threat models for engineering analysis, requirements development, capabilities development, and test and verification.</li> <li>- Plan, manage, and conduct trades and analysis tasks across the elements for Far-term discrimination improvements and countermeasures mitigation technology application to the Far-term threat.</li> </ul> <p><b>FY 2017 Plans:</b></p>	27.621	28.955	18.754
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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FY 17 decrease reflects completion of Near-term discrimination improvements testing and assessment activities, and completion of the Mid-term discrimination improvement requirements definition and performance specification development activities.

- Complete Mid-term discrimination improvements systems engineering work and integrate element level design solutions
- Complete analysis to support test planning and assessment of the integrated capability
- Perform cross element and system level integration of Mid-term discrimination improvements design solutions.
- Conduct Far-term discrimination and countermeasure mitigation capability development
- Define Far-term decision logic improvement solutions which are mature enough to initiate preliminary design
- Develop definition of fire control/weapon handover improvements and initiate preliminary design
- Execute system requirements review for radar electronic protection improvements.

<b>Title:</b> Integrated Air and Missile Defense (IAMD)	12.896	15.200	15.989
<b>Articles:</b>	-	-	-

**Description:** The IAMD effort provides a consistent, disciplined systems engineering process using a joint service systems engineering team to develop the technical requirements necessary to support integration of joint service IAMD systems, implementing capabilities required by the Geographic Combatant Commands. This effort includes systems engineering analysis, development of technical and interface control requirements and documents, definition of candidate Joint IAMD increments, and configuration control across the joint systems. The initial work will provide improved performance such as an improved air picture to enable engagement coordination decision making, increase battlespace, and improve track continuity. Follow-on increments will address critical joint Command and Control and interoperability needs such as integrated fire control. This effort was previously funded by the Air Force and transitioned to MDA in FY 2015.

**FY 2015 Accomplishments:**

- Led IAMD engineering and integration efforts, including interface definition and control and technical requirements allocation across the Joint IAMD Service systems.
- Analyzed technical options using modeling & simulations under operationally stressing threat conditions to improve the air picture with sufficient quality to support coordinated decision making across a joint warfighting environment.
- Assessed cost, schedule and risk impacts of implementing the options on selected air defense assets across the joint services.
- Continued to develop an IAMD joint system architecture to maintain consistency with JIAMDO operational architecture.
- Supported JIAMDO development of IAMD Increment 1 Operational Benefits Assessment.

**FY 2016 Plans:**

- Continue analysis of technical options for improving the air picture to support coordinated decision making in a joint warfighting environment.
- Support JIAMDO in completing the IAMD Increment 1 Operational Benefits Assessment
- Develop initial requirements document for the first Joint IAMD capability increment (improved air picture)

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-- Expand the IAMD Modeling and Simulation capabilities developed in FY14 and FY15 to support derivation of more detailed Joint Track Management Control (JTMC) requirements and evaluate performance of the selected technical approach for achieving the JROC-approved JTMC operational requirements to include the capability to support advanced engagement coordination across the air domain. -- Continue to develop the IAMD joint system architecture which is consistent with the JROC approved IAMD operational architecture. -- Define engineering tasks for Increment 2 capability.			
<b><i>FY 2017 Plans:</i></b> - Maintain and deliver updates to an IAMD system of systems level requirements specification, documenting the technical requirements for allocation to the affected air defense programs of record. - Conduct Joint IAMD System Requirements Reviews with affected service systems to incorporate IAMD Increment 1 capability. - Execute the joint system engineering tasks for IAMD Increment 2 capability. - Expand IAMD Modeling and Simulation capabilities to support derivation of more detailed Joint Track Management Control (JTMC) requirements for Increment 1 capability and to support IAMD Increment 2 concept development defined in FY16 to address critical joint Command and Control and interoperability needs. - Develop an IAMD joint system architecture for IAMD Increment 2 capability that is consistent with the JROC approved IAMD operational architecture.			
<b>Accomplishments/Planned Programs Subtotals</b>	126.625	141.368	133.166

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
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
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603881C: <i>Ballistic Missile</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<i>Control, Battle Management &amp; Communication</i>											
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

In order to optimize the performance of the BMDS, MDA leverages the nation's engineering Centers of Excellence at government agencies and Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS. Products and Services will be acquired by competitive means to the extent that is possible and practical.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
Future Concepts and Planning - Future Concepts - Architecture CSS	C/CPFF	Parsons : AL	1.249	2.372		2.994	Oct 2015	3.371	Nov 2016	-		3.371	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - Architecture Support	Various	Various : VA, AL	1.590	1.307		1.513	Oct 2015	1.109	Nov 2016	-		1.109	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - CSS	C/CPFF	MiDAESS / TEAMS : AL	19.637	0.791		0.856	Oct 2015	1.498	Nov 2016	-		1.498	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 1	MIPR	SNL : CA	1.771	0.334		0.377	Oct 2015	0.385	Nov 2016	-		0.385	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 3	MIPR	MIT/LL : MA	0.328	0.671		1.132	Oct 2015	0.385	Nov 2016	-		0.385	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - FFRDC / UARC 4	MIPR	JHU/APL : MD, VA	3.140	0.558		0.755	Oct 2015	0.790	Nov 2016	-		0.790	Continuing	Continuing	Continuing
Future Concepts and Planning - Future	MIPR	MITRE : VA	1.094	0.501		0.387	Oct 2015	0.462	Nov 2016	-		0.462	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Concepts - FFRDC / UARC 5															
Future Concepts and Planning - Future Concepts - FFRDC / UARC 6	MIPR	Aerospace : CA	1.166	0.719		0.453	Oct 2015	0.385	Nov 2016	-		0.385	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.000		0.450	Nov 2016	-		0.450	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - Industry	C/CPAF	Boeing : AL	23.805	2.184		2.114	Oct 2015	1.078	Nov 2016	-		1.078	Continuing	Continuing	Continuing
Future Concepts and Planning - Future Concepts - Support	Allot	MDA : VA / AL	3.108	1.660		2.704	Oct 2015	2.573	Oct 2016	-		2.573	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - Lethality Spt - FFRDC/ UARC 4	MIPR	SNL : CA	0.350	0.334		0.357	Oct 2015	0.364	Nov 2016	-		0.364	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - Lethality Spt - CSS	C/CPAF	Corvid : NC	0.000	0.715		0.744	Nov 2015	0.758	Nov 2016	-		0.758	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - CSS 1	C/CPFF	MiDAESS / TEAMS : AL	28.682	1.956		3.509	Oct 2015	1.886	Nov 2016	-		1.886	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - CSS 3	C/CPFF	MEI : AL	0.275	0.325		0.281	Oct 2015	0.286	Nov 2016	-		0.286	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - FFRDC/UARC 1	MIPR	LLNL : CA	0.600	0.384		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - FFRDC/UARC 2	MIPR	MITRE : VA	0.000	0.000		0.555	Oct 2015	0.762	Nov 2016	-		0.762	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - HAENS Spt	Various	Various : Various	0.279	0.235		0.460	Oct 2015	0.469	Nov 2016	-		0.469	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Requirements and Design - Reqts & Design - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.000		1.300	Nov 2016	-		1.300	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - Industry	C/CPAF	Boeing : AL	72.328	13.890		11.128	Oct 2015	9.486	Nov 2016	-		9.486	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - MDA	Allot	MDA : AL, VA	18.468	6.603		9.219	Nov 2015	11.917	Oct 2016	-		11.917	Continuing	Continuing	Continuing
Requirements and Design - Reqts & Design - OGA	MIPR	AMRDEC : AL	1.950	1.499		2.138	Oct 2015	1.872	Nov 2016	-		1.872	Continuing	Continuing	Continuing
Systems Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.232		0.793	Oct 2015	0.270	Nov 2016	-		0.270	Continuing	Continuing	Continuing
Systems Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - CSS	C/CPFF	MiDAESS / TEAMS : AL	22.910	3.860		4.590	Oct 2015	4.682	Nov 2016	-		4.682	Continuing	Continuing	Continuing
Systems Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - CSS 2	C/CPFF	SAIC : VA, AL	5.243	4.423		4.121	Oct 2015	4.556	Nov 2016	-		4.556	Continuing	Continuing	Continuing
Systems Engineering, Engineering Analysis and Quick Response Team - Sys Engrg, QRT - MDA	Various	MDA : VA, AL	2.684	0.228		0.000		0.357	Nov 2016	-		0.357	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - Anti-Tamper Support	MIPR	NSWC Crane : IN	5.854	0.205		0.209	Nov 2015	0.213	Nov 2016	-		0.213	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - CSS 2	C/CPAF	CSC - MiDAESS : AL	2.001	0.213		0.000		0.000		-		0.000	0	2.214	0

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Anti-Tamper & Engineering Manufacturing Readiness Level Development - AT & EMRL - MDA	Allot	MDA : AL, VA	7.009	4.130		4.859	Oct 2015	4.927	Oct 2016	-		4.927	Continuing	Continuing	Continuing
Anti-Tamper & Engineering Manufacturing Readiness Level Development - OGA Support	MIPR	AMRDEC : AL	0.000	0.455		0.314	Nov 2015	0.213	Nov 2016	-		0.213	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - CSS	C/CPFF	MiDAESS / TEAMS : AL	2.809	1.132		1.424	Nov 2015	1.044	Nov 2016	-		1.044	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - CSS 2	C/CPFF	Parsons : AL, CO	0.000	0.000		0.000		2.046	Nov 2016	-		2.046	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 1	MIPR	Aerospace : CA	13.366	1.930		1.495	Oct 2015	1.433	Nov 2016	-		1.433	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 2	MIPR	JHU/APL : MD, VA	7.986	1.116		0.894	Oct 2015	0.962	Nov 2016	-		0.962	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 6	MIPR	MIT/LL : MA	15.929	0.737		1.860	Oct 2015	1.372	Nov 2016	-		1.372	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - FFRDC/UARC 7	MIPR	MITRE : VA	11.761	2.581		2.225	Oct 2015	1.599	Nov 2016	-		1.599	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.993	Oct 2015	1.200	Nov 2016	-		1.200	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - MDA	Allot	MDA : VA, AL	5.716	0.386		0.547	Oct 2015	0.619	Oct 2016	-		0.619	Continuing	Continuing	Continuing
System-Level Verification and Assessment - Sys V&A - OGA	MIPR	AMRDEC : AL	4.121	2.577		2.130	Oct 2015	1.043	Nov 2016	-		1.043	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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
System-Level Verification and Assessment - V&A Industry Support	C/CPFF	Boeing : AL	3.237	3.749		3.118	Oct 2015	3.878	Nov 2016	-		3.878	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 1	MIPR	Aerospace : CA	8.552	1.474		1.438	Oct 2015	1.716	Nov 2016	-		1.716	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 2	MIPR	MIT/LL : MA	4.826	0.738		1.453	Oct 2015	0.983	Nov 2016	-		0.983	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 3	FFRDC	MITRE : VA	4.213	1.489		1.366	Oct 2015	0.998	Nov 2016	-		0.998	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 4	FFRDC	JHU/APL : VA	4.605	0.796		1.077	Oct 2015	0.657	Nov 2016	-		0.657	Continuing	Continuing	Continuing
Knowledge Centers - KC - FFRDC/UARC 7	MIPR	GTRI : GA	3.939	0.000		0.000		0.347	Nov 2016	-		0.347	0	4.286	0
Knowledge Centers - KC - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.432		0.900	Oct 2015	1.700	Nov 2016	-		1.700	Continuing	Continuing	Continuing
Knowledge Centers - KC - MDA	Various	MDA : AL, VA	12.296	5.312		6.443	Oct 2015	6.125	Nov 2016	-		6.125	Continuing	Continuing	Continuing
Knowledge Centers - KC - Various	MIPR	Various : Various	1.232	1.216		1.575	Oct 2015	1.616	Nov 2016	-		1.616	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - Analysis	Various	MDA : VA, AL	3.726	3.767		5.238	Oct 2015	5.892	Oct 2016	-		5.892	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - Analysis Spt	Various	Various : Various	1.129	0.720		0.864	Nov 2015	0.250	Nov 2016	-		0.250	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - FFRDC/UARC	MIPR	MITRE : VA	3.085	0.785		0.377	Oct 2015	0.577	Nov 2016	-		0.577	Continuing	Continuing	Continuing
Risk Management - Risk Mgt - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.432		0.793	Oct 2015	0.900	Nov 2016	-		0.900	Continuing	Continuing	Continuing
Manufacturing and Producibility - Core Standards	C/CPFF	Boeing : AL	0.000	1.109		1.091	Nov 2015	1.113	Nov 2016	-		1.113	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Manufacturing and Producibility - Mfg and Producibility	Allot	MDA : AL	0.632	0.655		0.645	Oct 2015	0.491	Oct 2016	-		0.491	Continuing	Continuing	Continuing
Manufacturing and Producibility - Mfg and Producibility - CSS	C/CPFF	CSC : AL	0.351	0.000		0.000		0.000		-		0.000	0	0.351	0
Manufacturing and Producibility - Mfg and Producibility - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.500	Oct 2015	0.950	Nov 2016	-		0.950	Continuing	Continuing	Continuing
Manufacturing and Producibility - Mfg and Producibility - OGA Support	MIPR	AMRDEC : AL	1.517	2.191		2.205	Nov 2015	2.108	Nov 2016	-		2.108	Continuing	Continuing	Continuing
Discrimination - Aegis BMD Algorithm Development, Modeling & Simulation, Performance Analysis (FFRDC)	MIPR	MIT / LL : MA	0.650	0.000		0.000		0.000		-		0.000	0	0.650	0
Discrimination - Aegis BMD Algorithm Development, Modeling & Simulation, Performance Analysis (Prime)	SS/CPFF	Lockheed Martin : NJ	2.415	0.000		0.000		0.000		-		0.000	0	2.415	0
Discrimination - Aegis BMD Algorithm Development, Modeling & Simulation, Performance Analysis (UARC)	SS/CPFF	JHU / APL : MD	0.735	0.000		0.000		0.000		-		0.000	0	0.735	0
Discrimination - DIHD - BMD 4.0.3 Dev.	MIPR	Various : MD, VA, CA	0.663	0.000		0.000		0.000		-		0.000	0	0.663	0
Discrimination - DIHD - BMD 4.0.3 Dev. (PRIME)	SS/CPFF	Lockheed Martin : NJ	2.996	0.000		0.000		0.000		-		0.000	0	2.996	0
Discrimination - Discrimination - CSS	C/CPFF	MiDAESS / TEAMS : AL	2.600	5.278		4.860	Nov 2015	1.998	Nov 2016	-		1.998	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Discrimination - Discrimination - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.000		2.006	Nov 2016	-		2.006	Continuing	Continuing	Continuing
Discrimination - Discrimination - Industry	C/CPAF	Boeing : AL, VA	0.000	8.567		11.005	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
Discrimination - Discrimination - Support	Allot	MDA : AL, VA	0.000	7.357		9.658	Nov 2015	8.400	Oct 2016	-		8.400	Continuing	Continuing	Continuing
Discrimination - Discrimination - Various	Various	Various : AL, VA	0.000	6.419		3.432	Nov 2015	4.350	Nov 2016	-		4.350	Continuing	Continuing	Continuing
Discrimination - Discrimination Improvement Homeland Defense (DIHD) Engineering	C/CPFF	Boeing : AL	7.412	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Discrimination - OGA Discrimination Improvement Homeland Defense (DIHD)	MIPR	SED : AL	0.690	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Discrimination - Prime Discrimination Improvement Homeland Defense (DIHD)	C/CPFF	Boeing : AL, AZ	9.652	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - FFRDC	Various	Various : AL, VA, MD	0.000	1.037		1.510	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - ICT	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.000		0.670	Nov 2016	-		0.670	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - OGA	MIPR	AMRDEC : AL	0.000	0.000		0.000		4.319	Nov 2016	-		4.319	Continuing	Continuing	Continuing
Integrated Air and Missile Defense (IAMD) - IAMD - Support	Various	MiDAESS / TEAMS : AL, VA, CO	0.000	1.109		2.282	Nov 2015	0.499	Nov 2016	-		0.499	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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<b>Support (\$ in Millions)</b>				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			
Integrated Air and Missile Defense (IAMD) - IAMD - Various	MIPR	DoD Activities : Various	0.000	10.750		11.408	Nov 2015	10.501	Nov 2016	-		10.501	Continuing	Continuing	Continuing
<b>Subtotal</b>			368.362	126.625		141.368		133.166		-		133.166	-	-	-

**Remarks**  
The FY 17 decrease in discrimination funding reflects completion of Near-term discrimination improvements testing and assessment activities, and completion of the Mid-term discrimination improvement requirements definition and performance specification development activities.

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	368.362	126.625	141.368	133.166	-	133.166	-	-	-

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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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
System/Subsystem Requirements Review - FY 2015	▲																											
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.1 - FY 2015	▲																											
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.2 - FY 2015	▲																											
Ballistic Missile Defense System Specification (BMD SS) 15.1 - FY 2015	▲																											
Adversary Data Package (ADP) - FY 2015	▲																											
Element Design Reviews - FY 2015	✦	✦	✦	✦																								
Ballistic Missile Defense System Specification (BMD SS) 15.2 - FY 2015		▲																										
Update Master Integration Plan (MIP) - FY 2015		▲																										
Ballistic Missile Defense System Engineering Review - FY 2015			▲																									
Ballistic Missile Defense System Specification (BMD SS) 15.3 - FY 2015			▲																									
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.3 - FY 2015			▲																									
Provide Independent Assessments to MDA - FY 2015				▲																								
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2015				▲																								
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2015				▲																								
Adversary Data Package (ADP) - FY 2016					△																							
Element Design Reviews - FY 2016					△																							
System Engineering Plan (SEP) Update - FY 2016					△																							
Ballistic Missile Defense System (BMDS) Requirements Review					△																							

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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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
Ballistic Missile Defense System Engineering Review - FY 2016							△																					
Ballistic Missile Defense System Interface Control Documents (SICD) - FY 2016							△																					
Update Achievable Capabilities List - FY 2016							△																					
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2016							△																					
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2016								△																				
Provide Independent Assessments to MDA - FY 2016								△																				
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY 2016								△																				
Update Master Integration Plan (MIP) - FY 2016								△																				
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2017									△																			
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2017									△																			
Ballistic Missile Defense System Specification (BMD SS) - FY 2017										△																		
Element Design Reviews - FY 2017										△																		
Ballistic Missile Defense System Engineering Review - FY 2017											△																	
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2017											△																	
Update Achievable Capabilities List - FY 2017											△																	
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2017												△																
Provide Independent Assessments to MDA - FY 2017												△																
Update Master Integration Plan (MIP) - FY 2017												△																
Ballistic Missile Defense System Description Document (BMD SDD) - FY 2018													△															
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2018													△															
Element Design Reviews - FY 2018														△														



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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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
Ballistic Missile Defense System Engineering Review - FY 2018														△														
Ballistic Missile Defense System Interface Control Documents (SICD) - FY 2018														△														
Update Achievable Capabilities List - FY 2018														△														
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2018														△														
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2018															△													
Provide Independent Assessments to MDA - FY 2018															△													
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY 2018															△													
Update Master Integration Plan (MIP) - FY 2018															△													
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2019																△												
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2019																△												
Deliver Assessment for EPAA Phase 3 - FY 2019																△												
Ballistic Missile Defense System Specification (BMD SS) - FY 2019																	△											
Element Design Reviews - FY 2019																		△										
System Engineering Plan (SEP) Update - FY 2019																		△										
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2019																			△									
Ballistic Missile Defense System Engineering Review - FY 2019																				△								
Update Achievable Capabilities List - FY 2019																					△							
Update Master Integration Plan (MIP) - FY 2019																						△						
Provide Independent Assessments to MDA - FY 2019																							△					
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2019																							△					
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2020																								△				

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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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	
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2020																				△									
System Engineering Plan (SEP) Update - FY 2020																					△								
Ballistic Missile Defense System Specification (BMD SS) - FY 2020																					△								
Ballistic Missile Defense System Engineering Review - FY 2020																						△							
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2020																						△							
Update Master Integration Plan (MIP) - FY 2020																							△						
Provide Independent Assessments to MDA - FY 2020																							△						
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2020																							△						
Update to BMD System Description Document (BMD SDD) FY 2021																								△					
System Engineering Plan (SEP) Update FY 2021																									△				
Ballistic Missile Defense System Specification (BMD SS) - FY 2021																										△			
Ballistic Missile Defense System Engineering Review - FY 2021																											△		
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2021																											△		
Update Master Integration Plan (MIP) - FY 2021																													△
Provide Independent Assessments to MDA - FY 2021																													△
Element/Component Characterization for Analysis (E/CCA) - 4Q FY 2021																													△

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System/Subsystem Requirements Review - FY 2015	1	2015	1	2015
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.1 - FY 2015	1	2015	1	2015
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.2 - FY 2015	1	2015	1	2015
Ballistic Missile Defense System Specification (BMD SS) 15.1 - FY 2015	1	2015	1	2015
Adversary Data Package (ADP) - FY 2015	1	2015	1	2015
Element Design Reviews - FY 2015	1	2015	4	2015
Ballistic Missile Defense System Specification (BMD SS) 15.2 - FY 2015	2	2015	2	2015
Update Master Integration Plan (MIP) - FY 2015	2	2015	2	2015
Ballistic Missile Defense System Engineering Review - FY 2015	3	2015	3	2015
Ballistic Missile Defense System Specification (BMD SS) 15.3 - FY 2015	3	2015	3	2015
Update to Ballistic Missile Defense System Description Document (BMD SDD) 15.3 - FY 2015	3	2015	3	2015
Provide Independent Assessments to MDA - FY 2015	4	2015	4	2015
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2015	4	2015	4	2015
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2015	4	2015	4	2015
Adversary Data Package (ADP) - FY 2016	2	2016	2	2016
Element Design Reviews - FY 2016	2	2016	2	2016
System Engineering Plan (SEP) Update - FY 2016	2	2016	2	2016
Ballistic Missile Defense System (BMDS) Requirements Review	2	2016	2	2016
Ballistic Missile Defense System Engineering Review - FY 2016	3	2016	3	2016
Ballistic Missile Defense System Interface Control Documents (SICD) - FY 2016	3	2016	3	2016
Update Achievable Capabilities List - FY 2016	3	2016	3	2016

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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Events	Start		End	
	Quarter	Year	Quarter	Year
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2016	3	2016	3	2016
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2016	4	2016	4	2016
Provide Independent Assessments to MDA - FY 2016	4	2016	4	2016
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY 2016	4	2016	4	2016
Update Master Integration Plan (MIP) - FY 2016	4	2016	4	2016
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2017	1	2017	1	2017
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2017	1	2017	1	2017
Ballistic Missile Defense System Specification (BMD SS) - FY 2017	2	2017	2	2017
Element Design Reviews - FY 2017	2	2017	2	2017
Ballistic Missile Defense System Engineering Review - FY 2017	3	2017	3	2017
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2017	3	2017	3	2017
Update Achievable Capabilities List - FY 2017	3	2017	3	2017
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2017	4	2017	4	2017
Provide Independent Assessments to MDA - FY 2017	4	2017	4	2017
Update Master Integration Plan (MIP) - FY 2017	4	2017	4	2017
Ballistic Missile Defense System Description Document (BMD SDD) - FY 2018	1	2018	1	2018
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2018	1	2018	1	2018
Element Design Reviews - FY 2018	2	2018	2	2018
Ballistic Missile Defense System Engineering Review - FY 2018	3	2018	3	2018
Ballistic Missile Defense System Interface Control Documents (SICD) - FY 2018	3	2018	3	2018
Update Achievable Capabilities List - FY 2018	3	2018	3	2018
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2018	3	2018	3	2018
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2018	4	2018	4	2018
Provide Independent Assessments to MDA - FY 2018	4	2018	4	2018
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY 2018	4	2018	4	2018

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD24 / System Engineering & Integration
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Events	Start		End	
	Quarter	Year	Quarter	Year
Update Master Integration Plan (MIP) - FY 2018	4	2018	4	2018
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2019	1	2019	1	2019
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2019	1	2019	1	2019
Deliver Assessment for EPAA Phase 3 – FY 2019	1	2019	1	2019
Ballistic Missile Defense System Specification (BMD SS) - FY 2019	2	2019	2	2019
Element Design Reviews - FY 2019	2	2019	2	2019
System Engineering Plan (SEP) Update - FY 2019	2	2019	2	2019
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2019	3	2019	3	2019
Ballistic Missile Defense System Engineering Review - FY 2019	3	2019	3	2019
Update Achievable Capabilities List - FY 2019	3	2019	3	2019
Update Master Integration Plan (MIP) - FY 2019	4	2019	4	2019
Provide Independent Assessments to MDA - FY 2019	4	2019	4	2019
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2019	4	2019	4	2019
Update to Integrated Master Assessment Plan (IMAP) - 1Q FY 2020	1	2020	1	2020
Update to Ballistic Missile Defense System Description Document (BMD SDD) - FY 2020	1	2020	1	2020
System Engineering Plan (SEP) Update - FY 2020	2	2020	2	2020
Ballistic Missile Defense System Specification (BMD SS) - FY 2020	2	2020	2	2020
Ballistic Missile Defense System Engineering Review - FY 2020	3	2020	3	2020
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2020	3	2020	3	2020
Update Master Integration Plan (MIP) - FY 2020	4	2020	4	2020
Provide Independent Assessments to MDA - FY 2020	4	2020	4	2020
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY 2020	4	2020	4	2020
Update to BMD System Description Document (BMD SDD) FY 2021	1	2021	1	2021
System Engineering Plan (SEP) Update FY 2021	2	2021	2	2021
Ballistic Missile Defense System Specification (BMD SS) - FY 2021	2	2021	2	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD24 / <i>System Engineering &amp; Integration</i>
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<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Ballistic Missile Defense System Engineering Review - FY 2021	3	2021	3	2021
Update to Integrated Master Assessment Plan (IMAP) - 3Q FY 2021	3	2021	3	2021
Update Master Integration Plan (MIP) - FY 2021	4	2021	4	2021
Provide Independent Assessments to MDA - FY 2021	4	2021	4	2021
Element/Component Characterization for Analysis (E/CCA) - 4Q FY 2021	4	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MT23 / Enabling - Test			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT23: <i>Enabling - Test</i>	-	32.792	16.611	17.449	-	17.449	25.501	26.040	24.704	25.077	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

FY 2017 increase keeps pace with projected FY 2017-FY 2021 Integrated Master Test Plan (IMTP) events, and reflects increase in pre- and post-mission System-level analyses, Modeling and Simulation (M&S) integration, and supporting validation and assessment activities required to support EPAA Phase 3 Technical Capability Declaration.

**A. Mission Description and Budget Item Justification**

In the Enabling Test project, SE&I drives BMDS test planning, execution, and post-test analysis and assessment, providing critical data to prove that missile defense works as designed and quantify system performance. M&S provides the tools and framework required to prepare for and execute ground and flight tests, and perform post-test reconstructions.

Engineering studies and analyses enable the allocation of test requirements to individual test events, design of test architectures, definition of target requirements, and generation of appropriate scenarios for ground and flight tests to collect data for model validation and system verification. With the support of the Director of Operational Test and Evaluation (DOT&E), SE&I works with the Service Operational Test Agencies (OTA) to incorporate operational test requirements to ensure the incremental capability being transferred to the Warfighter will be operationally effective, suitable, and survivable. SE&I identifies and coordinates test objectives and ensures BMDS requirements are being met by the BMDS system under test. Systems Engineering plays a key role in BMDS test design and development by defining, allocating to test events, and tracking Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs), as documented in the IMTP. The CECs and EMEs include Key Test Points (KTPs) allocated to test events to ensure the events will collect data to confirm proper system operation. The data anchors system and element models and simulations, which will be used in all-digital simulations to characterize BMDS performance across the battle space, including areas where no live-fire-testing is performed. The digital M&S complement extensive flight tests and hardware-in-the-loop (HWIL) ground tests, to directly support fielding decisions and BMDS deployed operations.

SE&I ground test (GT) responsibilities include BMDS performance sensitivity analysis; scenario design, focused on the production of an optimized set of GT scenarios; risk reduction analysis to mitigate data collection risks supporting test objectives; GT architecture certification analysis supporting test readiness reviews; and analysis of event test results. SE&I flight test (FT) responsibilities include planning and analysis of FT pre-mission digital and HWIL scenarios focused on exploring BMDS Flight Test performance boundaries related to the day of flight test scenario while surfacing performance risk; analytical support for flight test CONOPS development and range safety analysis; mission analysis support during FTs; conducting extensive post-mission analysis; and developing event analysis reporting products. These products support senior leaders' decisions on BMDS development and evolution and underpin BMDS capability declarations that provide new capabilities to the Warfighter.

SE&I supports pre-mission predictions for system level flight tests using the test framework set up with HWIL and digital models of the BMDS configuration for each test. This provides confidence in readiness for flight test execution by predicting BMDS performance and exercising element interfaces. It also ensures the flight test will collect the required data to support system analysis and assessments and Element and System Post-Flight Reconstruction (SPFR) objectives. SPFRs use HWIL and

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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M&S to replicate the day of flight for the BMDS configuration, including the environmental conditions and target dynamics observed in the test. They increase confidence in the System and element M&S by anchoring the results to the real world event, with emphasis on the performance parameters allocated to the M&S.

Reliability, Availability and Maintainability data collected through BMDS test events increases confidence in the predicted performance of the BMDS. SE&I documents abnormal system behavior observed during System tests and alerts MDA to issues with test article reliability. SE&I leads test failure review boards, identifies data collection shortfalls, and reallocates objectives to future test events as needed until all required model validation data is collected. The Failure Reporting, Analysis, and Corrective Action System provides a framework to investigate test failures and anomalies and identify solutions that will ultimately improve BMDS performance and reliability.

The distinct capabilities of MDA's M&S systems and products provide the BMDS, the Warfighter, and the OTA with an evaluation capability for individual components and for the overall M&S system-of-systems. MDA validates and accredits system-level models and simulations by anchoring them to real-world events to support accurate and comprehensive assessments of the BMDS. M&S development activities focus on the model and simulation frameworks, BMDS Element models, and core truth modeling (e.g., threat, phenomenology, lethality, and environment). Quality M&S systems and products contribute to the success of the missile defense program and help prove BMDS technologies work.

MDA M&S System and product testing is based on the integrated, comprehensive, and phased test program outlined in MDA's IMTP. Within the construct of the IMTP, Element-unique M&S systems, subsystems, and components are tested as part of their respective development and integration, a necessary precursor to conducting BMD System-level M&S testing (e.g., integrated ground test, performance/technical assessment venues). Resources for the planning, design, execution and management of this testing are provided in accordance with the BMDS Test Policy, as listed in the most current version of the IMTP.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Engineering and Analysis</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Engineering and Analysis effort provides engineering support for planning and execution of BMDS ground and flight test events, to include defining test architectures, objectives, and assessment requirements and evaluation criteria, and M&amp;S pre- and post-test analysis support.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Transferred from other accomplishments beginning in FY 2015.</li> <li>Provided engineering support for planning, execution, and analysis of the test events listed in the Integrated Master Test Plan (IMTP):</li> <li>- Designed test architecture, defined target requirements, and generated appropriate scenarios for ground and flight tests.</li> <li>- Defined test objectives and assessment criteria for all System level test events to anchor models and simulations and address data collection requirements.</li> </ul>	<p>18.225</p> <p align="center">-</p>	<p>16.611</p> <p align="center">-</p>	<p>17.449</p> <p align="center">-</p>



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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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"> <li>- Allocated and tracked Critical Engagement Condition (CEC) and Empirical Measurement Events (EME) data requirements and sufficiency.</li> <li>- Performed System-level and interoperability analysis.</li> <li>- Participated in major test reviews.</li> <li>- Generated BMDS test observations and coordinate associated BMDS Discrepancy Reports (BDR) within the Failure Reporting, Analysis, and Corrective Action System (FRACAS)</li> <li>- Produced the threat data required to enable BMDS ground tests, flight tests and performance assessment.</li> <li>- Utilized M&amp;S for pre-test assessment and post-test review, as well as M&amp;S updates.</li> <li>- Provided SE&amp;I test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements.</li> <li>- Analyzed test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data.</li> <li>- Developed and documented long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration.</li> <li>- 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.</li> <li>- Populated the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments.</li> <li>- 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).</li> <li>- Developed and provided infrastructure, software, and associated MDA/IA compliance for the RApid Scenario Prototype (RASP) capability.</li> <li>- Developed and optimized candidate ground test scenarios and produced the associated scenario data packages.</li> <li>- Developed and established hardware-in-the-loop (HWIL) M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provided modeling and technical analysis support during Combatant Command wargames and exercises.</li> <li>- Developed, delivered, and presented the Quick Look Brief (QLB), Executive QLB, Mission Data Review (MDR), and Executive MDR.</li> <li>- Conducted M&amp;S HWIL Integration Bench Mark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> <li>- Integrated, tested, functionally qualified, and delivered end-to-end BMDS simulations supporting ground test missions.</li> </ul> <p><b>FY 2016 Plans:</b> Provide engineering support for planning, execution, and analysis of the test events listed in the Integrated Master Test Plan (IMTP):</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests.</li> <li>- 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&amp;S) and address data collection requirements.</li> <li>- Perform System-level and interoperability analysis.</li> <li>- Lead test requirements and analysis reviews, and participate in major test reviews, analysis team meetings, and mission planning events.</li> <li>- Generate BMDS test observations and coordinate associated BMDS Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System.</li> <li>- Produce the threat data required to enable BMDS ground tests, flight tests and performance assessment.</li> <li>- Utilize M&amp;S for pre-test assessment and post-test review, as well as M&amp;S updates.</li> <li>- Provide Systems Engineering and Integration (SE&amp;I) test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements.</li> <li>- Analyze test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data.</li> <li>- Coordinate with BMDS Operational Test Agency (OTA) to address OTA issue sheets allocated to test events.</li> <li>- Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration.</li> <li>- 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.</li> <li>- Populate the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments.</li> <li>- 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).</li> <li>- Incrementally improve and provide infrastructure, software, and associated MDA/IA compliance for the RAPid Scenario Prototype (RASP) capability.</li> <li>- Develop and optimize candidate ground test scenarios and produce the associated scenario data packages.</li> <li>- Develop and establish hardware-in-the-loop (HWIL) M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provide modeling and technical analysis support during Combatant Command wargames and exercises.</li> <li>- Integrate non-MDA element models and simulations for participation in IMTP events.</li> <li>- Develop, deliver, and present the Quick Look Brief, Mission Data Review (MDR), and Executive MDR.</li> <li>- Conduct M&amp;S HWIL Integration Benchmark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> <li>- Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions.</li> </ul> <p><b>FY 2017 Plans:</b></p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>FY 2017 increase keeps pace with projected FY 2017-FY 2021 IMTP events.</p> <p>FY 2017 Engineering &amp; Performance Analysis activities focus on projected FY 2017-FY 2020 IMTP events and analysis and assessments that support delivery of Near-term Discrimination Improvements for Homeland Defense and Enhanced Homeland Defense.</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"> <li>- Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests.</li> <li>- 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&amp;S and address data collection requirements.</li> <li>- Assess the feasibility of flight test design analysis results to meet test objectives, and provide inputs to Approved Test Configuration packages.</li> <li>- Perform System-level and interoperability analyses.</li> <li>- Lead test requirements and analysis reviews, and participate in major test reviews, analysis team meetings, and mission planning events.</li> <li>- Generate BMDS test observations and coordinate associated BMDS Discrepancy Reports within the Failure Reporting, Analysis, and Corrective Action System.</li> <li>- Produce the threat data required to conduct BMDS ground tests, flight tests and performance assessment.</li> <li>- Utilize M&amp;S for pre-test assessment and post-test review; update M&amp;S with flight and ground test data.</li> <li>- Provide SE&amp;I 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.</li> <li>- 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.</li> <li>- Coordinate with BMDS OTA to address OTA issue sheets allocated to test events.</li> <li>- Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration.</li> <li>- 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.</li> <li>- Populate the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments.</li> <li>- 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).</li> <li>- Incrementally improve and provide infrastructure, software, and associated MDA/IA compliance for the RAPid Scenario Prototype (RASP) capability.</li> <li>- Develop and optimize candidate ground test scenarios and produce the associated scenario data packages.</li> <li>- Develop operational overlay scenarios to support flight test planning and design.</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Develop and establish HWIL M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provide modeling and technical analysis support during Combatant Command wargames and exercises.</li> <li>- Integrate non-MDA element models and simulations for participation in IMTP events.</li> <li>- Develop, deliver, and present the Quick Look Brief, Mission Data Review (MDR), and Executive MDR.</li> <li>- Conduct M&amp;S HWIL Integration Benchmark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> <li>- Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions.</li> <li>- Coordinate with the OTA community and Element stakeholders to disposition open OTA Issue Sheets and recommend action plans to achieve closure.</li> </ul>			
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<b>Title:</b> Flight Test Engineering	14.567	0.000	0.000
<b>Articles:</b>	-	-	-

**Description:** FTO-02 E1 was a “no test” due to a target extraction failure that prevented target ignition. Completed the following additional Aegis BMD specific work/re-work to re-plan the test as FTO-02 Event 1a, which successfully executed in 1Q FY 2016.

**FY 2015 Accomplishments:**

- Re-conducted test milestone reviews to ensure all test participants mission assignments and execution readiness were adequate to ensure accomplishment of test objectives
- Provided additional Aegis BMD engineering test configuration management; risk assessment; and anomaly/deficiency review to support the Failure Review Board, and assessment and closure to support data gathering for BMDS hardware/software reliability improvements
- Provided support for additional use of Aegis BMD test event laboratories, field activities, range support activities, and land-based test site test teams
- Conducted further interoperability testing from the Aegis Ashore Missile Defense Test Complex (AAMDTC) at Pacific Missile Range Facility (PMRF) and the BMDS Test Site (BTS) lab in San Diego to evaluate link performance, data integrity, data handling and weapon system mission performance.
- Performed additional Range Integration Testing (RIT) with the AAMDTC and PMRF to ensure integrated systems are providing and passing data correctly, safety system interlocks and decision engines are working properly and to provide console operator training.
- Performed additional Distributed RIT (DRIT) with the AAMDTC and PMRF, other participating mission elements and the BTS lab to ensure all participating elements were working properly, passing reliable data and provide console operator training for off nominal situations.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
- Conducted mission scenario based dry run and dress rehearsal exercises to ensure range and tactical communication loops were adequate and working properly and to exercise diverse timelines for target deployment and range surveillance and ensure countdown recycle points were adequate.			
<b>FY 2016 Plans:</b> N/A			
<b>FY 2017 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	32.792	16.611	17.449

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0604878C: <i>Aegis BMD Test</i>	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604887C: <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	78.463	64.618	56.481	-	56.481	86.709	76.205	74.776	87.415	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

In order to optimize the performance of the BMDS, MDA leverages the nation's engineering Centers of Excellence at government agencies and Military Services, FFRDCs, UARCs, and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS. MDA will acquire products and services by competitive means to the extent practical.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**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			
Engineering and Analysis - Engineering & Analysis - CSS Support	C/CPFF	Parsons : AL	0.000	1.000		1.276	Oct 2015	1.514	Oct 2016	-		1.514	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - FFRDC	MIPR	Aerospace : AL	0.000	0.000		0.000		0.385	Nov 2016	-		0.385	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Industry	C/CPAF	Boeing : VA, AL	0.000	5.594		2.243	Oct 2015	2.382	Nov 2016	-		2.382	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Integration Support CSS	C/CPAF	COLSA : AL, CO	0.000	2.790		5.076	Nov 2015	5.328	Nov 2016	-		5.328	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - OGA Support	MIPR	AMRDEC : AL	0.000	6.557		6.182	Oct 2015	7.301	Nov 2016	-		7.301	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Technical Support	C/CPAF	Northrop Grumman : VA, AL	0.000	1.354		1.205	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Engineering and Analysis - Engineering & Analysis - Test Engineering Support	Various	Various : AL, CO, VA	0.000	0.930		0.629	Nov 2015	0.539	Nov 2016	-		0.539	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	18.225		16.611		17.449		-		17.449	-	-	-

**Remarks**  
FY 2017 increase keeps pace with projected FY 2017-FY 2021 Integrated Master Test Plan (IMTP) events, and reflects increase in pre- and post-mission System-level analyses, Modeling and Simulation (M&S) integration, and supporting validation and assessment activities required to support EPAA Phase 3 Technical Capability Declaration.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Flight Test Engineering - Aegis BMD Flight Test Execution	MIPR	DMEA : CA	0.000	0.085		0.000		0.000		-		0.000	0	0.085	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 2	MIPR	NAWC AD : Pax River, MD	0.000	0.509		0.000		0.000		-		0.000	0	0.509	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 3	MIPR	NAWC : Pt. Mugu, CA	0.000	2.108		0.000		0.000		-		0.000	0	2.108	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 4	MIPR	NSWC Dahlgren : Dahlgren, VA	0.000	0.602		0.000		0.000		-		0.000	0	0.602	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 5	MIPR	NSWC PHD : Pt Heuneme, CA	0.000	0.778		0.000		0.000		-		0.000	0	0.778	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 6	MIPR	PMRF : PMRF, HI	0.000	2.543		0.000		0.000		-		0.000	0	2.543	0
Flight Test Engineering - Aegis BMD Flight Test Execution - 7	MIPR	Various : HI, VA, CA, MA, NC	0.000	2.014		0.000		0.000		-		0.000	0	2.014	0
Flight Test Engineering - Aegis BMD Flight Test Execution - CSS	SS/CPAF	RMS : Tuscon, AZ	0.000	0.978		0.000		0.000		-		0.000	0	0.978	0
Flight Test Engineering - Aegis BMD Flight Test Execution - IA 1	IA	DOI : PMRF, HI	0.000	1.394		0.000		0.000		-		0.000	0	1.394	0
Flight Test Engineering - Aegis BMD Flight Test Execution - IA 2	IA	DOT : PMRF, HI	0.000	3.200		0.000		0.000		-		0.000	0	3.200	0
Flight Test Engineering - Aegis BMD Flight Test Execution - UARC	SS/CPAF	JHU / APL : MD	0.000	0.356		0.000		0.000		-		0.000	0	0.356	0
<b>Subtotal</b>			0.000	14.567		0.000		0.000		-		0.000	0.000	14.567	0.000

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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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			

**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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	0.000	32.792	16.611	17.449	-	17.449	-	-	-

**Remarks**  
N/A



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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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
Integrated Master Test Plan (IMTP) Engineering Inputs - 2Q - FY 2015		▲																										
Integrated Master Test Plan (IMTP) Engineering Inputs - 4Q - FY 2015				▲																								
FT0-02 E1a (OTA, Intercept Flight Test)			✦	✦																								
FT0-02 E2a (OTA, Intercept Flight Test)			✦	✦																								
Integrated Master Test Plan (IMTP) Engineering Inputs - 2Q - FY 2016					△																							
Integrated Master Test Plan (IMTP) Engineering Inputs - 4Q - FY 2016							△																					
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2017								△																				
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2017									△																			
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2018										△																		
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2018											△																	
FT0-03 E1 (OTA, Intercept Flight Test)												△																
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2019													△															
FT0-03 E2 (OTA, Intercept Flight Test)														△														
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2019															△													
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2020																△												
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2020																	△											
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2021																		△										
FT0-04 (OTA, Intercept Flight Test)																											△	
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2021																											△	

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MT23 / Enabling - Test
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Master Test Plan (IMTP) Engineering Inputs - 2Q - FY 2015	2	2015	2	2015
Integrated Master Test Plan (IMTP) Engineering Inputs - 4Q - FY 2015	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
Integrated Master Test Plan (IMTP) Engineering Inputs - 2Q - FY 2016	2	2016	2	2016
Integrated Master Test Plan (IMTP) Engineering Inputs - 4Q - FY 2016	4	2016	4	2016
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2017	1	2017	1	2017
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2017	3	2017	3	2017
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2018	1	2018	1	2018
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2018	3	2018	3	2018
FT0-03 E1 (OTA, Intercept Flight Test)	3	2018	3	2018
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2019	1	2019	1	2019
FT0-03 E2 (OTA, Intercept Flight Test)	1	2019	1	2019
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2019	3	2019	3	2019
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2020	1	2020	1	2020
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2020	3	2020	3	2020
Integrated Master Test Plan (IMTP) Engineering Inputs - 1Q - FY 2021	1	2021	1	2021
FT0-04 (OTA, Intercept Flight Test)	3	2021	3	2021
Integrated Master Test Plan (IMTP) Engineering Inputs - 3Q - FY 2021	3	2021	3	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD28 / Intelligence & Security			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD28: <i>Intelligence &amp; Security</i>	69.469	38.485	40.263	41.254	-	41.254	45.192	45.654	48.462	49.348	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

Major program goals for the Intelligence and Security team are:

- Ensure the Intelligence Community (IC) understands and fulfills MDA's current and future prioritized intelligence requirements; advocate BMDS test support intelligence requirements; and maintain regular interactions with the IC.
- Continue the federated approach of supporting MDA by leveraging available National and DoD Counterintelligence resources. Ensure counterintelligence products and services are fully integrated into all RDT&E programs and activities to protect classified information and critical technologies and to support and protect MDA and BMDS personnel, facilities, information and activities.
- Consistently and comprehensively define cybersecurity systems engineering requirements for Continental United States (CONUS) and non-CONUS based BMDS assets. Identify cybersecurity systems engineering and infrastructure intelligence requirements to focus IC collection, analysis and production to target MDA/BMDS cyber vulnerabilities. Incorporate cybersecurity engineering requirements into the BMDS systems engineering process.
- Provide cross-Agency acquisition security oversight and support for the identification and protection of Critical Program Information (CPI), and evaluation and implementation of developing Supply Chain Risk Management (SCRM) requirements. Provide physical security support for BMDS weapons/sensor system deployments, including Foreign Military Sales. Implement MDA's information security and declassification programs. Strengthen Test and Operations Security (OPSEC) support across the Agency.

The Security and Intelligence Project captures five specific areas: Intelligence; Counterintelligence; Cybersecurity Engineering; Research, Development, and Acquisition (RDA) Security; and Threat Systems Engineering. Collectively, these efforts provide critical information regarding threat ballistic missile system capabilities; protect personnel, activities, and technology from espionage and terrorism; and identify and mitigate BMDS system vulnerabilities.

1) The Intelligence Requirements Program furnishes highly classified intelligence on foreign threat ballistic missile systems to the missile defense community. This program provides a clearing house for MDA's requirements to be presented to the IC for collection, analysis and production. The Intelligence Requirements Office registers MDA's requirements with the IC, which provides data to be disseminated and archived in the MDA Intelligence Knowledge Base. The intelligence and threat changes are provided to the MDA System Engineer, who uses the information to reduce risk and improve BMDS performance against the evolving threat. This enables MDA Program Managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make informed decisions, and invest limited resources on countering the most significant aspects of potential adversary capabilities. Other aspects of Intelligence Requirements allow MDA to gain access to and leverage unique IC capabilities, many of which are highly classified and require expertise to exploit.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD28 / <i>Intelligence &amp; Security</i>
<p>2) The Counterintelligence (CI) Program undertakes defensive CI activities as part of an integrated DoD/National effort to detect and neutralize foreign intelligence collection efforts, espionage and International terrorist activities directed against MDA personnel, information, facilities, and activities, or against U.S. National Security. Pursuant to DoD Directive O-5240.02 (Counterintelligence) and other DoD CI policy issuances, the MDA CI Program:</p> <ul style="list-style-type: none"> <li>-- Conducts CI investigations, including initial inquiries into reported or suspected clandestine relationships between MDA personnel and agents of a foreign power or relationships between MDA personnel and individuals associated with international terrorist organizations;</li> <li>-- Conducts CI Collection Activities (CCA) to acquire information about the capabilities, intentions, and activities of foreign powers, organizations, or persons who engage in espionage, terrorism, sabotage, subversion, and clandestine intelligence activities against the United States, DoD and MDA. This includes establishing liaison relationships with U.S. and host-nation intelligence, CI and law enforcement organizations and debriefing MDA foreign travelers;</li> <li>-- Conducts CI analysis and production by performing research and analysis to produce assessments, analytical reports, threat advisories and other products to keep MDA apprised of current or emerging foreign intelligence concerns and international terrorism threats to MDA personnel, information, facilities and activities worldwide;</li> <li>-- Performs defensive CI activities, including CI Awareness Training. Provides specialized on-site support for MDA Special Access Programs (SAP), RDA programs, flight tests, and fielding/deployment activities worldwide to protect CPI, critical BMDS components, and sensitive SAP technologies/capabilities from foreign intelligence entity targeting, collection or compromise; and</li> <li>-- Ensures MDA's Insider Threat program is compliant with the minimum standards established by Executive Order 13587 (White House Memorandum on National Insider Threat Policy and Minimum Standards for Executive Branch Insider Threat Programs) and DoD Counterintelligence Policies.</li> </ul> <p>3) The Cybersecurity Engineering Program provides coherent cybersecurity systems engineering policy and guidance to BMDS system design and acquisition, enhancing BMDS resiliency against existing and emerging cyber threats. It develops and coordinates near-term and long-term engineering changes to the BMDS that advance MDA's ability to counter cyber threats posed by our adversaries. To fulfill this role, the BMDS Cybersecurity Engineering program works with Intelligence Requirements and Counterintelligence to obtain a comprehensive picture of the overall cyber threat for impacts to the BMDS design; identifies mitigation strategies and maps them to established National Security Systems and DoD policies; and then influences the design by:</p> <ul style="list-style-type: none"> <li>-- Identifying updates to the Core Standards and Requirements to implement Defense-in-Depth within planned development cycles (Builds);</li> <li>-- Providing oversight, coordination and management of cybersecurity technical requirements development and policy-mandated responsibilities;</li> <li>-- Coordinating evaluation of cybersecurity capability during BMDS tests; and</li> <li>-- Assessing the validated cyber threat intelligence for impact to the BMDS design.</li> </ul> <p>To fulfill mission requirements, the program interfaces with relevant Cybersecurity Systems Engineering experts to assess requirements, documentation and cybersecurity system design and assessment criteria.</p> <p>4) RDA Security develops and implements policy for, and manages the MDA Information, Acquisition, System Protection, Declassification, Security Matrix, and Test and OPSEC programs to enable the acquisition, testing, development, and fielding of BMDS capabilities. RDA Security:</p> <ul style="list-style-type: none"> <li>-- Manages the Agency-wide Information Security (INFOSEC) program, which includes: conducting annual INFOSEC reviews; executing the Security Manager program; providing INFOSEC training for marking, classifying, and protecting classified and controlled unclassified information; performing security reviews for all Congressional, Government Accountability Office (GAO), budget, Freedom of Information Act (FOIA), and Public Release actions; supporting the development and coordination of Security Classification Guides (SCGs); and overseeing MDA's collateral classification management program;</li> <li>-- Supports program offices by identifying CPI and critical components, analyzing risk, and recommending security measures to protect CPI and the BMDS supply chain;</li> </ul>		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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- Manages the Industrial Security and Acquisition Security programs to develop Contract Security Classification Specifications (DD-254s) and security content for all applicable MDA contracts and research initiatives;
- Provides planning support for BMDS development, test, and deployments by coordinating security requirements for BMDS assets internal to MDA and with the Combatant Commanders (CCMDs) and Services. Develops and coordinates BMDS and site security infrastructure requirements and designs in accordance with DoD direction to protect critical BMDS assets; and
- Conducts the MDA Declassification Program in compliance with Executive Order 13526 (Classified National Security Information), which requires mandatory review of 25 year-old missile defense documents to ensure classified and sensitive unclassified information is not inadvertently released into the public domain.

5) The Threat Systems Engineering effort defines adversary capabilities required for BMDS design and development, and maintains and updates the Agency-wide threat documentation to ensure the threat parameters used for BMD System performance predictions, analyses, design, verification, and assessment are correct and consistent. Threat Systems Engineering also provides, develops, coordinates, and baselines targets and countermeasures requirements to define target capabilities that support BMDS flight test objectives. Threat Systems Engineering:

- Defines the BMDS threat space and supports threat space allocation to specific BMDS capability increments;
- Guides missile requirements development, planning, and accreditation for BMDS ground tests and digital simulations;
- Supports development of target system specifications and guides targets requirements development, planning, and certification for BMDS flight tests;
- Analyzes flight test target performance relative to threat intelligence assessments to support target system verification and certification;
- Conducts verification and validation to ensure threat missile models meet specifications and are consistent with intelligence assessments at established cut-off dates; and
- Produces threat models and scenario data for BMDS development events and establishes threat consistency across the BMDS and Elements.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Intelligence</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Intelligence program provides expertise to develop intelligence products on threat ballistic missile system capabilities, and leverages unique intelligence-community developed, owned, and operated capabilities for the benefit and advocacy of the missile defense community.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Served as designated intelligence broker between MDA and the Intelligence Community:</li> <li>-- Maintained and communicated prioritized, specific BMDS intelligence requirements to the Intelligence Community.</li> <li>-- Maintained a focused dialog with members of the Intelligence Community to ensure understanding, urgency and context of MDA intelligence requirements.</li> </ul> <p>-Provided up-to-date and accurate intelligence to Missile Defense community.</p>	<p>8.415</p> <p>-</p>	<p>8.767</p> <p>-</p>	<p>9.203</p> <p>-</p>

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<p>-Maintained and updated MDA's encyclopedic, all-source, and all-encompassing knowledge base of foreign ballistic missile threats, including development, enhancement, and population of the Missile Threat Portals with Intelligence Community produced documents at the appropriate security classification levels.</p> <p>-Fully characterized all ballistic missile threat systems from high priority countries for use by the MDA Systems Engineer, Program Managers, and Director for Test to perform modeling, simulation, and testing of the BMDS in FY 2015.</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Serve as designated intelligence broker between MDA and the Intelligence Community:</li> <li>-- Maintain and communicate prioritized, specific BMDS intelligence requirements to the Intelligence Community.</li> <li>-- Maintain a focused dialog with members of the Intelligence Community to ensure understanding, urgency and context of MDA intelligence requirements.</li> <li>- Provide up-to-date and accurate intelligence to Missile Defense community.</li> <li>- Maintain and update MDA's encyclopedic, all-source, and all-encompassing knowledge base of foreign ballistic missile threats, including development, enhancement, and population of the Missile Threat Portals with Intelligence Community produced documents at the appropriate security classification levels.</li> <li>- Fully characterize all ballistic missile threat systems from high priority countries for use by the MDA Systems Engineer, Program Managers, and Director for Test to perform modeling, simulation, and testing of the BMDS.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Serve as designated intelligence broker between MDA and the Intelligence Community</li> <li>-- Maintain and communicate prioritized, specific BMDS intelligence requirements to the Intelligence Community.</li> <li>-- Maintain a focused dialog with members of the Intelligence Community to ensure understanding, urgency and context of MDA intelligence requirements.</li> <li>- Provide up-to-date and accurate Current, Technical, Acquisition, Collection and Cyber intelligence support to the BMDS throughout the acquisition life cycle.</li> <li>- Maintain and update MDA's encyclopedic, all-source, and all-encompassing knowledge base of foreign ballistic missile threats, including development, enhancement, and population of the Missile Threat Portals with Intelligence Community produced documents at the appropriate security classification levels.</li> <li>- Fully characterize all ballistic missile threat systems from high priority countries for use by the MDA Systems Engineer, Program Managers, and Director for Test to perform modeling, simulation, and testing of the BMDS.</li> <li>- Maintain Missile Intelligence Secure Link (MISL) classified portal (full operational capability).</li> </ul>				
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<b>Title:</b> Counterintelligence				
<b>Articles:</b>	5.752	6.105		6.389
	-	-		-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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**Description:** The Counterintelligence Program detects, exploits or neutralizes espionage, foreign intelligence collection activities and terrorist activities conducted for or on behalf of foreign powers, organizations, persons, or their agents directed against U.S. national security interests, or DoD/MDA and its personnel, information, material, facilities, and activities.

**FY 2015 Accomplishments:**

- Served as MDA Office of Primary Responsibility with Federal, State and Local Law Enforcement and Counterintelligence (CI) Organizations for reporting and resolution of matters or incidents involving MDA personnel, information and technologies.
- Engaged National, Combatant Command and DoD CI resources to share and obtain threat information impacting MDA personnel, facilities, information, technologies, programs and activities, worldwide.
- Deployed organic CI and technical teams to support of BMDS fielding and deployment activities under the Phased Adaptive Approach and other initiatives under Foreign Military Sales Programs.
- Conducted CI research and provided timely, relevant and accurate threat products to keep MDA program elements and senior leadership informed of criminal, terrorist and foreign intelligence threats to MDA personnel, facilities, programs, information, and activities.
- Executed lifecycle replacement of outdated technical surveillance countermeasures and cyber forensics gear to employ the latest technologies during conferences, flight tests and other classified activities to detect, deter and prevent the loss or compromise of classified or sensitive but unclassified information to sophisticated foreign adversary collection activities.
- Provided on-site CI and technical support for all MDA flight tests to detect, deter, or neutralize criminal, terrorist and foreign intelligence collection threats targeting MDA and BMDS technologies, personnel, facilities and activities.
- Conducted CI in Cyberspace activities to detect malicious and insider threat activities targeting MDA administrative and fire control networks.
- Initiated MDA Insider Threat Program to identify, deter and mitigate potential insider threats.

**FY 2016 Plans:**

- Serve as MDA Liaison with Federal, State and Local Law Enforcement and Counterintelligence (CI) Organizations for reporting and resolution of matters or incidents involving MDA personnel, information and technologies.
- Engage National, Combatant Command and DoD CI resources to share and obtain threat information impacting MDA personnel, facilities, information, technologies, programs and activities, worldwide.
- Deploy organic CI and technical teams to support BMDS fielding and deployment activities in all regions and other initiatives under Foreign Military Sales Programs.
- Conduct CI research and provide timely, relevant and accurate threat products to keep MDA program elements and senior leadership informed of criminal, terrorist and foreign intelligence threats to MDA personnel, facilities, programs, information, and activities.


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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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- Execute life cycle replacement of outdated technical surveillance countermeasures and cyber forensics gear to employ the latest technologies during conferences, flight tests and other classified activities to detect, deter and prevent the loss or compromise of classified or sensitive but unclassified information to sophisticated foreign adversary collection activities.
- Provide on-site CI and technical support for all MDA flight tests to detect, deter, or neutralize criminal, terrorist and foreign intelligence collection threats targeting MDA and BMDS technologies, personnel, facilities and activities.
- Conduct CI in Cyberspace activities to detect malicious and insider threat activities targeting MDA administrative and fire control networks.
- Develop MDA Insider Threat Program Standard Operating Procedures (SOPs) and Tactics, Techniques, and Procedures (TTPs) for the collection and analysis of information required to identify, deter and mitigate potential insider threats, and establish capability to execute analysis of determined data feeds.

**FY 2017 Plans:**

- Serve as MDA Liaison with Federal, State and Local Law Enforcement and Counterintelligence (CI) Organizations for reporting and resolution of matters or incidents involving MDA personnel, information and technologies.
- Engage National, Combatant Command and DoD CI resources to share and obtain threat information impacting MDA personnel, facilities, information, technologies, programs and activities, worldwide.
- Provide CI, technical and cyber threat support to MDA flight tests, conferences, and BMDS deployment activities worldwide, including Foreign Military Sales Programs, to detect, deter, or neutralize criminal, terrorist and foreign intelligence collection threats targeting MDA and BMDS technologies, personnel, facilities and activities.
- Execute life cycle replacement of outdated technical surveillance countermeasures and cyber forensics gear to employ the latest technologies during conferences, flight tests and other classified activities to detect, deter and prevent the loss or compromise of classified or sensitive but unclassified information to sophisticated foreign adversary collection activities.
- Conduct CI in Cyberspace activities to detect malicious and insider threat activities targeting MDA administrative and fire control networks.
- Conduct MDA Insider Threat Program to identify, deter and mitigate potential insider threats.
- Provide initial, periodic and annual CI Awareness and Reporting training to entire MDA workforce.
- Provide CI support for cyber forensics and analysis to identify insider and foreign entity cyber threats to MDA computer networks and BMDS fire control systems.
- Conduct CI research and analysis to produce CI threat products that address foreign intelligence, cyber and international terrorist threats to MDA personnel, facilities, information, systems and activities worldwide.
- Maintain state of the art technical surveillance countermeasures and cyber forensic gear to detect, identify and neutralize adversary collection platforms and capabilities used to gain unauthorized access to MDA classified and controlled unclassified information.

<b>Title:</b> Cybersecurity Engineering Program	4.584	4.687		4.958
<b>Articles:</b>	-	-		-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Description:</b> The Cybersecurity Engineering Program is focused on developing designs and solutions to protect the BMDS from cybersecurity threats through coherent cybersecurity systems engineering.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Implemented the Deputy Assistant Secretary of Defense (DASD) for Cyber, Identity, and Information Assurance (CIIA) Strategy by achieving Cyberspace resiliency (being flexible, adaptable, and successful in the face of cyber degradation, loss or attack) by understanding the battle space; and engineering for survivability.</li> <li>- Ensured Cybersecurity is integrated into the Acquisition Process in accordance with DoD Instruction 8580.1.</li> <li>- Developed and coordinated near-term and long-term engineering changes to the BMDS that advance the resilience to cyber threats.</li> <li>- Defined cybersecurity engineering requirements for the BMD System Specification for continental U.S. (CONUS) and non-CONUS based BMDS assets. Developed requirements for building cybersecurity into incremental BMDS Hardware and Software builds, up front. Monitored allocation of these requirements to the Elements. Recommended updates to the BMDS Core Standards to include new Cyber-related specifications specified by the Agency, the Combatant Commanders, the DOD, and the Federal Government.</li> <li>- Assessed the Cybersecurity Architecture to address gaps/disconnects, enhance interoperability, and realize efficiencies across all mission systems. Defined the "As Built" and "To Be" Cybersecurity Systems Engineering concepts to support technical assessments and cybersecurity design solutions and implementation recommendations impacted by the change in requirements. Recommended updates to the BMD System Description Document, System Security Concept (SSC), and other planning documents to ensure cybersecurity issues are fully considered through the BMDS and element programs.</li> <li>- Developed technical requirements and interface documentation to execute an Integrated Cybersecurity Engineering Net-centric Architectural Concept.</li> <li>- Implemented the National Security Agency (NSA) Community Gold Standard to enhance the cybersecurity posture of the BMDS by delivering expert, responsive, cybersecurity systems engineering products and services supporting the Program Managers to meet BMDS and cybersecurity systems engineering needs and requirements for Enhanced Homeland Defense and Enhanced Medium Range Ballistic Missile (MRBM) Defense.</li> <li>- Implemented mitigations to cyber threats as system requirements and specifications for the BMDS design and architecture, and ensured mitigations trace to necessary components and interfaces supporting the BMDS mission.</li> <li>- Coordinated evaluation of cybersecurity capability during BMDS tests; developed verification and assessment strategies for system requirements.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Implement the Deputy Assistant Secretary of Defense (DASD) for Cyber, Identity, and Information Assurance (CIIA) Strategy by achieving Cyberspace flexibility, adaptability, and resilience in the face of cyber degradation, loss or attack, through understanding of the battle space.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD28 / <i>Intelligence &amp; Security</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Ensure Cybersecurity is integrated into the Acquisition Process in accordance with DoD Instruction 8580.1.</li> <li>- Develop and coordinate near-term and long-term engineering changes to the BMDS that advance the resilience to cyber threats.</li> <li>- Define cybersecurity engineering requirements for the BMD System Specification for continental U.S. (CONUS) and non-CONUS based BMDS assets. Develop requirements for building cybersecurity into incremental BMDS Hardware and Software builds, up front. Monitor allocation of these requirements to the Elements. Recommend updates to the BMDS Core Standards to include new Cyber-related specifications specified by the Agency, the Combatant Commanders (COCOMs), the DOD, and the Federal Government.</li> <li>- Assess the Cybersecurity Architecture to address gaps/disconnects, enhance interoperability, and realize efficiencies across all mission systems. Define the "As Built" and "To Be" Cybersecurity Systems Engineering concepts to support technical assessments and cybersecurity design solutions and implementation recommendations impacted by the change in requirements. Recommend updates to the BMDS System Description Document, System Security Concept (SSC), and other planning documents to ensure cybersecurity issues are fully considered through the BMDS and Element programs.</li> <li>- Develop technical requirements and interface documentation to execute an Integrated Cybersecurity Engineering Net-centric Architectural Concept.</li> <li>- Implement the National Security Agency (NSA) Community Gold Standard to enhance BMDS cybersecurity posture by delivering expert and responsive cybersecurity systems engineering products and services, supporting Program Managers to meet BMDS and cybersecurity systems engineering needs and requirements for Enhanced Homeland Defense and Enhanced Medium Range Ballistic Missile (MRBM) Defense.</li> <li>- Implement cyber threat mitigation strategies within BMDS architecture, design, system requirements, and specifications documentation to ensure traceability to necessary components and interfaces supporting the BMDS mission.</li> <li>- Coordinate evaluation of cybersecurity capability during BMDS tests.</li> <li>- Develop verification and assessment strategies for system cybersecurity requirements.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Ensure Cybersecurity is integrated into the Acquisition Process in accordance with DoD Instruction 8580.1.</li> <li>- Assess the Cybersecurity Architecture to address gaps/disconnects, enhance interoperability, and realize efficiencies across all mission systems. Define the "As Built" and "To Be" Cybersecurity Systems Engineering concepts to support technical assessments and cybersecurity design solutions and implementation recommendations impacted by the change in requirements. Recommend updates to the BMDS System Description Document, System Security Concept, and other planning documents to ensure cybersecurity issues are fully considered through the BMDS and Element programs.</li> <li>- Provide cybersecurity systems engineering policy and guidance for BMDS system design and acquisition to enhance BMDS resiliency against cyber threats</li> <li>-- Develop and coordinate near-term and long-term engineering changes to the BMDS that advance resilience to cyber threats.</li> <li>- Define cybersecurity engineering requirements for the BMD System Specification for CONUS and non-CONUS based BMDS assets</li> </ul>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>-- Develop requirements for building cybersecurity into incremental BMDS Hardware and Software builds, up front.</li> <li>-- Monitor allocation of these requirements to the Elements.</li> <li>-- Recommend updates to the BMDS Core Standards, including Cyber-related requirements specified by the Agency, the CCMDs, the DoD, and the Federal Government.</li> <li>-- Perform cybersecurity systems engineering assessments for BMD System Specification changes and additions.</li> <li>- Perform cybersecurity systems engineering assessments for BMDS interface changes.</li> <li>- Implement cybersecurity engineering resiliency techniques.</li> <li>- Support cybersecurity requirement architecture, system design, testing, and assessment.</li> <li>- Provide independent cybersecurity reviews at critical engineering milestones.</li> <li>- Support information system security engineering by assessing cybersecurity requirements, design, and implementations and provide recommendations to address architecture gaps or shortfalls.</li> <li>- Implement cyber threat mitigation strategies within BMDS architecture, design, system requirements, and specifications documentation to ensure traceability to necessary components and interfaces supporting the BMDS mission.</li> <li>- Coordinate evaluation of cybersecurity capability during BMDS tests.</li> <li>- Develop verification and assessment strategies for system cybersecurity requirements.</li> </ul>			
<p><b>Title:</b> Research, Development, and Acquisition (RDA) Security</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> RDA Security protects BMDS information, Critical Program Information, technologies, and deploying systems; develops and coordinates Security Classification Guides; and performs declassification reviews to identify equities that warrant continued protection in order to preserve the technological advantage of the BMDS. RDA Security also coordinates MDA intelligence, counterintelligence and security support to BMDS test activities.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Performed all reviews supporting Agency public release, security classification, and required Freedom of Information Act (FOIA) and Mandatory Declassification Reviews (MDR) to ensure sensitive BMDS information is not inadvertently released into the public domain.</li> <li>- Per Executive Order 13525, Classified National Security Program, provided a combination of digitized material, automated search tools, and Declassification specialists to identify sensitive BMDS material that qualifies for exemption from automatic declassification based on age. Declassification reviews identified equities that warrant continued protection to preserve the technological advantage of the BMDS.</li> <li>- Performed Information Security staff assistance reviews and assessments of 90 MDA programs and coordinated required security incident reviews to identify and fix security deficiencies impacting Agency operations; supported continuing awareness and emphasis of security measures to protect critical BMDS technological information.</li> </ul>	<p>9.945</p> <p align="center">-</p>	<p>10.434</p> <p align="center">-</p>	<p>10.965</p> <p align="center">-</p>

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provided security oversight for the Agency's classified contracts by drafting and coordinating DD254 "Contract Security Classification Specification" documents to support contracting efforts and ensure that appropriate protections for BMDS sensitive information are applied within the supporting industrial base.</li> <li>- Provided security support to Phased Adaptive Approach (PAA) and deployments of AN-TPY-2 radars to the CENTCOM and PACOM areas of responsibility to ensure effective physical protection is provided to extremely low density/high demand emerging warfighter capability.</li> <li>- Conducted program protection planning for the continuing assessment of candidate critical program information (CPI) for Advanced Technology programs and reassessment of other BMDS programs affected by technical baseline changes; ensured critical technologies embedded in Missile Defense systems are not vulnerable to compromise.</li> <li>- Executed an effective Supply Chain Risk Management (SCRM) program to prevent unmitigated risks from degrading the performance of components and systems across the BMDS supply chain.</li> <li>- Provided dedicated on-site security and protection of BMDS resources and personnel at operational sites in Alaska, California and Colorado to ensure 100% security protection coverage of the BMDS mission operations and test assets based in those regions.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Perform reviews supporting all Agency public release, security classification, and required Freedom of Information Act and Mandatory Declassification Reviews to ensure sensitive BMDS information is not inadvertently released into the public domain.</li> <li>- Perform Information Security staff assistance reviews and assessments of MDA programs and coordinate required security incident reviews to identify and fix security deficiencies impacting Agency operations; support continuing awareness and emphasis of security measures to protect critical BMDS technological information.</li> <li>- Provide security oversight for the Agency's classified contracts by drafting and coordinating DD254 "Contract Security Classification Specification" documents to support contracting efforts and ensure that appropriate protections for BMDS sensitive information are applied within the supporting industrial base.</li> <li>- Provide security support to deployed assets to ensure effective physical protection is provided to extremely low density/high demand emerging warfighter capability.</li> <li>- Conduct program protection planning for the continuing assessment of candidate critical program information for Advanced Technology programs and reassessment of other BMDS programs affected by technical baseline changes; ensure critical technologies embedded in Missile Defense systems are not vulnerable to compromise.</li> <li>- Execute an effective Supply Chain Risk Management (SCRM) program to prevent unmitigated risks from degrading the performance of components and systems across the BMDS supply chain.</li> <li>- Provide dedicated on-site security and protection of BMDS resources and personnel at operational sites in Alaska, California and Colorado to ensure 100% security protection coverage of the BMDS mission operations and test assets based in those regions.</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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- Per Executive Order 13525, Classified National Security Program, provide a combination of digitized material, automated search tools, and Declassification specialists to identify sensitive BMDS material that qualifies for exemption from automatic declassification based on age.

**FY 2017 Plans:**

- Perform reviews supporting all Agency public release, security classification, and required Freedom of Information Act and Mandatory Declassification Reviews to ensure sensitive BMDS information is not inadvertently released into the public domain.
- Perform Information Security staff assistance reviews and assessments of MDA programs
- Coordinate security incident reviews to identify and fix security deficiencies impacting Agency operations
- Support continuing awareness and emphasis of security measures to protect critical BMDS technological information.
- Provide security oversight for the Agency's classified contracts by drafting and coordinating DD254 "Contract Security Classification Specification" documents to support contracting efforts and ensure that appropriate protections for BMDS sensitive information are applied within the supporting industrial base.
- Execute an effective Supply Chain Risk Management program to prevent unmitigated risks from degrading the performance of components and systems across the BMDS supply chain.
- Provide dedicated on-site security and protection of BMDS resources and personnel at operational sites in Alaska, California and Colorado to ensure 100% security protection coverage of the BMDS mission operations and test assets based in those regions.
- Provide security support to deployed assets to ensure effective physical protection is provided to extremely low density/high demand emerging warfighter capability.
- Expand security support activities to include Foreign Military Sales.
- Conduct program protection planning for the continuing assessment of candidate critical program information for Advanced Technology programs and reassessment of other BMDS programs affected by technical baseline changes; ensure critical technologies embedded in missile defense systems are not vulnerable to compromise.
- Keep pace with substantial mission growth in program protection, system security engineering, acquisition security, and SCRM.

<b>Title:</b> Threat Systems Engineering	9.789	10.270		9.739
<b>Articles:</b>	-	-		-

**Description:** Threat Systems Engineering will define the BMDS Threat Space and directly support a collaborative MDA engineering effort to develop, test, and field BMDS capabilities. Threat Engineering provides representations of adversary missile capabilities based on best available intelligence information, and develops, coordinates, and baselines BMDS-level targets and countermeasures requirements to define target capabilities that support BMDS flight test objectives.

**FY 2015 Accomplishments:**

- Defined, developed, and maintained the BMDS threat.
- Produced flight test targets and countermeasures requirements to support BMDS flight test testing.
- Produced /updated threat specifications, models, and scenario data to support BMDS development and testing.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD28 / <i>Intelligence &amp; Security</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Produced Adversary Data Package (ADP) updates.</li> <li>- Provided Technical Data to support major reviews (System Requirements Reviews, Critical Design Reviews, etc.).</li> <li>- Supported verification and validation of threat models.</li> <li>- Certified that flight test targets meet the established requirements.</li> <li>- Analyzed threat representation of flight test targets and ensured target requirements were based on intelligence assessments and the threat.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Ensure flight test targets meet operationally realistic conditions.</li> <li>- Define threat representative target requirements early in the development of Integrated Master Test Plan.</li> <li>- Define the BMDS threat space and support threat space allocation to specific BMDS capability increments.</li> <li>- Guide threat missile requirements development, planning, and accreditation for BMDS ground and digital simulation tests.</li> <li>- Develop target system specifications and guide targets requirements development, planning, and certification for BMDS flight tests.</li> <li>- Analyze flight test target performance relative to threat intelligence assessments to support target system verification and certification.</li> <li>- Conduct threat model verification and validation to verify missile models meet specifications and are consistent with intelligence assessments at established Intel-Cut-Off dates.</li> <li>- Produce threat / scenario data for BMDS development events and establish threat consistency across the BMDS and Elements.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop threat definitions for system specifications</li> <li>-- Produce threat / scenario data for BMDS development events</li> <li>-- Perform Threat Verification and Validation analysis to verify missile models meet specifications and are consistent with intelligence assessments.</li> <li>- Produce Adversary Data Package (ADP) updates.</li> <li>- Develop target requirements to ensure flight test targets meet operationally realistic conditions.</li> <li>- Produce Target Assessment and Certification Reports.</li> <li>- Assess threat representation of flight test targets.</li> <li>- Develop target system specifications and guide targets requirements development, planning, and certification for BMDS flight tests.</li> <li>- Analyze flight test target performance relative to threat intelligence assessments to support target system verification and certification.</li> <li>- Provide Technical Data to support major reviews (System Requirements Reviews, Critical Design Reviews, etc.)</li> <li>- Complete Target Specification builds.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Update MDA INS 5000.06, Target Class Capabilities and Requirements documents as necessary.			
<b>Accomplishments/Planned Programs Subtotals</b>	38.485	40.263	41.254

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0305103C: Cyber Security Initiative	0.944	0.963	0.969	-	0.969	0.986	0.997	1.031	1.051	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

This project leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the Military Services, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS. Products and Services will be acquired by competitive means to the extent that is beneficial and practical.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
Intelligence - Intelligence Analysis & Support	Various	MDA : VA, AL, CO	9.100	3.641		4.251	Nov 2015	3.832	Oct 2016	-		3.832	Continuing	Continuing	Continuing
Intelligence - Intelligence Applications	MIPR	SMDC : Huntsville, AL	6.470	0.000		0.000		0.000		-		0.000	0	6.470	0
Intelligence - Intelligence Collections	MIPR	NASIC : Wright-Patterson AFB, OH	1.300	0.000		0.000		0.000		-		0.000	0	1.300	0
Intelligence - Intelligence Support	C/CPFF	Booz Allen Hamilton : AL, VA, CO	8.267	4.774		3.809	Nov 2015	4.746	Nov 2016	-		4.746	Continuing	Continuing	Continuing
Intelligence - Intelligence Support (2)	C/CPFF	Northrop Grumman : AL, CO	0.856	0.000		0.707	Nov 2015	0.625	Nov 2016	-		0.625	Continuing	Continuing	Continuing
Counterintelligence - CI Analysis & Support	Various	MDA : AL, CO, VA	3.566	1.263		2.138	Nov 2015	1.468	Oct 2016	-		1.468	Continuing	Continuing	Continuing
Counterintelligence - CI Analysis and Support 3	C/CPFF	ManTech : AL, CO, VA	3.331	4.489		3.105	Nov 2015	4.514	Nov 2016	-		4.514	Continuing	Continuing	Continuing
Counterintelligence - CI Insider Threat Analysis	C/CPFF	ManTech : VA	0.000	0.000		0.862	Nov 2015	0.407	Nov 2016	-		0.407	Continuing	Continuing	Continuing
Cybersecurity Engineering Program - Cybersecurity - FFRDC	FFRDC	Aerospace : CA, VA	1.650	0.120		0.755	Nov 2015	0.754	Nov 2016	-		0.754	Continuing	Continuing	Continuing
Cybersecurity Engineering Program - Cybersecurity - FFRDC (2)	FFRDC	MITRE : VA, VA	0.986	0.218		0.755	Nov 2015	0.754	Nov 2016	-		0.754	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>Support (\$ in Millions)</b>				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			
Cybersecurity Engineering Program - Cybersecurity Engineering	Various	MDA : VA, AL	3.641	3.431		2.259	Nov 2015	2.355	Oct 2016	-		2.355	Continuing	Continuing	Continuing
Cybersecurity Engineering Program - Cybersecurity Engineering CSS	C/CPFF	Booz Allen Hamilton : VA, AL	0.000	0.815		0.918	Nov 2015	1.095	Nov 2016	-		1.095	Continuing	Continuing	Continuing
Research, Development, and Acquisition (RDA) Security - RDA Analysis & Support	C/CPFF	Mantech : AL, AK, CA, CO, VA	6.960	3.906		4.508	Nov 2015	4.322	Nov 2016	-		4.322	Continuing	Continuing	Continuing
Research, Development, and Acquisition (RDA) Security - RDA Declass Analysis	C/CPFF	Booz-Allen Hamilton : VA, AL	2.530	1.490		1.623	Nov 2015	1.853	Nov 2016	-		1.853	Continuing	Continuing	Continuing
Research, Development, and Acquisition (RDA) Security - RDA Security Analysis	Various	MDA : VA, AL	9.002	4.048		3.592	Nov 2015	4.250	Oct 2016	-		4.250	Continuing	Continuing	Continuing
Research, Development, and Acquisition (RDA) Security - RDA Security Support	Various	Various : VA, AL, CO	1.165	0.501		0.711	Nov 2015	0.540	Nov 2016	-		0.540	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering	Various	MDA : VA, AL, CO	2.268	3.012		3.153	Nov 2015	2.116	Oct 2016	-		2.116	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering - CSS	C/CPFF	MEI : AL, MD, VA	3.811	3.868		4.139	Nov 2015	4.218	Nov 2016	-		4.218	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat Systems Engineering - CSS (2)	C/CPFF	Parsons : VA, AL	0.974	1.075		1.958	Nov 2015	2.230	Nov 2016	-		2.230	Continuing	Continuing	Continuing
Threat Systems Engineering - Threat	FFRDC	MIT/LL : MA	0.643	1.226		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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<b>Support (\$ in Millions)</b>				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			
Systems Engineering - FFRDC															
Threat Systems Engineering - Threat Systems Engineering - UARC	FFRDC	JHU/APL : MD	1.961	0.272		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Threat Systems Engineering - Unique RCS	FFRDC	NSWC Corona : CA, MD	0.988	0.336		1.020	Nov 2015	1.175	Nov 2016	-		1.175	Continuing	Continuing	Continuing
<b>Subtotal</b>			69.469	38.485		40.263		41.254		-		41.254	-	-	-

**Remarks**  
SMDC - Space & Missiles Development Center; NASIC - National Air and Space Intelligence Center

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	69.469	38.485	40.263	41.254	-	41.254	-	-	-

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security
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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
MD28 Intelligence & Security					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				
Adversary Data Package (ADP) - 2017												▲																
Submit Annual MDA OPSEC Report to USD(I) - 2017												▲																
Complete Annual Declassification Review - 2017												▲																
Adversary Data Package (ADP) - 2018																▲												
Submit Annual MDA OPSEC Report to USD(I) - 2018																▲												
Complete Annual Declassification Review - 2018																▲												
Adversary Data Package (ADP) - 2019																												
Submit Annual MDA OPSEC Report to USD(I) - 2019																												
Complete Annual Declassification Review - 2019																												
Adversary Data Package (ADP) - 2020																												
Submit Annual MDA OPSEC Report to USD(I) - 2020																												
Complete Annual Declassification Review - 2020																												
Adversary Data Package (ADP) - 2021																												▲
Submit Annual MDA OPSEC Report to USD(I) - 2021																												▲
Complete Annual Declassification Review - 2021																												▲

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD28 / Intelligence & Security

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD28 Intelligence & Security	1	2016	4	2020
Adversary Data Package (ADP) - 2017	4	2017	4	2017
Submit Annual MDA OPSEC Report to USD(I) - 2017	4	2017	4	2017
Complete Annual Declassification Review - 2017	4	2017	4	2017
Adversary Data Package (ADP) - 2018	4	2018	4	2018
Submit Annual MDA OPSEC Report to USD(I) - 2018	4	2018	4	2018
Complete Annual Declassification Review - 2018	4	2018	4	2018
Adversary Data Package (ADP) - 2019	4	2019	4	2019
Submit Annual MDA OPSEC Report to USD(I) - 2019	4	2019	4	2019
Complete Annual Declassification Review - 2019	4	2019	4	2019
Adversary Data Package (ADP) - 2020	4	2020	4	2020
Submit Annual MDA OPSEC Report to USD(I) - 2020	4	2020	4	2020
Complete Annual Declassification Review - 2020	4	2020	4	2020
Adversary Data Package (ADP) - 2021	4	2021	4	2021
Submit Annual MDA OPSEC Report to USD(I) - 2021	4	2021	4	2021
Complete Annual Declassification Review - 2021	4	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD30: BMD Information Management Systems	151.415	90.761	95.650	92.628	-	92.628	81.212	80.427	86.691	87.939	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The reduction of \$3.022 million between FY 2016 and FY 2017 is due to delaying Information Technology (IT) equipment replacement beyond the lifecycle replacement standard.

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

MDA must comply with National Command Authority Directives for rapid deployment of the BMDS while complying with DoD initiatives of the Joint Information Environment (JIE) and the Unified Capabilities Framework to ensure MDA remains compatible with the DoD Information Network (DODIN). Over the last 5 years, MDA funding in this Budget Project has been used to concentrate on meeting National Security Presidential Directive (NSPD-23) and DoD Directive 5134.09 to expand the global mission of MDA to the Global Information Grid (GIG) End-to-End Communications Architecture. The global expansion established classified and unclassified MDA communication and collaboration services to over 203 global locations. This enables a near real-time capability to execute BMD RDT&E mission and share missile threat data with the NATO members, CCMD, foreign governments, and industry partners.

**A. Mission Description and Budget Item Justification**

The Ballistic Missile Defense (BMD) Information Management Systems Project funds the Information Technology (IT), Cybersecurity, Information Assurance (IA), and telecommunications infrastructure of the Agency. Information management systems are critical to the day-to-day functions of MDA personnel to communicate (classified and unclassified) with each other, Congress, senior DoD and other U.S. government agency personnel, CCMDs, NATO partners, and other industry partners. Communication among these organizations facilitates the MDA mission of developing and fielding an integrated BMDS to defend the United States, our deployed forces, allies, and friends against all ranges of enemy ballistic missiles in all phases of flight.

MDA information management systems capabilities support rigorous missile defense testing and facilitate the development of technologies to guard against evolving missile threat. Communications are vital for missile defense to continue a viable homeland defense against rogue threats and to provide the integration required to defend deployed forces, allies, and friends against theater threats. The management systems consist of MDA secure communication networks, IT systems, data centers, operations and monitoring centers which are vital to support the strategic mission of the Agency and necessary to meet disaster recovery and continuity of operations requirements. This infrastructure is required to sustain access to the Secret Internet Protocol Router Network (SIPRNET), Non secure Internet Protocol Router Network (NIPRNET), MDA classified and unclassified networks, classified and unclassified video teleconferencing services, test and business knowledge data centers, the Defense Research Engineering Network (DREN). These mission critical functions provide for the efficient operation and safeguarding of all agency information in locations supporting MDA around the world.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

This project funds IT, mission critical functions, providing for the efficient operation and safeguarding of Agency information in compliance with DoD policies and in keeping with the President's declaration on 29 May 2009, "cyber threat is one of the most serious economic and national security challenges we face as a nation".

Project MD30 was realigned into the following seven inter-agency mission critical IT services and the associated plans to align with the Federal Information Technology Shared Services Strategy.

**1. End User Support**

Covers licensing and sustainment of desktops, laptops, and associated hardware and software, printing and copy services, file and directory services, user authentication, and help desk support for break-fix actions.

**2. Unified Communications**

Supports leased communications (classified and unclassified wide area networks, metropolitan area networks, and local area networks), telecommunications (local and long distance telephone services and secure and non-secure mobile and desktop telephony devices), management, engineering, systems integration, operations, maintenance, and technical support services. Unified Communications also includes sustainment of Video Teleconferencing (VTC) hardware/software, and conference room scheduling, BlackBerrys and wireless services, instant messaging and collaboration, private branch exchange switches maintenance, unclassified desktop/laptop integrated audio/video collaboration services, secure Telepresence suites and secure mobile cell phones.

**3. Business Automation Services**

Provides, in accordance with the Clinger Cohen Act and Defense Business Systems Investment Management Process, for the licensing and sustainment of DoD business enterprise architecture approved applications. This function ensures that MDA business applications meet the interoperable defense business solutions requirements for federal accounting, financial management, and reporting requirements

**4. Portal and Data Services**

Enables knowledge and information sharing across MDA. This service includes operations and maintenance of the unclassified and classified MDA Knowledge Online portals and associated storage, and is also responsible for records management solutions, and privacy and civil liberties compliance and reporting.

**5. Network and Infrastructure Services**

Includes operations and sustainment of MDA classified and unclassified networks and data centers. Ensures DoD compliant delivery, oversight and performance monitoring of IT systems that enable, secures IT systems access, server and storage capacity management, and communications security status. Also supports Disaster Recovery and Continuity of Operations rehearsals, network hardware break/fix and end-of-life replacement.

**6. Information Technology (IT) Planning and Solutions**

Provides IT project planning and management, life-cycle asset management, enterprise architecture planning and documentation, architecture change and configuration management, and Office of Management and Budget (OMB) and DoD IT compliance tracking and reporting.

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> End User Support	19.402	20.217	18.859
<b>Articles:</b>	-	-	-
<b>Description:</b> Provides for operations, maintenance and helpdesk support to each MDA IT user desktop capability.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>-Sustained End User core service support 18 hours a day, 6 days a week for administrative and business information systems for approximately 8,000 MDA unclassified users and approximately 3,500 classified users.</li> <li>-Monitored networks for user compliance and DoD policies, and report incidents.</li> <li>-Maintained Printing and Copy Services (386 multi-functional device printers and 12 print servers).</li> <li>-Sustained email services (24 Exchange servers, 4 BlackBerry Enterprise Services servers and 2 archiving storage area networks).</li> <li>-Sustained file services (8 file servers and 4 storage area networks) -Maintain Directory Services (24 Active Directory and domain controller servers).</li> <li>-Maintained Authentication services (Public Key Infrastructure/Common Area Card) -Maintain current hardware and software licenses for IT operational systems.</li> <li>-Maintained an Integrated Service Desk supporting 8,000 MDA users across all locations, resolving over 45,000 help desk tickets per quarter.</li> <li>-Maintained IT life-cycle asset management of over 15,000 end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys).</li> <li>-Funded MDA Chief Information Office (CIO) civilian salaries.</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <ul style="list-style-type: none"> <li>-Perform IT receiving; warehousing; shipping; transportation and movement; and excess property management functions for over 103,000 IT assets at MDA warehouses in Huntsville, Alabama; Fort Belvoir, VA; Colorado Springs, CO.</li> <li>-Maintain Defense Property Accountability System (DPAS) property accountability artifacts to support DoD Audit Readiness activities.</li> <li>-Sustain End User support (IT Help Desk and Client Support Services) 18 hours a day, 6 days a week for administrative and business information systems for approximately 8,350 MDA unclassified users and approximately 4,300 classified users.</li> <li>-Address approximately 50,000 Client Support tickets per year.</li> <li>-Respond to approximately 77,000 IT Help Desk tickets per year.</li> <li>-Monitor networks for user compliance and DoD policies, and report incidents.</li> <li>-Maintain Printing and Copy Services (872 multi-functional device printers and 51 classified/unclassified print servers).</li> <li>-Sustain email services (103 Exchange servers, 12 Smart Phone Enterprise servers, 14 Lync communication servers and 12 archive servers).</li> <li>-Sustain file services (33 classified/unclassified file servers and 4 storage area networks).</li> <li>-Maintain Directory Services (70 classified/unclassified domain controller servers).</li> <li>-Maintain Authentication services (Public Key Infrastructure/Common Area Card).</li> <li>-Maintain current hardware and software licenses for IT operational systems.</li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Maintain an Integrated Service Desk supporting 8,350 MDA users across all locations, resolving over 45,000 help desk tickets per quarter.</p> <p>-Maintain IT life-cycle asset management of over 15,000 end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys).</p> <p>-Fund MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2017 Plans:</b></p> <p>-Perform IT receiving; warehousing; shipping; transportation and movement; and excess property management functions for over 103,000 IT assets at MDA warehouses in Huntsville, Alabama; Fort Belvoir, VA; Colorado Springs, CO.</p> <p>-Maintain Defense Property Accountability System (DPAS) property accountability artifacts to support DoD Audit Readiness activities.</p> <p>-Sustain End User support (IT Help Desk and Client Support Services) 18 hours a day, 6 days a week for administrative and business information systems for approximately 8,350 MDA unclassified users and approximately 4,300 classified users.</p> <p>-Address approximately 50,000 Client Support tickets per year.</p> <p>-Respond to approximately 77,000 IT Help Desk tickets per year.</p> <p>-Monitor networks for user compliance and DoD policies, and report incidents.</p> <p>-Maintain Printing and Copy Services (872 multi-functional device printers and 51 classified/unclassified print servers).</p> <p>-Sustain email services (103 Exchange servers, 12 Smart Phone Enterprise servers, 14 Lync communication servers and 12 archive servers).</p> <p>-Sustain file services (33 classified/unclassified file servers and 4 storage area networks).</p> <p>-Maintain Directory Services (70 classified/unclassified domain controller servers).</p> <p>-Maintain Authentication services (Public Key Infrastructure/Common Area Card).</p> <p>-Maintain current hardware and software licenses for IT operational systems.</p> <p>-Maintain an Integrated Service Desk supporting 8,350 MDA users across all locations, resolving over 45,000 help desk tickets per quarter.</p> <p>-Maintain IT life-cycle asset management of over 15,000 end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys).</p> <p>-Fund MDA CIO civilian salaries.</p>				
<b>Title:</b> Unified Communications		13.617	14.314	13.997
		<b>Articles:</b>	-	-
<b>Description:</b> Provides for implementation, operations and maintenance of VTC, wireless and telephony services.				
<b>FY 2015 Accomplishments:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD30 / <i>BMD Information Management Systems</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Funded recurring leased circuits (wide area, local area and metropolitan area networks), maintenance agreements and licenses for MDA Enterprise network and telecommunications equipment (classified and unclassified mobile and telephony devices).</p> <p>-Operated, monitored, and sustained recurring classified and unclassified telecommunications equipment to comply with DoD policies and Global Information Grid architecture plan.</p> <p>-Operated, monitored, and sustained recurring classified and unclassified wireless services.</p> <p>-Operated, monitored, and sustained recurring operations for agency wide video teleconference rooms and equipment.</p> <p>-Provided and implemented engineering solutions for all unified communication services.</p> <p>-Sustained unclassified desktop instant messaging and collaboration capabilities to MDA users.</p> <p>-Funded Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2016 Plans:</b></p> <p>-Develop and maintain artifacts to obtain authority to operate VTC systems.</p> <p>-Fund recurring leased circuits (wide area, local area and metropolitan area networks), maintenance agreements and licenses for MDA Enterprise network and telecommunications equipment (classified and unclassified mobile and telephony devices).</p> <p>-Operate, monitor, and sustain recurring classified and unclassified telecommunications equipment to comply with DoD policies and Global Information Grid (GIG) architecture plan.</p> <p>-Operate, monitor, and sustain recurring classified and unclassified wireless services, 2,401 unclassified users.</p> <p>-Operate, monitor, and sustain recurring operations for agency wide video teleconference rooms and equipment. 10,000+ sessions per month increasing 11% per year.</p> <p>-Provide and implement engineering solutions for all unified communication services.</p> <p>-Sustain unclassified desktop instant messaging and collaboration capabilities to MDA users.</p> <p>-Fund Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2017 Plans:</b></p> <p>-Develop and maintain artifacts to obtain authority to operate VTC systems.</p> <p>-Fund recurring leased circuits (wide area, local area and metropolitan area networks), maintenance agreements and licenses for MDA Enterprise network and telecommunications equipment (classified and unclassified mobile and telephony devices).</p> <p>-Operate, monitor, and sustain recurring classified and unclassified telecommunications equipment to comply with DoD policies and Global Information Grid (GIG) architecture plan.</p> <p>-Operate, monitor, and sustain recurring classified and unclassified wireless services, 2,401 unclassified users.</p> <p>-Operate, monitor, and sustain recurring operations for agency wide video teleconference rooms and equipment. 10,000+ sessions per month increasing 11% per year.</p> <p>-Provide and implement engineering solutions for all unified communication services.</p> <p>-Sustain unclassified desktop instant messaging and collaboration capabilities to MDA users.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Fund CIO civilian salaries.			
<p><b>Title:</b> Business Automation Services</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides for the implementation, operations and maintenance of business specific applications.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Sustained an MDA community cloud to host and sustain business applications, storage administration, hosting and operations and maintenance of the virtual environment.</li> <li>-Sustained portal-based Learning Management System</li> <li>-Hosted and provided business applications support for Program Resource Internet Database Environment (PRIDE), Information Management Program Activity control Tool (IMPACT), Standard Procurement System (SPS), Personnel Tracking System (PTS), Human Resource Tracking System (HRTS), Computer-aided Facilities Management(CAFM).</li> <li>-Provided server administration hosting licensing and management.</li> <li>-Maintained Integrated Access Control System and Diamond II badge system.</li> <li>-Maintained hardware and licenses for Defense Enrollment Eligibility Reporting System (DEERS)/Real-time Automated Personnel Identification System (RAPIDS) stations for issuing DoD identification smart cards to MDA employees.</li> <li>-Replaced End-of-Life hardware platform to support Microsoft SharePoint software migration (version 2007 to version 2013).</li> <li>-Funded MDA Chief Information Office (CIO) civilian salaries.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Operate MDA Enterprise Applications/Systems at a minimum availability of 98%.</li> <li>-Operate and maintain 9 Defense Business Systems that meet the reporting requirements of Title 10 United States Code section 2222.</li> <li>-Conduct annual reviews of Defense Business Systems to ensure compliance with current Business Enterprise Architecture (BEA).</li> <li>-Design a solution and procure IT products that comply with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d).</li> <li>-Sustain an MDA community cloud to host and sustain business applications, storage administration, hosting and operations and maintenance of the virtual environment.</li> <li>-Sustain portal-based Learning Management System.</li> <li>-Host and provide business applications support for Microsoft SharePoint, Program Resource Internet Database Environment (PRIDE), Information Management Program Activity control Tool (IMPACT), Standard Procurement System (SPS), Personnel Tracking System (PTS), Human Resource Tracking System (HRTS), Computer-aided Facilities Management (CAFM).</li> <li>-Provide server administration hosting licensing and management.</li> <li>-Maintain Integrated Access Control System and Diamond II badge system.</li> </ul>	6.608	7.976	7.930
	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Maintain hardware and licenses for Defense Enrollment Eligibility Reporting System (DEERS)/Real-time Automated Personnel Identification System (RAPIDS) stations for issuing DoD identification smart cards to MDA employees.</p> <p>-Fund MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2017 Plans:</b></p> <p>-Operate MDA Enterprise Applications/Systems at a minimum availability of 98%.</p> <p>-Operate and maintain 9 Defense Business Systems that meet the reporting requirements of Title 10 United States Code section 2222.</p> <p>-Conduct annual reviews of Defense Business Systems to ensure compliance with current Business Enterprise Architecture (BEA).</p> <p>-Design a solution and procure IT products that comply with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d).</p> <p>-Sustain an MDA community cloud to host and sustain business applications, storage administration, hosting and operations and maintenance of the virtual environment.</p> <p>-Sustain portal-based Learning Management System.</p> <p>-Host and provide business applications support for Microsoft SharePoint, Program Resource Internet Database Environment (PRIDE), Information Management Program Activity control Tool (IMPACT), Standard Procurement System (SPS), Personnel Tracking System (PTS), Human Resource Tracking System (HRTS), Computer-aided Facilities Management (CAFM).</p> <p>-Provide server administration hosting licensing and management.</p> <p>-Maintain Integrated Access Control System and Diamond II badge system.</p> <p>-Maintain hardware and licenses for Defense Enrollment Eligibility Reporting System (DEERS)/Real-time Automated Personnel Identification System (RAPIDS) stations for issuing DoD identification smart cards to MDA employees.</p> <p>-Fund MDA CIO civilian salaries.</p>				
<p><b>Title:</b> Portal and Data Services</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides for the implementation, operations and maintenance of Portal, digital records and data archiving functions.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Sustained the classified and unclassified MDA Knowledge On-line portal environment including data management, data storage, and data mining services providing access to over four hundred terabytes of Ballistic Missile Defense data available to 8,000 users.</p> <p>-Maintained a MDA Privacy Office, conducted privacy impact surveys and completed Civil Liberties compliance reporting.</p> <p>-Maintained compliance with Section 508 of the Rehabilitation Act to ensure electronic information technology is accessible to persons with disabilities.</p>		5.530	6.783	6.831
		-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Sustained the Ballistic Missile Defense System (BMDS) Integrated Master Schedule and the Ballistic Missile Defense (BMD) Asset Management Tool.</p> <p>-Managed a software assessment program and conducted reviews of proposed software applications for DoD compliance.</p> <p>-Sustained a DoD mandated Electronics Records Management system.</p> <p>-Provided MDA web-based training programs for information assurance, business applications, workforce certification, security, and ethics.</p> <p>-Provided for the engineering and sequenced migration of one billion software objects and knowledge files from the Microsoft SharePoint 2007 to the 2013 platform.</p> <p>-Funded MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2016 Plans:</b></p> <p>-Manage demands on data storage capacity to accommodate the current and increasing number of users in the MDA RDT&amp;E community.</p> <p>-Provide twenty four hours a day, seven days a week, 365 days a year access to MDA test and administrative data and information to support the increasing demands on the MDA workforce around the world in the classified and unclassified environment.</p> <p>-Develop and maintain executive digital dashboards.</p> <p>-Sustain a DoD compliant Electronics Records Management system.</p> <p>-Digitize official records for more efficient storage and retrieval.</p> <p>-Sustain the classified and unclassified MDA Knowledge On-line portal environment including data management, data storage, and data mining services providing access to over four hundred terabytes of Ballistic Missile Defense data available to 8,000 users.</p> <p>-Maintain a MDA Privacy Office, conducted privacy impact surveys and completed Civil Liberties compliance reporting.</p> <p>-Maintain compliance with Section 508 of the Rehabilitation Act to ensure electronic information technology is accessible to persons with disabilities.</p> <p>-Sustain the Ballistic Missile Defense System (BMDS) Integrated Master Schedule and the Ballistic Missile Defense (BMD) Asset Management Tool.</p> <p>-Manage a software assessment program and conducted reviews of proposed software applications for DoD compliance.</p> <p>-Provide MDA web-based training programs for information assurance, business applications, workforce certification, security, and ethics.</p> <p>-Fund MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2017 Plans:</b></p> <p>-Manage demands on data storage capacity to accommodate the current and increasing number of users in the MDA RDT&amp;E community.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Provide twenty four hours a day, seven days a week, 365 days a year access to MDA test and administrative data and information to support the increasing demands on the MDA workforce around the world in the classified and unclassified environment.</p> <p>-Develop and maintain executive digital dashboards.</p> <p>-Sustain a DoD compliant Electronics Records Management system.</p> <p>-Digitize official records for more efficient storage and retrieval.</p> <p>-Sustain the classified and unclassified MDA Knowledge On-line portal environment including data management, data storage, and data mining services providing access to over four hundred terabytes of Ballistic Missile Defense data available to 8,000 users.</p> <p>-Maintain a MDA Privacy Office, conducted privacy impact surveys and completed Civil Liberties compliance reporting.</p> <p>-Maintain compliance with Section 508 of the Rehabilitation Act to ensure electronic information technology is accessible to persons with disabilities.</p> <p>-Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool.</p> <p>-Manage a software assessment program and conducted reviews of proposed software applications for DoD compliance.</p> <p>-Provide MDA web-based training programs for information assurance, business applications, workforce certification, security, and ethics.</p> <p>-Fund MDA CIO civilian salaries.</p>			
<p><b>Title:</b> Network and Infrastructure Services (Retitled: MDA Special Purpose Processing Node - PBR16)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides for the implementation, operations, maintenance and Communications Security (COMSEC) for the MDA UNET/CNET. Real-world issues and the global demand for the Missile Defense Agency (MDA) BMDS capabilities are increasing the demand for more complex information technology products and highly specialized IT services.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Sustained core communications distribution services across the MDA Enterprise consisting of two wide area networks, three metropolitan area networks, fourteen local area networks, one hundred eighty sub-networks and over five thousand network devices</p> <p>-Sustained two computing and data centers (Huntsville, Alabama and Colorado Springs, Colorado) across the MDA Enterprise including network operations and performance monitoring; Disaster Recovery and Continuity of Operations rehearsals; internet access management; and web filtering</p> <p>-Architected and developed plans to repair general IT service and business systems</p> <p>-Performed network tracking and analysis and reported metrics on equipment lifecycle and average time to repair</p> <p>-Planned, engineered and implemented sustainment projects for general IT service and business systems</p>	31.613 -	31.669 -	30.636 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

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

	FY 2015	FY 2016	FY 2017
<p>-Procured, received, inventoried, and managed IT equipment to include network devices and desktop and laptop computers</p> <p>-Provided Communications Security (COMSEC) operations and maintenance services for over 4,000 COMSEC items</p> <p>-Funded MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2016 Plans:</b></p> <p>-Sustain core communications distribution services across the MDA Enterprise consisting of six wide area networks, 16 metropolitan area networks, 288 local area networks, two principle sites, 11 major sites, 205 remote sites</p> <p>-Sustain two SPPNs (Huntsville, Alabama and Colorado Springs, Colorado) across the MDA Enterprise including network operations and performance monitoring; Disaster Recovery and Continuity of Operations rehearsals; internet access management; and web filtering</p> <p>-Maintain MDA IT Infrastructure Services at a 99.99% availability level.</p> <p>-Operate and maintain the MDA SPPNs consisting of 1202 servers both classified and unclassified, 500 equipment racks, 148 network devices (routers, switches, Wide Area Network (WAN) accelerators, firewalls, intrusion detection systems (IDS)) and back office IT infrastructure associated with 10,000 Voice-over-Internet Protocol (VoIP) telephones, 2400 wireless devices, 50 secure wireless devices</p> <p>-Continue server virtualization to meet DoD mandates and Federal green standards, 22% still require virtualization.</p> <p>-Develop solutions, provide designs and execute transition plans, consistent with the architecture roadmap</p> <p>-Provide Detailed Designs, Implementation Plans, Interface Control Document (ICD) updates, Information Assurance assessments, Change Management, and DR COOP implementation engineering services.</p> <p>-Assist in performing configuration tests and assisting the O&amp;M RBA crews with execution of operational readiness tests.</p> <p>-Manage MDA increasing need of data storage capacity, over 5 Petabytes.</p> <p>-Support constant modifications and reconfigurations of network infrastructure for mission and event unique configurations.</p> <p>-Architect and develop plans to repair general IT service and business systems</p> <p>-Perform network tracking and analysis and reported metrics on equipment lifecycle and average time to repair</p> <p>-Plan, engineer and implement sustainment projects for general IT service and business systems</p> <p>-Procure, receive, inventory, and manage IT equipment to include network devices and desktop and laptop computers</p> <p>-Fund MDA Chief Information Office (CIO) civilian salaries.</p> <p><b>FY 2017 Plans:</b></p> <p>-Sustain core communications distribution services across the MDA Enterprise consisting of six wide area networks, 16 metropolitan area networks, 288 local area networks, two principle sites, 11 major sites, 205 remote sites</p> <p>-Sustain two SPPNs (Huntsville, Alabama and Colorado Springs, Colorado) across the MDA Enterprise including network operations and performance monitoring; Disaster Recovery and Continuity of Operations rehearsals; internet access management; and web filtering</p> <p>-Maintain MDA IT Infrastructure Services at a 99.99% availability level.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Operate and maintain the MDA SPPNs consisting of 1202 servers both classified and unclassified, 500 equipment racks, 148 network devices (routers, switches, Wide Area Network (WAN) accelerators, firewalls, intrusion detection systems (IDS)) and back office IT infrastructure associated with 10,000 Voice-over-Internet Protocol (VoIP) telephones, 2400 wireless devices, 50 secure wireless devices</p> <p>-Continue server virtualization to meet DoD mandates and Federal green standards, 22% still require virtualization.</p> <p>-Develop solutions, provide designs and execute transition plans, consistent with the architecture roadmap</p> <p>-Provide Detailed Designs, Implementation Plans, Interface Control Document (ICD) updates, Information Assurance assessments, Change Management, and DR COOP implementation engineering services.</p> <p>-Assist in performing configuration tests and assisting the O&amp;M RBA crews with execution of operational readiness tests.</p> <p>-Manage MDA increasing need of data storage capacity, over 5 Petabytes.</p> <p>-Support constant modifications and reconfigurations of network infrastructure for mission and event unique configurations.</p> <p>-Architect and develop plans to repair general IT service and business systems</p> <p>-Perform network tracking and analysis and reported metrics on equipment lifecycle and average time to repair</p> <p>-Plan, engineer and implement sustainment projects for general IT service and business systems</p> <p>-Procure, receive, inventory, and manage IT equipment to include network devices and desktop and laptop computers</p> <p>-Fund MDA CIO civilian salaries.</p>				
<p><b>Title:</b> Information Technology (IT) Planning and Solutions</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides IT engineering support for new requirements analysis, design, planning and implementation of IT solutions to real-world issues and an increasing demand for more complex IT products and highly specialized IT services.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Supported the MDA CIO Enterprise Architecture Board, Program Management Integration Board, and Change Control Board.</p> <p>-Updated and maintained current Enterprise architecture documentation.</p> <p>-Provided engineering support for change management, configuration management, validation testing and quality assurance.</p> <p>-Managed MDA customer IT requirements planning, engineering and project management.</p> <p>-Supported MDA Command Group IT project planning and documentation.</p> <p>-Maintained asset management of IT equipment in accordance with DoD policies.</p> <p>-Provided planning, budgeting, and management oversight of IT projects.</p> <p>-Ensured compliance with Federal Laws and DoD policies, directives and regulations, including: Clinger-Cohen Act, the Federal Information Security Management Act, and Office of Management and Budget (OMB) IT budget reporting policies.</p> <p>-Funded MDA Chief Information Office (CIO) civilian and matrix civilian salaries.</p> <p><b>FY 2016 Plans:</b></p>		13.991 -	14.691 -	14.375 -



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Design and engineer IT solutions for DoD directed JIE projects.</li> <li>-Provide DoD Architecture Framework compliant engineering designs and solutions.</li> <li>-Provide project planning and oversight for approximately 150 IT projects per year.</li> <li>-Process over 800 Agency-wide IT commodity requests per year.</li> <li>-Support the MDA CIO Enterprise Architecture Board, Program Management Integration Board, and Change Control Board.</li> <li>-Update and maintain current Enterprise architecture documentation.</li> <li>-Provide engineering support for change management, configuration management, validation testing and quality assurance.</li> <li>-Manage MDA customer IT requirements planning, engineering and project management.</li> <li>-Support MDA Command Group IT project planning and documentation.</li> <li>-Provide planning, budgeting, and management oversight of the Agency-wide IT program.</li> <li>-Ensure compliance with Federal Laws and DoD policies, directives and regulations, including: Clinger-Cohen Act, the Federal Information Security Management Act, and Office of Management and Budget (OMB) IT budget reporting policies.</li> <li>-Fund MDA Chief Information Office (CIO) civilian and matrix civilian salaries.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Design and engineer IT solutions for DoD directed JIE projects.</li> <li>-Provide DoD Architecture Framework compliant engineering designs and solutions.</li> <li>-Provide project planning and oversight for approximately 150 IT projects per year.</li> <li>-Process over 800 Agency-wide IT commodity requests per year.</li> <li>-Support the MDA CIO Enterprise Architecture Board, Program Management Integration Board, and Change Control Board.</li> <li>-Update and maintain current Enterprise architecture documentation.</li> <li>-Provide engineering support for change management, configuration management, validation testing and quality assurance.</li> <li>-Manage MDA customer IT requirements planning, engineering and project management.</li> <li>-Support MDA Command Group IT project planning and documentation.</li> <li>-Provide planning, budgeting, and management oversight of the Agency-wide IT program.</li> <li>-Ensure compliance with Federal Laws and DoD policies, directives and regulations, including: Clinger-Cohen Act, the Federal Information Security Management Act, and OMB IT budget reporting policies.</li> <li>-Fund MDA CIO civilian and matrix civilian salaries.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	90.761	95.650	92.628

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems			

**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603913C: <i>Israeli Cooperative Programs</i>	268.842	267.595	103.835	-	103.835	105.612	108.271	110.009	112.168	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
• 0604881C: <i>AEWIS SM-3 Block IIA Co-Development</i>	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961
• 0901598C: <i>Management HQ - MDA</i>	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

In 2016, the MDA Joint National Integration Center Research and Development (JRDC) contract is scheduled to be recompeted and will be called the Integrated Research and Development for Enterprise Solutions (IRES).

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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			
End User Support - End User Civilian Pay/Travel/PCS	Allot	MDA Civilian Pay : AL, CO, NM, VA	5.448	3.116		3.121	Oct 2015	3.148	Oct 2016	-		3.148	Continuing	Continuing	Continuing
End User Support - End User Civilian Travel	Allot	MDA Civilian Travel : AL, AK, CA, CO, HI, NM, VA	0.446	0.206		0.223	Oct 2015	0.228	Oct 2016	-		0.228	Continuing	Continuing	Continuing
End User Support - End User IT Hardware/Software Support	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	8.799	7.778		8.590	Oct 2015	7.483	Oct 2016	-		7.483	Continuing	Continuing	Continuing
End User Support - End User IT Licenses	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	8.431	1.107		1.138	Oct 2015	1.161	Oct 2016	-		1.161	Continuing	Continuing	Continuing
End User Support - End User Operational Support	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	24.437	7.195		7.145	Oct 2015	6.839	Oct 2016	-		6.839	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Civilian Pay/Travel/PCS	Allot	MDA Civilian Pay : AI, CO, VA	2.644	1.081		1.092	Oct 2015	1.102	Oct 2016	-		1.102	Continuing	Continuing	Continuing
Unified Communications - Unified Communications Leased Communications/Licenses	MIPR	DISA/DREN/IT2S : AL, AK, CA, CO, HI, NM, VA	8.907	4.869		5.973	Oct 2015	6.093	Oct 2016	-		6.093	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 0603890C / BMD Enabling Programs				MD30 / BMD Information Management Systems							
Support (\$ 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
Unified Communications - Unified Communications Operational Support	Allot	Northrop Grumman : AL, CO, VA	2.776	2.051		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Unified Communications - Unified Communications VTC Operations Support	C/CPIF	NMR : AL, AK, CO, NM, VA	9.790	5.616		7.249	Oct 2015	6.802	Oct 2016	-		6.802	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Civilian Pay/Travel/PCS	Allot	MDA Civilian Pay : AL, CO, VA	1.475	0.772		0.780	Oct 2015	0.472	Oct 2016	-		0.472	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Licenses	C/CPAF	Northrop Grumman : AL, CO, VA	1.749	0.897		0.916	Oct 2015	0.934	Oct 2016	-		0.934	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Operational Support	C/CPAF	Northrop Grumman : AL, CO, VA	7.308	4.919		6.259	Oct 2015	6.503	Oct 2016	-		6.503	Continuing	Continuing	Continuing
Business Automation Services - Business Automation Services Support	MIPR	CACI : AL, CO, VA	0.020	0.020		0.021	Oct 2015	0.021	Oct 2016	-		0.021	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Civilian Pay/Travel/PCS	Allot	MDS Civilian Pay : AL, CO, VA	1.770	0.926		0.936	Oct 2015	0.944	Oct 2016	-		0.944	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Licenses and Maintenance	C/CPAF	Northrop Grumman : AL, CO, VA	3.744	1.472		1.573	Oct 2015	1.605	Oct 2016	-		1.605	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Operational	C/CPAF	Online Subscriptions Services : AL, CO, VA	0.623	0.399		0.408	Oct 2015	0.416	Oct 2016	-		0.416	Continuing	Continuing	Continuing
Portal and Data Services - Portal and Data Services Operational Support	C/FFP	NMR : AL, CO, VA	6.489	2.733		3.866	Oct 2015	3.866	Oct 2016	-		3.866	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 0603890C / BMD Enabling Programs					MD30 / BMD Information Management Systems					
Support (\$ 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
Network and Infrastructure Services (Retitled: MDA Special Purpose Processing Node - PBR16) - Network and Infrastructure Services Civilian Pay/Travel/PCS	Allot	MDA Civilian Pay : AL, CO, VA	2.210	1.235		1.271	Oct 2015	1.259	Oct 2016	-		1.259	Continuing	Continuing	Continuing
Network and Infrastructure Services (Retitled: MDA Special Purpose Processing Node - PBR16) - Network and Infrastructure Services Licenses	C/CPAF	Northrop Grumman : AL, CO, VA	24.590	13.485		13.275	Oct 2015	13.450	Oct 2016	-		13.450	Continuing	Continuing	Continuing
Network and Infrastructure Services (Retitled: MDA Special Purpose Processing Node - PBR16) - Network and Infrastructure Services Operational Support	C/CPAF	Northrop Grumman : AL, CO, VA	17.037	16.893		17.123	Oct 2015	15.927	Oct 2016	-		15.927	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Advisory and Assistance Services	C/CPFF	Colsa : AL, CO, VA	1.526	4.544		4.628	Oct 2015	4.713	Oct 2016	-		4.713	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Civilian Pay/Travel/PCS	Allot	MDA Civilian Pay : AL, CO, VA	1.770	0.926		0.815	Oct 2015	0.352	Oct 2016	-		0.352	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - IT Planning and Solutions OMB,OSD, and DOD Compliance Monitoring	C/CPFF	Colsa : AL, CO, VA	0.510	0.160		0.164	Oct 2015	0.167	Oct 2016	-		0.167	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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<b>Support (\$ in Millions)</b>				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			
and Reporting/Contract Deliverable															
Information Technology (IT) Planning and Solutions - IT Planning and Solutions Operational Support	C/CPAF	Northrop Grumman : AL, CO, VA	8.007	7.366		7.514	Oct 2015	7.664	Oct 2016	-		7.664	Continuing	Continuing	Continuing
Information Technology (IT) Planning and Solutions - MDA Agency Business Operations	Allot	MDA Business Operations : AL, CO, VA	0.909	0.995		1.570	Oct 2015	1.479	Oct 2016	-		1.479	Continuing	Continuing	Continuing
<b>Subtotal</b>			151.415	90.761		95.650		92.628		-		92.628	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency								<b>Date:</b> February 2016					
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems					
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	151.415	90.761		95.650		92.628		-		92.628	-	-	-

**Remarks**

N/A



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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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
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Revise and Test Contingency Plans for Information Technology Systems - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Procure, Implement, and Asset Control for Information Technology Operational Systems - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications	✦	✦	✦	✦																								
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems	✦	✦	✦	✦																								
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week	✦	✦	✦	✦																								
Revise and Test Contingency Plans for Information Technology Systems	✦	✦	✦	✦																								
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services	✦	✦	✦	✦																								
Procure, Implement, and Asset Control for Information Technology Operational Systems	✦	✦	✦	✦																								

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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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
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce	+	+	+	+																								
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise	+	+	+	+																								
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications	+	+	+	+																								
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool	+	+	+	+																								
Sustain the Information Technology Infrastructure Across the MDA Enterprise	+	+	+	+																								
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle	+	+	+	+																								
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sustain the Information Technology Infrastructure Across the MDA Enterprise - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems

**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications Follow-On	1	2016	4	2021
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems - Follow-On	1	2016	4	2021
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week - Follow-On	1	2016	4	2021
Revise and Test Contingency Plans for Information Technology Systems - Follow-On	1	2016	4	2021
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services - Follow-On	1	2016	4	2021
Procure, Implement, and Asset Control for Information Technology Operational Systems -Follow-On	1	2016	4	2021
Operate, Monitor and Sustain Recurring Operations for Video Teleconferencing for Unified Communications	1	2015	4	2015
Manage DoD Mandated Business Applications and Sustain MDA Financial and Contractual Support Systems	1	2015	4	2015
Operate and Maintain General Information Technology Services 18 hours per day, 6 days per week	1	2015	4	2015
Revise and Test Contingency Plans for Information Technology Systems	1	2015	4	2015
Operate and Maintain Classified and Unclassified MDA Knowledge Online Services	1	2015	4	2015
Procure, Implement, and Asset Control for Information Technology Operational Systems	1	2015	4	2015
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce	1	2015	4	2015
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise	1	2015	4	2015

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD30 / BMD Information Management Systems
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Events	Start		End	
	Quarter	Year	Quarter	Year
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications	1	2015	4	2015
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool	1	2015	4	2015
Sustain the Information Technology Infrastructure Across the MDA Enterprise	1	2015	4	2015
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle	1	2015	4	2015
Operate, Monitor and Sustain Recurring Classified and Unclassified Telecommunication Requirements for Unified Communications - Follow-On	1	2016	4	2021
Provide 18 hours per day, 6 days per week Network and Helpdesk Services for General Information Technology Services for MDA Workforce - Follow-On	1	2016	4	2021
Fund Recurring Leased Circuits, Maintenance Agreements and Licenses for MDA Enterprise - Follow-On	1	2016	4	2021
Sustain the BMDS Integrated Master Schedule and the Ballistic Missile Defense Asset Management Tool - Follow-On	1	2016	4	2021
Sustain the Information Technology Infrastructure Across the MDA Enterprise - Follow-On	1	2016	4	2021
Perform Analysis, Track, and Report Metrics on Equipment Lifecycle - Follow-On	1	2016	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MC30 / Cyber Operations			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC30: <i>Cyber Operations</i>	12.314	19.189	20.017	22.881	-	22.881	21.019	21.184	23.922	24.396	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The increase of \$2.864M between FY 2016 to FY 2017 provides for compliance with expanding White House, Secretary of Defense, and U.S. Cyber Command DoD-wide Cybersecurity Initiatives, and the FISMA. The most significant includes: \$2.550 million increase for the tri-annual license renewal of ArcSight. This helps safeguard MDA data by giving complete visibility into activity across the IT infrastructure-including external threats such as malware and hackers, internal threats such as data breaches and fraud, risks from application flaws and configuration changes, and compliance pressures from failed audits. This software enables MDA to collect, analyze, and assess IT security, enterprise security and non-security events for rapid identification, prioritization and response.

**A. Mission Description and Budget Item Justification**

A number of key IT strategies were also identified in the DoD Information Technology Enterprise Strategy and Roadmap issued by the Deputy Secretary of Defense in 2011. The IT Roadmap specifically addresses the need to improve Cybersecurity. It states that DoD networks are under constant attack from cybersecurity threats launched from various sources. MDA must meet the National Command Authority Directives for rapid deployment of the BMDS while complying with the key principles of the Cybersecurity standards to ensure MDA remains a secure member of the DoD Information Network (DODIN).

DoD Instruction 8500.01 “Cybersecurity” issued in March 2014, requires continuous monitoring, data analysis, reporting and incident mitigation of DoD classified and unclassified, mission, test and administrative networks. To comply with the Instruction, MDA must implement a multi-tiered cybersecurity risk management capability to protect critical BMD data and systems from rapidly evolving internal and external threats.

The issuance of DoD Instruction 8510.01, “Risk Management Framework (RMF) Information Technology” in March 2014 requires additional resources to implement, manage, monitor and report as a result of a thirty five percent increase in controls (237 controls with 817 enhancements). DoD 8510.01 also states that “resources for implementing the RMF must be identified and allocated as part of the Defense planning, programming, budgeting, and execution process.” The Controls must be tested on all IT supporting research, development, test and evaluation and DoD-controlled IT operated by a contractor or other entity on behalf of DoD and reported.

The Cyber Operations budget project in the Enabling Program Element is executed by the MDA Chief Information Officer who is the Agency Authorizing Official (AO) for MDA Administrative information technology systems. The project provides funds to sustain the Risk Management Framework (RMF) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Systems Security Officer (PM/ISSO) Plan of Action and Milestones (POA&M) for the MDA mission, test and administrative systems. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF documentation (artifacts, validation results, and Cybersecurity Risk Assessment results, and Authorizing Official (AO) accreditation decisions) and POA&M on all MDA information systems. It support the monitoring and tracking of Cybersecurity mitigations detailed in IT security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA PM/ISSO and AO. Independent Verification and Validation (IV&V) team actions ensure the availability, integrity, confidentiality and non-repudiation of the MDA mission, test and administrative systems. Activities in the Project are necessary to comply with FISMA.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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This project funds the MDA Security Operations Center (SOC), responsible for monitoring, managing, patching, and maintaining MDA network and core IT services; issuing and tracking Technical Compliance Orders; and coordinating overarching Enterprise NetOps. The SOC provides the network security operations centers and supporting processes to protect and defend BMDS and the MDA Enterprise information and information systems.

The MDA Computer Emergency Response Team (CERT), funded in this project, monitors the classified and unclassified information technology MDA administrative IT networks and report vulnerabilities. The MDA CERT coordinates with U.S. Cyber Command to identify and implement network vulnerability updates and patches to comply with U.S. Cyber Command vulnerabilities identified for DoD networks.

The project funds IA governance management and administrative management support, annual Agency-wide computer-based IA training and metrics reporting, implementation of Public Key Infrastructure and Enabling and COMSEC related activities.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Information Assurance/Computer Network Defense (IA/CND)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Provides for the certification of Information Technology networks and systems, monitoring and computer emergency response services.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Monitored and defended MDA mission, test, and administrative information systems 24 hours a day, 7 days a week, 365 days a year.</li> <li>-Collected, analyzed, and reported vulnerability and cyber warfare attack metrics to the MDA Chief Information Officer (CIO), MDA leadership, and U.S. Cyber Command.</li> <li>-Ensured MDA mission, test, and administrative systems are operated securely in accordance with DoD Information Assurance Certification and Accreditation policies.</li> <li>-Implemented Information Assurance Vulnerability Alerts and Communication Tasking Orders remediation and patches.</li> <li>-Prepared and maintained current certification and accreditation documentation for general service networks reported to DoD and Office of Management and Budget.</li> <li>-Managed data-at-rest encryption to ensure compliance with Global Information Grid mandated policies.</li> <li>-Revised and updated Information Assurance certification and accreditation packages for system level Ballistic Missile Defense Systems reported to DoD and Office of Management and Budget.</li> <li>-Managed the Information Assurance Workforce Improvement Program to certify Cybersecurity professionals and report compliance in accordance with Federal Information Security Management Act (FISMA) and Information Assurance Workforce Improvement Program (DoD Manual 8570.1), achieving the DoD certification goal.</li> <li>-Completed DoD mandated annual Cybersecurity user training for the MDA workforce.</li> <li>-Provided Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs.</li> </ul>	<p>19.189</p> <p align="center">-</p>	<p>20.017</p> <p align="center">-</p>	<p>22.881</p> <p align="center">-</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Funded MDA Chief Information Office (CIO) Cybersecurity civilian salaries.</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Document and maintain Standard Operating Instructions/Procedures for consistent interface with the MDA BMDS Network Operations Support Center (BNOSC) and the BMDS elements.</li> <li>-Publish MDA policies to incorporate new requirements stated in DoDI 8510.01 Risk Management Framework (RMF) to comply with 237 new controls and 817 control enhancements into controls validation testing of BMDS elements and networks.</li> <li>-Test RMF controls on all IT supporting research, development, test and evaluation and DoD-controlled IT operated by a contractor or other entity on behalf of DoD and reported.</li> <li>-Conduct RMF analysis and reporting for the BMDS such as evaluation of residual risk by incorporating current and proposed BMDS monitoring and mitigations.</li> <li>-Maintain a current Information Assurance risk and residual risk assessment of the BMDS.</li> <li>-Provide coordination on all IT projects and remote sites for Cybersecurity compliance.</li> <li>-Maintain MDA Computer Emergency Response Team (MDA CERT) as a fully accredited Tier II Computer Network Defense Service provider (CNDSP) in accordance with CJCSI 6510.01F and DoD O-8530.1.</li> <li>-Perform CNDSP services (protect, detect, respond and sustain) for all MDA Admin/GENSER, MDA Mission and test networks and enclaves 24 hours per day, seven days a week.</li> <li>-Conduct penetration and application testing that looks for vulnerabilities and issues using a number of tactics, technical and procedures.</li> <li>-Implement methodologies and goals to identify insecure and unauthorized vectors of access to networks or applications, analyze the threat, attempt to exploit the vectors and confirm existence and analyze the risk for exploiting an application, network or service.</li> <li>-Conduct vulnerability scanning of MDA network to assess risks to MDA data from inside and outside sources.</li> <li>-Conduct monthly information assurance vulnerability audits.</li> <li>-Issue and track implementation of Information Assurance Vulnerability Alerts (IAVA), Bulletins (IAVB) and Technical Advisories (IAVT).</li> <li>-Track ports, protocols, and services.</li> <li>-Perform network security monitoring of all MDA subscriber networks and enclaves.</li> <li>-Conduct system forensic analysis, review content of compromised system, document files and data, and identify tactics, techniques and procedures used by an attacker to gain access.</li> <li>-Develop and maintain the RMF package for the BMDS Mission System to support a full Authorization to Operation (ATO).</li> <li>-Compile and validate BMDS Mission Element-level certification and accreditation documents to include BMDS Element-level SIPs, DIPs, C&amp;A Scorecards, POA&amp;M artifacts (CVT reports IA Risk Assessments, Primary RMF artifacts).</li> <li>-Interface with Central Command (CENTCOM) to provide BMDS Mission RMF package.</li> <li>-Conduct an annual IA Security review of the BMDS in accordance with 8510.01 and provide an analysis of changes in IA posture.</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<p>-Manage the Information Assurance Workforce Improvement Program to certify Cybersecurity professionals and report compliance in accordance with Federal Information Security Management Act (FISMA) and Information Assurance Workforce Improvement Program (DoD Manual 8570.1), achieving the DoD certification goal.</p> <p>-Complete DoD mandated annual Cybersecurity user training for the MDA workforce.</p> <p>-Manage data-at-rest encryption to ensure compliance with Global Information Grid mandated policies.</p> <p>-Collect, analyze, and report vulnerability and cyber warfare attack metrics to the MDA Chief Information Officer (CIO), MDA leadership, and U.S. Cyber Command.</p> <p>-Ensure MDA mission, test, and administrative systems are operated securely in accordance with DoD Information Assurance Certification and Accreditation policies.</p> <p>-Implement Information Assurance Vulnerability Alerts and Communication Tasking Orders remediation and patches.</p> <p>-Prepare and maintain current certification and accreditation documentation for general service networks reported to DoD and Office of Management and Budget.</p> <p>-Provide Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs.</p> <p>-Fund MDA Chief Information Office (CIO) Cybersecurity civilian salaries.</p> <p><b>FY 2017 Plans:</b> The increase of \$2.864M between FY 2016 to FY 2017 provides for compliance with expanding White House, Secretary of Defense, and U.S. Cyber Command DoD-wide Cybersecurity Initiatives, and the FISMA. The most significant includes: \$2.550 million increase for the tri-annual license renewal of ArcSight. This helps safeguard MDA data by giving complete visibility into activity across the IT infrastructure-including external threats such as malware and hackers, internal threats such as data breaches and fraud, risks from application flaws and configuration changes, and compliance pressures from failed audits. This software enables MDA to collect, analyze, and assess IT security, enterprise security and non-security events for rapid identification, prioritization and response.</p> <p>-Document and maintain Standard Operating Instructions/Procedures for consistent interface with the MDA BMDS Network Operations Support Center (BNOSC) and the BMDS elements.</p> <p>-Publish MDA policies to incorporate new requirements stated in DoDI 8510.01 Risk Management Framework (RMF) to comply with 237 new controls and 817 control enhancements into controls validation testing of BMDS elements and networks.</p> <p>-Test RMF controls on all IT supporting research, development, test and evaluation and DoD-controlled IT operated by a contractor or other entity on behalf of DoD and reported.</p> <p>-Conduct RMF analysis and reporting for the BMDS such as evaluation of residual risk by incorporating current and proposed BMDS monitoring and mitigations.</p> <p>-Maintain a current Information Assurance risk and residual risk assessment of the BMDS.</p> <p>-Provide coordination on all IT projects and remote sites for Cybersecurity compliance.</p>			
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MC30 / <i>Cyber Operations</i>
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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"> <li>-Maintain MDA Computer Emergency Response Team (MDA CERT) as a fully accredited Tier II Computer Network Defense Service provider (CNDSP) in accordance with CJCSI 6510.01F and DoD O-8530.1.</li> <li>-Perform CNDSP services (protect, detect, respond and sustain) for all MDA Admin/GENSER, MDA Mission and test networks and enclaves 24 hours per day, seven days a week.</li> <li>-Conduct penetration and application testing that looks for vulnerabilities and issues using a number of tactics, technical and procedures.</li> <li>-Implement methodologies and goals to identify insecure and unauthorized vectors of access to networks or applications, analyze the threat, attempt to exploit the vectors and confirm existence and analyze the risk for exploiting an application, network or service.</li> <li>-Conduct vulnerability scanning of MDA network to assess risks to MDA data from inside and outside sources.</li> <li>-Conduct monthly information assurance vulnerability audits.</li> <li>-Issue and track implementation of Information Assurance Vulnerability Alerts (IAVA), Bulletins (IAVB) and Technical Advisories (IAVT).</li> <li>-Track ports, protocols, and services.</li> <li>-Perform network security monitoring of all MDA subscriber networks and enclaves.</li> <li>-Conduct system forensic analysis, review content of compromised system, document files and data, and identify tactics, techniques and procedures used by an attacker to gain access.</li> <li>-Develop and maintain the RMF package for the BMDS Mission System to support a full Authorization to Operation (ATO).</li> <li>-Compile and validate BMDS Mission Element-level certification and accreditation documents to include BMDS Element-level SIPs, DIPs, C&amp;A Scorecards, POA&amp;M artifacts (CVT reports IA Risk Assessments, Primary RMF artifacts).</li> <li>-Interface with Central Command (CENTCOM) to provide BMDS Mission RMF package.</li> <li>-Conduct an annual IA Security review of the BMDS in accordance with 8510.01 and provide an analysis of changes in IA posture.</li> <li>-Manage the Information Assurance Workforce Improvement Program to certify Cybersecurity professionals and report compliance in accordance with Federal Information Security Management Act (FISMA) and Information Assurance Workforce Improvement Program (DoD Manual 8570.1), achieving the DoD certification goal.</li> <li>-Complete DoD mandated annual Cybersecurity user training for the MDA workforce.</li> <li>-Manage data-at-rest encryption to ensure compliance with Global Information Grid mandated policies.</li> <li>-Collect, analyze, and report vulnerability and cyber warfare attack metrics to the MDA Chief Information Officer (CIO), MDA leadership, and U.S. Cyber Command.</li> <li>-Ensure MDA mission, test, and administrative systems are operated securely in accordance with DoD Information Assurance Certification and Accreditation policies.</li> <li>-Implement Information Assurance Vulnerability Alerts and Communication Tasking Orders remediation and patches.</li> <li>-Prepare and maintain current certification and accreditation documentation for general service networks reported to DoD and Office of Management and Budget.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-Provide Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs. -Fund MDA Chief Information Office (CIO) Cybersecurity civilian salaries.			
<b>Accomplishments/Planned Programs Subtotals</b>	19.189	20.017	22.881

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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<b>Support (\$ in Millions)</b>				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			
Information Assurance/ Computer Network Defense (IA/CND) - BMDs IA Advisory and Assistance Services	C/CPFF	Booz Allen Hamilton : AL, CO, VA	0.630	0.641		1.308	Oct 2015	1.334	Oct 2016	-		1.334	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/IA Advisory and Assistance Services	C/CPFF	Torch Technologies : AL, CO, VA	2.737	2.783		2.529	Oct 2015	2.580	Oct 2016	-		2.580	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/ IA Civilian Travel	Allot	MDA Civilian Travel : AL, AK, CA, CO, HI, NM, VA	0.088	0.105		0.104	Oct 2015	0.106	Oct 2016	-		0.106	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/ IA Civilian pay/Travel/PCS	Allot	MDA Civilian Pay : AL, CO, VA	2.064	2.778		2.809	Oct 2015	2.844	Oct 2016	-		2.844	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/ IA Comsec	MIPR	NSA : AL, CO, VA	0.104	0.105		0.108	Oct 2015	0.110	Oct 2016	-		0.110	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/ IA Licenses	C/CPAF	Northrop Grumman : AL, CO, VA	0.000	3.737		2.516	Oct 2015	5.218	Oct 2016	-		5.218	Continuing	Continuing	Continuing
Information Assurance/ Computer Network Defense (IA/CND) - CND/ IA Operational Support	C/FFP	Northrop Grumman : AL, CO, VA	6.691	9.040		10.643	Oct 2015	10.689	Oct 2016	-		10.689	Continuing	Continuing	Continuing
<b>Subtotal</b>			12.314	19.189		20.017		22.881		-		22.881	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	12.314	19.189	20.017	22.881	-	22.881	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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Significant Event Complete ▲    Milestone Decision Complete ★    Element Test Complete ◆    System Level Test Complete ●    Complete Activity Planned Activity ✦  
 Significant Event Planned △    Milestone Decision Planned ☆    Element Test Planned ◇    System Level Test Planned ○

	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
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command	✦	✦	✦	✦																								
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance	✦	✦	✦	✦																								
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs	✦	✦	✦	✦																								
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance - Follow-On					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦
Complete Annual Information Assurance user Training for MDA Workforce	✦	✦	✦	✦																								
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services	✦	✦	✦	✦																								

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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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
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems	+	+	+	+																								
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance	+	+	+	+																								
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Complete Annual Information Assurance user Training for MDA Workforce - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services - Follow-On					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC30 / Cyber Operations
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command - Follow-On	1	2016	4	2021
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance - Follow-On	1	2016	4	2021
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs - Follow-On	1	2016	4	2021
Report Vulnerability and Cyber Warfare Attack Metrics to the MDA Chief Information Officer, MDA Leadership, and Cyber Command	1	2015	4	2015
Monitor Networks and Systems to Defend Mission, Test, and Administrative Systems on a 24 hours per day, 7 days per week, 365 days per year basis for Information Assurance	1	2015	4	2015
Provide Information Assurance Engineering and Planning Guidance and Vulnerability Assessment for Information Technology Acquisition Programs	1	2015	4	2015
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance - Follow-On	1	2016	4	2021
Complete Annual Information Assurance user Training for MDA Workforce	1	2015	4	2015
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services	1	2015	4	2015
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems	1	2015	4	2015
Procure, Implement, and Asset Control of Hardware maintenance and Software Licenses for Monitoring Systems of Information Assurance	1	2015	4	2015
Conduct Information Assurance Certification Evaluation of Mission, Test, and Administrative Systems - Follow-On	1	2016	4	2021
Complete Annual Information Assurance user Training for MDA Workforce - Follow-On	1	2016	4	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MC30 / <i>Cyber Operations</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Implement Information Assurance Vulnerability Alert Control Improvements for General Information Technology Services - Follow-On	1	2016	4	2021



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD31 / Modeling & Simulation			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD31: <i>Modeling &amp; Simulation</i>	85.843	39.589	42.668	44.458	-	44.458	47.278	47.837	50.226	50.984	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

The mission of MDA's M&S Program is 1) to execute a single, integrated, and synchronized program to manage M&S development in support of MDA's BMDS acquisition, 2) to support BMDS Flight and Ground Test execution, 3) to drive MDA test activities to collect data to anchor M&S, and 4) to support warfighter training and tactics validation.

M&S develops, sustains and delivers system-level models, frameworks, and simulations which are used to examine and evaluate BMDS performance and behaviors of the associated components and elements within a virtual and constructive simulation environment. MDA's M&S Program assists the development and acquisition of the BMDS by providing: M&S system and product planning, development, integration, and operation; threat model development, verification, and analysis; and integration and deployment of MDA's Distributed BMDS real-time Hardware-in-the-Loop (HWIL) and digital M&S simulation capabilities.

MDA's M&S program is essential to ensuring missile defense capabilities are affordable and effective. MDA's M&S program provides a cost effective means to assess and explore the performance space of the BMDS beyond what can be physically tested under current test range conditions and within fiscal constraints. Through conceptual simulation activities, M&S provides the capability to design and develop technologies to hedge against future missile threats. These efforts require close coordination with the DoD, Joint Staff, Military Services, Combatant Commands (CCMDs), Operational Test Agencies (OTAs), MDA Program Elements, and the Intelligence Community.

In response to a Director of Operational Test and Evaluation (DOT&E) BMDS Assessment Report, M&S has developed and is executing Corrective Action Plans. Key tasks include:

- Ensure that future M&S architectures are composable and flexible, and simplify the integration process to conserve resources and improve capabilities.
- Ensure that future M&S architectures incorporate and require the use of consistent "truth" representations (environmental factors, threat simulations, etc.).
- Improve cross-organizational system engineering processes to optimize requirements generation and ensure the inclusion of all stakeholders.
- Develop refined M&S accreditation criteria between MDA and the OTA.

The M&S objective is to evolve the various systems and products to incrementally improve the fidelity of MDA's M&S representations to match, as appropriate, the real world performance of the BMDS and meet Warfighter and Agency needs. In particular, MDA's M&S systems and products provide analysis and decision-making and planning capabilities for Real-World Operations in support of the National Command Authority, Joint Staff, Military Services, NATO, CCMDs, OTAs, Director of Operational Test & Evaluation (DOT&E), and Allies. Models and simulations are tailored to the specific needs of the Agency's test events and to match BMDS

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD31 / <i>Modeling &amp; Simulation</i>
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components in their various stages of development, ranging from low-to-medium fidelity analyses supporting concept definitions studies, to high-fidelity models used to support engineering level activities.

MDA's M&S mission has relied on the use of two simulation frameworks to execute requirements to support various stakeholder applications such as Ground Tests, Flights Tests and digital performance assessments. The Single Stimulation Framework (SSF) has supported all HWIL stakeholder applications, while the Digital Simulation Architecture (DSA) was used to support all Digital stakeholder applications. MDA established requirements for the Objective Simulation Framework (OSF) to move towards a single simulation framework that support all MDA M&S stakeholder applications: HWIL, digital, and hybrid configurations. OSF will provide a composable simulation framework that promotes significant reuse of authoritative, community-validated truth models and is extensible to facilitate integration of new models as they evolve. OSF threat scenarios and simulated BMDS operating environments will allow assessment of the BMDS capabilities to support various agency objectives and decisions. In addition to supporting BMDS system assessments, OSF will support CCMDs by delivering a framework that provides the BMDS operational crews and command staffs with the capability to work together to exercise a spectrum of offensive and defensive operations, as well as a venue for the operational community to experiment with new Concepts of Operation and Tactics, Techniques and Procedures.

The Core Truth Modeling program provides consistent and common Phenomenology, Lethality, and Environment models, and threat capabilities for Agency M&S venues. Phenomenology models address missile hard body visible and infrared signatures, as well as the plume produced by the missile engines. Lethality models represent the impact of the BMDS missile kill vehicles (i.e. GBI, SM-3, THAAD) on reentry vehicles. Lethality results include percentage of destruction and the direction and speed of debris fragments. Environment modeling provides a representation of natural and man-made endo and exo-atmospheric conditions (e.g., rain, wind, sea state) for simulations.

The Threat Modeling Center (TMC) uses all-source intelligence products to produce credible, high resolution threat models and simulation media to support analysis, development, test, and assessment of the defense of the U.S., deployed forces, and allies against ballistic missile attacks. The threat models are used to produce accurate kinematic threat trajectories and signature data (radar cross-section (RCS), hardbody infrared (IR), and plume IR) of ballistic missiles and air breathing threats to drive the M&S tools of the missile defense community, and enable design, verification, and assessment of the BMDS and associated components' concepts and requirements. BMDS simulation events use common threat data to prove the performance of the BMDS.

MDA's M&S capabilities, systems and products are in use throughout the BMDS and provide the Warfighter and OTAs the capability to evaluate both the BMDS and individual components. MDA validates and accredits system-level models and simulations by anchoring them to ground and flight test events to support accurate and comprehensive assessments of the BMDS. MDA bases M&S system and product testing on an integrated, comprehensive, and phased test program as outlined in MDA's IMTP. Within the construct of the IMTP, MDA Element-unique M&S systems, subsystems, and components are tested as part of their respective development and integration, a necessary precursor to conducting BMD System-level M&S testing (e.g., integrated ground test, performance/technical assessment venues). Resources for the planning, design, execution and management of this testing are provided in accordance with the BMDS Test Policy, as listed in the most current version of the IMTP.

MDA's M&S program also supports Allied/Coalition Partner cooperative activities, real-world pre- and post-flight launch analyses, and the Israeli Cooperative Programs.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<b>Title:</b> Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization	7.819	7.628		7.919
<b>Articles:</b>	-	-	-	-

**Description:** M&S capability development executes an integrated, synchronized program to manage M&S development in support of BMDS development, testing, and assessment.

**FY 2015 Accomplishments:**

- Maintained traceability between the M&S requirements database and M&S product development.
- Produced capability documents and specifications for M&S product development to enable BMDS Ground Tests, Training events, Exercises, Wargames, Digital simulations, and Element Integration.
- Supported requests to export M&S software to nations or international organizations.
- Supported system engineering capability trades which are essential in the assessment of all BMDS capability deliveries (including BMDS capability deliveries for Phased Adaptive Approach (PAA) and Homeland Defense).
- Continued the transition to replace the Digital Simulation Architecture (DSA) and Single Stimulation Framework (SSF) with an Objective Simulation Framework (OSF) to support M&S Intended Uses.
- Supported M&S technical interchange with the Department of Defense of Australia under the Ballistic Missile Defense Modeling, Simulation and Analysis Project arrangement .

**FY 2016 Plans:**

- Maintain and update MDA's M&S model capability descriptions catalog.
- Maintain traceability between the M&S requirements database and M&S product development.
- Produce capability documents and specifications for M&S product development to enable BMDS Flight and Hardware in the Loop (HWIL) tests, training events, exercises, wargames, digital simulations, and Element integration.
- Support requests to export M&S software and technical data to nations or international organizations.
- Support Technical Interchange Meetings and bilateral agreements with allies and partners.
- Support system engineering capability trades which are essential for the assessment of all BMDS capability deliveries (including BMDS capability deliveries for Phased Adaptive Approach and Homeland Defense).
- Continue the transition to replace the Single Stimulation Framework with the Objective Simulation Framework to support M&S Intended Uses.

**FY 2017 Plans:**

- Maintain traceability between the M&S Systems Requirements Documents and M&S product development.
- Produce capability documents and specifications for M&S product development to enable BMDS flight and HWIL tests, training events, exercises, wargames, digital simulations, and Element integration.
- Maintain and update MDA's M&S model capability descriptions catalog.
- Support MDA response to export requests for M&S software and technical data to nations or international organizations.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Participate in Technical Interchange Meetings and provide support for bilateral agreements with allies and partners.</li> <li>- Support system engineering capability trades for all BMDS capability deliveries (including BMDS capability deliveries for Phased Adaptive Approach and Homeland Defense).</li> <li>- Continue the transition to replace the Single Stimulation Framework with the Objective Simulation Framework to support M&amp;S Intended Uses.</li> <li>- Provide integrated program lifecycle planning and scheduling of all BMDS M&amp;S models and capabilities to enable assessment of BMDS capability deliveries for Phased Adaptive Approach and Homeland Defense.</li> </ul>			
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<b>Title:</b> M&S Digital Framework, Simulation, Models	10.015	11.366	11.836
<b>Articles:</b>	-	-	-

**Description:** The M&S Digital Framework, simulation, and models effort includes: development and sustainment of digital products and the architecture framework, and delivery/maintenance of infrastructure for BMDS performance assessments, Warfighter events, and BMD International Simulation events.

**FY 2015 Accomplishments:**

Development and Sustainment:

- Initiated the re-architecting of MDA's BMD International Simulation (I-SIM) to adapt to growing distributed event requirements in support of CCMD and International Wargames, conceptual planning, BMD visualizations, BMD training/orientation, and M&S demonstrations.
- Continued development and sustainment of the Missile Defense Space Warning Tool (MDST) to keep pace with fielded BMDS OPIR Architectures in support of Warfighter events.
- Provided software operations/maintenance support to the Extended Air Defense Simulation (EADSIM) code base for use in Warfighter exercises, training venues, and CCMD planning tools.
- Provided software development/sustainment for BMDS component models of PATRIOT weapon system for use in MDA test and validation events.

Maintenance:

- Initiated the replacement of Discrete Event Simulation (DESIM) with existing modernized M&S tools in support of some COCOM events and operating potential replacement simulations in "shadow mode" for others.

Event Integration/Support Operations:

- Integrated, tested, functionally qualified, and delivered legacy M&S tools for use in MDA test events, Wargames, and exercises (includes models for PATRIOT, and communications).
- Continued the transition of real-time digital simulation capability to the Objective Simulation Framework (OSF) to support Intended Uses.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD31 / <i>Modeling &amp; Simulation</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Controlled and maintained simulations for Element M&amp;S development laboratory use in the Digital M&amp;S Integration Center (DMIC) in Huntsville, AL.</li> <li>- Provided digital representations for use during International Simulations/Wargames and demonstrations as well as Missile Defense Space Warning Tool operations.</li> <li>- Provided threat representations (kinematic trajectories, RCS, and IR signature data) for use in real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD.</li> <li>- Performed operational planning for the FY 2016 BMDS assessment events.</li> </ul> <p><b>FY 2016 Plans:</b> Development and Sustainment:</p> <ul style="list-style-type: none"> <li>- Continue re-architecting of MDA's BMD International Simulation (I-SIM) to adapt to growing distributed event requirements in support of COCOM and International Wargames, conceptual planning, BMD visualizations, BMD training/orientation, M&amp;S demonstrations, and the Warfighter's Modification &amp; Fielding Requirements List (MFRL).</li> <li>- Maintain the Missile Defense Space Warning Tool (MDST) to keep pace with fielded BMDS Overhead Persistent Infrared (OPIR) Architectures in support of Warfighter events.</li> <li>- Provide software operations/maintenance support to the Extended Air Defense Simulation (EADSIM) code base for use in Warfighter exercises, training venues, and COCOM planning tools.</li> <li>- Provide Software development/sustainment for BMDS component models of PATRIOT weapon system for use in MDA test and validation events.</li> </ul> <p>Event Integration/Support Operations:</p> <ul style="list-style-type: none"> <li>- Integrate, test, functionally qualify, and deliver M&amp;S tools for use in MDA test events, Wargames, and exercises.</li> <li>- Continue the transition of real-time digital simulation capability to the Objective Simulation Framework (OSF) to support Intended Uses.</li> <li>- Control and maintain simulations for Element M&amp;S development laboratory use in the Digital M&amp;S Integration Center (DMIC) in Huntsville, AL.</li> <li>- Provide digital representations for use during International Simulations/Wargames and demonstrations, and exercise/training events.</li> <li>- Provide threat representations (kinematic trajectories, radar cross sections, and infrared signature data) for use in real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD.</li> <li>- Perform operational planning for the FY 2017 BMDS assessment events.</li> </ul> <p><b>FY 2017 Plans:</b> Event Integration/Support Operations:</p>			
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<p>- Provide the ground test architecture integration expertise to meet the testing requirements of the IMTP. Support delivery of integrated architectures for test across all test venues using the BMDS test framework to integrate distributed architectures in support of BMDS capability deployments for EPAA Phase 3.</p> <p>- Integrate, test, and verify the M&amp;S enterprise supporting BMDS testing, assessment, exercises, and wargaming, including testing infrastructure. Guide and facilitate integration testing of MDA's M&amp;S frameworks and core truth models, and all M&amp;S components into virtual representations of the BMDS that are credible, affordable, and provide decision makers with the data needed.</p> <p>- Integrate, test, functionally qualify, and deliver M&amp;S tools and complex test architectures to provide system test capabilities to support MDA IMTP based test events, wargames, and exercises.</p> <p>- Continue the transition of real-time digital simulation capability to the Objective Simulation Framework to support Intended Uses.</p> <p>- Maintain simulations for Element M&amp;S development laboratories used in the BMDS Integration &amp; Development Lab and Digital M&amp;S Integration Center (DMIC) in Huntsville, AL and in the MDIOC Simulation Center.</p> <p>- Begin providing required integration, testing and system-level verification manpower to achieve digital System Requirements Document threshold performance. Operate the test-bed to support maturation of an OSF-based digital system simulation.</p> <p>- Provide threat representations (kinematic trajectories, radar cross sections, and infrared signature data) for use in real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD.</p> <p>- Perform operational planning for the FY 2017 BMDS assessment events.</p> <p>- Deploy System Interface Units (SIUs) for BMDS testing - materials, licenses, SIU fleet purchasing. Deploy SIUs and components to maintain and sustain SIU fleet including cybersecurity; enables Developmental and Operational testing with full BMDS as required in IMTP, to meet EPAA Phase 3 requirements.</p> <p>- Conduct M&amp;S system integration and verification to support M&amp;S system architecture development. Provide developmental integration testing to support M&amp;S system architecture integration.</p> <p><b>M&amp;S Operations:</b></p> <p>- Continue to implement the re-architecture requirements of MDA's BMD International Simulation (I-SIM) as well as implement emerging requirements such as IAMD/Fog of War to adapt to growing distributed event requirements in support of CCMD and International Wargames, conceptual planning, BMD visualizations, BMD training/orientation, M&amp;S demonstrations, and the Warfighter's Modification &amp; Fielding Requirements List (MFRL).</p> <p>- Develop and maintain the Missile Defense Space Warning Tool (MDST) to keep pace with fielded BMDS Overhead Persistent Infrared (OPIR) Architectures in support of Warfighter training events and BMDS exercise events.</p> <p>- Provide software operations/maintenance support to the Extended Air Defense Simulation (EADSIM) code base for use in Warfighter exercises, training venues, and CCMD planning tools.</p> <p>- Provide Event Integration Support for BMDS component models of PATRIOT weapon system for use in MDA test and validation events.</p> <p>- Provide Software development/sustainment for BMDS component models (PSEM and FMS/D) of PATRIOT weapon system for use in IMTP events.</p>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Provide HWIL/M&amp;S Benchmarking/Integration, documentation and coordination. Sustain, integrate and execute ground tests, FAST Events and Exercises/Wargames to include Patriot FMS/D HWIL representations and improved model validation and accreditation.</li> <li>- Provide communications emulation (MTJ, STJ, and Link-16) and network analysis support via the Tactical Communications Environment Segment (TCES) for use in IMTP events such as integrated ground tests, HWIL SPFRs and HWIL SPMTs.</li> <li>- Provide digital representations for use during International Simulations/Wargames and demonstrations, and exercise/training events.</li> <li>- Support the Re-Architecture of BMDS simulations via compliance upgrades to legacy models, new designs or as software as required by the Agency M&amp;S efforts.</li> </ul>			
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<b>Title:</b> M&S HWIL Framework, Simulations, Models	12.402	13.341	13.948
<b>Articles:</b>	-	-	-

**Description:** The M&S HWIL Framework, Models and Simulations effort develops, maintains and deploys the HWIL framework hardware and software for use at element laboratories and Combatant Command locations to support IMTP test events, BMDS capability delivery assessments, Warfighter training, exercises, and wargames.

**FY 2015 Accomplishments:**

- Delivered the initial version of the Objective Simulation Framework (OSF), which included Hardware-in-the-loop (HWIL) capabilities.
- Incorporated advanced M&S capabilities into the next version of the OSF for tracking, discrimination, engagement and associated upper tier debris mitigation, launch/engage on remote, as well as lower tier engagement coordination to satisfy PAA needs.
- Controlled and maintained the HWIL Integration Laboratory for Element M&S in Huntsville, AL.
- Provided support for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated Ground Test Events as presented in the Integrated Master Test Plan (IMTP).
- Developed, maintained, tested, fielded, and operated model representations for use in Ground Tests.

**FY 2016 Plans:**

- Develop Objective Simulation Framework upgrades to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving M&S Enterprise needs.
- Begin implementation of new capabilities needed to support MDA's Tier 2 Digital requirements, including hardware and software, data storage and transmission, and verification tools.
- Control and maintain the M&S Integration and Development Laboratories for Element M&S. Maintain venue for stakeholders to conduct early integration efforts and identification of issues prior to event architecture integration to support system development.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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- Develop plans, procedures and documentation for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated HWIL Events as presented in the Integrated Master Test Plan (IMTP). Provide event architecture integration and checkout of Wargames for these same scheduled events.

- Develop, maintain, test, field, and operate model representations for use in events and other MDA M&S stakeholder application areas. Deploy hardware and software updates to Continental U.S. (CONUS) and Outside CONUS (OCONUS) distributed sites. Perform regular maintenance and critical repairs of hardware and software.

**FY 2017 Plans:**

- Develop plans, procedures and documentation for scheduled events including Wargames and Combatant Command Exercises and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP. Provide event architecture integration and checkout of Wargames for these same scheduled events.

- Develop, maintain, test, field, and operate model representations for use in events and other MDA M&S stakeholder application areas. Deploy hardware and software updates to CONUS and OCONUS distributed sites. Perform regular maintenance and critical repairs of hardware and software.

- Enhance and publish the OSF framework interface to facilitate element integration in support of the GT-07 campaign.

- Evolve the OSF product to integrate and take advantage of new Core Truth Models in support of the GT Re-architecture efforts.

- Implement framework functionality needed to support MDA's reconstitution of the Tier 2 Digital capabilities.

- Implement OSF into the Flight Test and Warfighter Training venues.

- Sustain and enhance framework products to maintain capabilities to support stakeholders.

- Provide System Engineering support to the Ground Test Re-architecture effort.

- Implement Objective Simulation Framework capabilities to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving M&S Enterprise needs.

- Continue maintenance of the Single Stimulation Framework in the required venues until the transition of the Objective Simulation Framework into the venues completes.

<b>Title:</b> M&S Core Truth Modeling	9.353	10.333	10.755
<b>Articles:</b>	-	-	-

**Description:** The Core Truth Model (CTM) program provides consistent and common Phenomenology, Lethality, Environment, Communications, and Threat models for BMDS M&S venues and supports all Digital and Ground Test Events and Wargaming Exercises. The Core Truth Model efforts are critical in the assessment of all BMDS capability deliveries.

**FY 2015 Accomplishments:**

-Continued the implementation of next generation truth representations for phenomenology and lethality to meet advanced BMDS capability needs for tracking, discrimination and engagement in support of Phased Adaptive Approach (PAA).



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<p>-Maintained legacy truth representations (e.g., Parametric Endoatmospheric-Exoatmospheric Lethality Simulation (PEELS), Kinetic Intercept Debris Distribution (KIDD) and Optical Signatures Code/Optical Signature Inline Generator (OSC/OPTISIG)) until fully transitioned.</p> <p>-Provided M&amp;S software for the Threat Modeling Simulation System (TMSS) threat production architecture (e.g. integration of new/updated missile models and threat system capabilities) to enable threat production for real-world events; BMDS development, system-level events, and exercises; and Wargames.</p> <p>-Provided M&amp;S software for the Threat Generator External (TGx) analyst/planner tool (e.g. integration of new/updated missile models and threat system capabilities) for threat studies throughout the DoD.</p> <p>-Continued efforts to support integration of all applicable Core Truth Model (CTM) functions into Objective Simulation Framework (OSF) framework.</p> <p>-Provided support for scheduled events including Wargames, Exercises, and the Distributed, Focused and Integrated Ground Test Events as presented in the IMTP.</p> <p>- Continued development of CTM Toolkit for integrated truth representations across the M&amp;S enterprise.</p> <p>- Continued assessment of Environment models for ground test implementation.</p> <p><b>FY 2016 Plans:</b></p> <p>- Continue implementation of next generation truth representations for signatures and lethality to address advanced BMDS capability needs for tracking, discrimination and engagement in support of European Phased Adaptive Approach (EPAA) Phase 3.</p> <p>- Maintain legacy truth representations (e.g., Parametric Endoatmospheric-Exoatmospheric Lethality Simulation (PEELS), Kinetic Intercept Debris Distribution (KIDD) and Optical Signatures Code/Optical Signature Inline Generator (OSC/OPTISIG)) until fully transitioned.</p> <p>- Provide M&amp;S software for the Threat Modeling Simulation System (TMSS) threat production architecture (e.g. integration of new/updated missile models and threat system capabilities) to enable threat production for real-world events, BMDS development, BMD system-level events, training, exercises, and Wargames.</p> <p>- Provide M&amp;S software for the Threat Generator External (TGx) analyst/planner tool (e.g. integration of new/updated missile models and threat system capabilities) for threat studies throughout the DoD.</p> <p>- Continue efforts to support integration of all applicable Core Truth Model (CTM) functions into Objective Simulation Framework (OSF) framework.</p> <p>- Provide support for scheduled events including training, exercises, Wargames, and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP.</p> <p>- Deliver CTM Toolkit for integrated truth representations across the M&amp;S enterprise.</p> <p>- Continue efforts to develop radar cross section (RCS) prediction tool that provides consistent RCS data for system and element simulations.</p> <p>- Continue the re-establishment of the Environments Program that will provide consistent environment models for system and element level simulations.</p>			
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Continue development of Truth Interaction which includes infrared (IR) propagation, radio frequency (RF) propagation, and aerodynamic propagation. This will provide consistent models and truth to system and element level simulations.</li> <li>- Continue generating CTM Sensitivity analysis to identify the sensitivity within system simulation of CTM models and boundary.</li> <li>- Continue development of CTM design to support system and element level simulations.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue implementation of next generation truth representations for signatures and lethality; establish truth representations for environments and truth interaction to address advanced BMDS capability needs for tracking, discrimination and engagement in support of EPAA Phase 3.</li> <li>- Maintain legacy truth representations (e.g., Parametric Endoatmospheric-Exoatmospheric Lethality Simulation (PEELS), Kinetic Intercept Debris Distribution (KIDD) and Optical Signatures Code/Optical Signature Inline Generator (OSC/OPTISIG)) until fully transitioned.</li> <li>- Deliver Core Truth Models (CTM) Toolkit for integrated truth representations across the M&amp;S enterprise.</li> <li>- Continue efforts to develop radar cross section prediction tool that provides consistent data for system and element simulations.</li> <li>- Continue integration of applicable Core Truth Model functions into Objective Simulation Framework.</li> <li>- Support training, exercises, Wargames, and the Distributed, Focused and Integrated HWIL Events as presented in the IMTP.</li> <li>- Provide consistent environment models for system and element level simulations.</li> <li>- Continue development of Truth Interaction capability, to include infrared, radio frequency, and aerodynamic propagation. Provide consistent models and truth to system and element level simulations.</li> <li>- Continue generating CTM Sensitivity Analysis to identify the sensitivity within system simulation of CTM models and boundary.</li> <li>- Continue development of CTM design to support system and element level simulations.</li> <li>- Sustain the Threat Modeling Simulation System (TMSS) threat production architecture (e.g. integration of new/updated missile models and threat system capabilities) to enable efficient and timely BMD threat production for real-world events, BMDS development, BMD system-level events, training, exercises, and Wargames.</li> <li>- Sustain the Threat Generator External (TGx) analyst/planner tool (e.g. integration of new/updated missile models and threat system capabilities) for BMD threat studies throughout the DoD.</li> <li>- Provide Integrated Threat Packages of red-force representations (kinematic trajectories, radar cross sections, and infrared signature data) for use in BMD real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD</li> <li>- Continue System Engineering efforts in Support of GT Re-architecture efforts</li> <li>- Identify SBIR Technology to be transitioned to core program in support of increasing capabilities across the CTM areas</li> <li>- Continue efforts to develop prediction tools/capabilities covering all threat data types for radar cross section, kinematics, infrared hardbody and plume signatures which provide consistent data for system and element simulations.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	39.589	42.668	44.458

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603881C: <i>Ballistic Missile</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											
• 0603882C: <i>Ballistic</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
<i>Missile Defense Midcourse</i>											
<i>Defense Segment</i>											
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks while the Elements, using the same open competition methods, develop and deliver models of their systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by FFRDCs and UARCs.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>Product Development (\$ in Millions)</b>				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
Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization - FFRDC & UARC	MIPR	Various : CO, AL	0.000	1.460		1.574	Nov 2015	1.728	Nov 2016	-		1.728	Continuing	Continuing	Continuing
Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization - Requirements & Design - CSS 2	C/CPFF	Parsons : CO	0.000	5.375		5.294	Nov 2015	5.433	Nov 2016	-		5.433	Continuing	Continuing	Continuing
Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization - Requirements & Design - OGA	MIPR	SMDC : AL	0.000	0.476		0.486	Nov 2015	0.482	Nov 2016	-		0.482	Continuing	Continuing	Continuing
Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization - Requirements & Design Support	Various	MDA : CO, AL	3.728	0.508		0.274	Oct 2015	0.276	Nov 2016	-		0.276	Continuing	Continuing	Continuing
Modeling and Simulation (M&S) Requirements, Design Support, Scenario Optimization - Requirements & Scenario Design Support - OGA	MIPR	AMRDEC : AL	1.933	0.000		0.000		0.000		-		0.000	0	1.933	0
M&S Digital Framework, Simulation, Models - Digital Framework Development	C/CPAF	Northrop Grumman : CO	5.744	4.351		5.067	Oct 2015	4.720	Nov 2016	-		4.720	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - Digital Simulation Development / Support	MIPR	SMDC : AL	1.750	0.873		0.924	Oct 2015	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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>Product Development (\$ in Millions)</b>				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			
M&S Digital Framework, Simulation, Models - M&S / Digital Framework Support	Various	MDA : CO, AL	0.506	0.608		0.551	Oct 2015	0.895	Nov 2016	-		0.895	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - M&S / Digital Framework Support - CSS	C/CPFF	Parsons : CO	0.000	0.000		0.000		2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - M&S / Digital Framework Support - Industry	C/CPFF	TBE : AL	0.000	0.000		0.000		0.959	Nov 2016	-		0.959	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - M&S / Digital Framework Support - OGA	MIPR	AMRDEC : AL	2.390	4.183		4.824	Oct 2015	3.262	Nov 2016	-		3.262	Continuing	Continuing	Continuing
M&S HWIL Framework, Simulations, Models - M&S HWIL - CSS	C/CPFF	Parsons : CO	0.000	0.000		0.000		2.200	Nov 2016	-		2.200	Continuing	Continuing	Continuing
M&S HWIL Framework, Simulations, Models - M&S HWIL - Industry	C/CPAF	Northrop : CO	2.608	0.000		3.162	Oct 2015	0.620	Nov 2016	-		0.620	Continuing	Continuing	Continuing
M&S HWIL Framework, Simulations, Models - M&S HWIL Framework Development and Support	C/CPFF	Teledyne Brown Engineering : AL, CO	6.315	5.402		3.928	Oct 2015	3.405	Nov 2016	-		3.405	Continuing	Continuing	Continuing
M&S HWIL Framework, Simulations, Models - M&S HWIL Simulations / Models Development	MIPR	AMRDEC : AL	9.049	5.692		5.090	Oct 2015	4.411	Nov 2016	-		4.411	Continuing	Continuing	Continuing
M&S HWIL Framework, Simulations, Models - M&S HWIL Support / GT re-architecture	Various	MDA : AL, CO	0.600	1.308		1.161	Oct 2015	3.312	Nov 2016	-		3.312	Continuing	Continuing	Continuing
M&S Core Truth Modeling - M&S Core Truth Modeling - OGA	MIPR	AFRL : CO	0.000	0.000		0.000		1.300	Nov 2016	-		1.300	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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<b>Product Development (\$ in Millions)</b>				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			
M&S Core Truth Modeling - Core Truth Models Validation	Various	MDA : CO, AL	3.789	1.258		1.260	Oct 2015	0.500	Oct 2016	-		0.500	Continuing	Continuing	Continuing
M&S Core Truth Modeling - M&S Core Truth Modeling - Lethality/ Phenomenology Modeling	MIPR	AMRDEC : AL	26.056	1.509		2.437	Oct 2015	2.400	Nov 2016	-		2.400	Continuing	Continuing	Continuing
M&S Core Truth Modeling - M&S Core Truth Modeling Simulation System	C/CPAF	Northrop Grumman : CO	21.375	6.586		6.636	Oct 2015	6.555	Nov 2016	-		6.555	Continuing	Continuing	Continuing
<b>Subtotal</b>			85.843	39.589		42.668		44.458		-		44.458	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	85.843	39.589		42.668		44.458		-		44.458	-	-	-

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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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
Combatant Command Exercise (Vigilant Shield / Global Thunder 15) 1Q-FY 2015	▲																											
International Simulation v.8.2 – 1Q-FY 2015	▲																											
Missile Defense Space Warning Tool (MDST) v16 - 1Q-FY 2015	▲																											
Multi-National Missile Defense Conference Seminar 1Q-FY 2015	▲																											
GTD-04e Part 2 (BMDs Ground Test) M&S Test Integration	▲																											
BMDs Wargame 2015 2Q-FY 2015		▲																										
Global Response (GREx06 Part 2) 3Q-FY 2015			▲																									
Combatant Command Exercise (Global Lightning 15) 3Q-FY 2015			▲																									
Key Resolve 15 Combatant Command Exercise Objective Simulation Framework (OSF) v1.0.2.2 - 4Q-FY 2015			▲																									
FTO-02 Event 2 - HWIL SPMT			▲																									
Ground Test, Integrated 06 Part 3 (GTI-06 Part 3)			◆																									
International Simulation v.8.3 – 1Q-FY 2016				▲																								
Missile Defense Space Warning Tool (MDST) v16.1 - 1Q-FY 2016				▲																								
CTV-02 HWIL System Pre-Mission Test (SPMT) (EX) Global Lightning 16				▲																								
GM CTV-02+ (GM Intercept Flight Test) Countdown Exercise					△																							
Combatant Command Exercise (Keen Edge 16)					△																							
Flight Test, Operational (FTO) 02 E2 HWIL System Post Flight Reconstruction (SPFR)					△																							
FTG-15 (GM Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)					△																							
Objective Simulation Framework (OSF) v1.5 - 3Q-FY 2016						△																						
FTG-15 Countdown Event							△																					



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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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	
(WG) Multi-National Missile Defense Conference (MNC) 16								✦	✦																				
International Simulation v 8.4 – 1Q-FY 2017								△																					
Missile Defense Space Warning Tool (MDST) v16.2 - 1Q-FY 2017								△																					
FTX-22 HWIL System Pre-Mission Test (SPMT)								△																					
Objective Simulation Framework (OSF) v1.0.4.x - 1Q FY 2017								△																					
(EX) Global Lightning 17								✦	✦																				
FTG-11 HWIL System Pre-Mission Test (SPMT)									△																				
FTG-15 (GM Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)										△																			
FTM-29 (AEGIS 5.1 Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)										△																			
Single Stimulation Framework (SSF) 1.1.7.Z										△																			
(EX) KEEN Sword 17									✦	✦	✦																		
FTG-11 Count Down Exercise											△																		
(WG) Multi-National Missile Defense Conference (MNC) 17											✦	✦																	
Objective Simulation Framework (OSF) 1.0.3												△																	
Missile Defense Space Warning Tool (MDST) v16.3												△																	
International Simulation v8.5												△																	
Flight Test, Operational (FTO) 03 E1 HWIL System Pre-Mission Test (SPMT)												△																	
GTX-07b												△																	
FTG-11 (OT) HWIL System Post Flight Reconstruction (SPFR)													△																
CTV-03 HWIL System Pre-Mission Test (SPMT)													△																
Global Response GREx 07b 3Q-FY 2018														△															
Flight Test, Operational 03 E1 (FTO-03 E1) Count Down Exercise															△														
CTV-03 Count Down Exercise																△													
FTM-29 HWIL System Post Flight Reconstruction (SPFR)																△													

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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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
Flight Test, Operational (FTO) 03 E2 HWIL																												
System Pre-Mission Test (SPMT)														△														
Flight Test, Operational 03 E2 (FTO-03 E2) Count Down Exercise														△														
(WG) Multi-National Missile Defense Conference (MNC) 18														✦	✦													
Performance Assessment (PA07b OT)														△														
International Simulation v8.6														△														
Objective Simulation Framework v2.0														△														
Flight Test, Operational (FTO) 03 E1 HWIL														△														
System Post Flight Reconstruction (SPFR)														△														
FTG-17 (GM Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)														△														
Ground Test, Distributed (GTD) 07b Part 1														△														
CTV-03 HWIL System Post Flight Reconstruction (SPFR)														△														
Flight Test, Operational (FTO) 03 E2 HWIL System Post Flight Reconstruction (SPFR)															△													
FTM-35 (AEGIS 5.1 Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)															△													
FTT-19 (TH Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)															△													
Ground Test, Distributed 07b Part 2 (GTD-07b Part 2)															△													
Global Responder GREx 08 Part 1 3Q-FY 2019																△												
FTG-17 Count Down Exercise																△												
GTX-08 Part 1																△												
(EX) KEEN Sword 19																	✦	✦	✦									
(WG) Multi-National Missile Defense Conference (MNC) 19																		✦	✦									
International Simulation v8.7																			△									
FTG-17 (GM Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)																			△									
FTX-26 (SN Target Only Flight Test) HWIL System Pre-Mission Test (SPMT)																				△								
FTO-04 HWIL System Pre-Mission Test (SPMT)																					△							

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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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
GTX-08 Part 2																												
Objective Simulation Framework 2.0.3 (FY 2020 update 1)																					△							
FTT-19 (TH Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)																					△							
Flight Test, Operational 04 (FTO-04) Count Down Exercise																						△						
(EX) KEEN Sword 21																						☆	☆	☆	☆			
Objective Simulation Framework v.2.0.4																							△					
Ground Test, Integrated 08 (GTI-08)																							△					
Ground Test, Distributed 08 Part 1 (GTD-08 Part 1)																							△					
(WG) Multi-National Missile Defense Conference (MNC) 20																							☆	☆				
International Simulation v8.8 - 1Q-FY 2021																								△				
Flight Test, Operational (FTO-04) HWIL System Post Flight Reconstruction (SPFR)																								△				
FTG-16 HWIL System Pre-Mission Test (SPMT)																								△				
FTX-25 HWIL System Pre-Mission Test (SPMT)																								△				
Ground Test, Distributed 08 Part 2 (GTD-08 Part 2)																								△				
FTG-16 Count Down Exercise																											△	

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Combatant Command Exercise (Vigilant Shield / Global Thunder 15) 1Q-FY 2015	1	2015	1	2015
International Simulation v.8.2 – 1Q-FY 2015	1	2015	1	2015
Missile Defense Space Warning Tool (MDST) v16 - 1Q-FY 2015	1	2015	1	2015
Multi-National Missile Defense Conference Seminar 1Q-FY 2015	1	2015	1	2015
GTD-04e Part 2 (BMDS Ground Test) M&S Test Integration	1	2015	1	2015
BMDS Wargame 2015 2Q-FY 2015	2	2015	2	2015
Global Response (GREx06 Part 2) 3Q-FY 2015	3	2015	3	2015
Combatant Command Exercise (Global Lightning 15) 3Q-FY 2015	3	2015	3	2015
Key Resolve 15 Combatant Command Exercise	3	2015	3	2015
Objective Simulation Framework (OSF) v1.0.2.2 - 4Q-FY 2015	4	2015	4	2015
FTO-02 Event 2 - HWIL SPMT	4	2015	4	2015
Ground Test, Integrated 06 Part 3 (GTI-06 Part 3)	4	2015	4	2015
International Simulation v.8.3 – 1Q-FY 2016	1	2016	1	2016
Missile Defense Space Warning Tool (MDST) v16.1 - 1Q-FY 2016	1	2016	1	2016
CTV-02 HWIL System Pre-Mission Test (SPMT)	1	2016	1	2016
(EX) Global Lightning 16	1	2016	2	2016
GM CTV-02+ (GM Intercept Flight Test) Countdown Exercise	2	2016	2	2016
Combatant Command Exercise (Keen Edge 16)	2	2016	2	2016
Flight Test, Operational (FTO) 02 E2 HWIL System Post Flight Reconstruction (SPFR)	2	2016	2	2016
FTG-15 (GM Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)	2	2016	2	2016
Objective Simulation Framework (OSF) v1.5 - 3Q-FY 2016	3	2016	3	2016
FTG-15 Countdown Event	4	2016	4	2016
(WG) Multi-National Missile Defense Conference (MNC) 16	4	2016	1	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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Events	Start		End	
	Quarter	Year	Quarter	Year
International Simulation v 8.4 – 1Q-FY 2017	1	2017	1	2017
Missile Defense Space warning Tool (MDST) v16.2 - 1Q-FY 2017	1	2017	1	2017
FTX-22 HWIL System Pre-Mission Test (SPMT)	1	2017	1	2017
Objective Simulation Framework (OSF) v1.0.4.x - 1Q FY 2017	1	2017	1	2017
(EX) Global Lightning 17	1	2017	2	2017
FTG-11 HWIL System Pre-Mission Test (SPMT)	2	2017	2	2017
FTG-15 (GM Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)	3	2017	3	2017
FTM-29 (AEGIS 5.1 Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)	3	2017	3	2017
Single Stimulation Framework (SSF) 1.1.7.Z	3	2017	3	2017
(EX) KEEN Sword 17	3	2017	1	2018
FTG-11 Count Down Exercise	4	2017	4	2017
(WG) Multi-National Missile Defense Conference (MNC) 17	4	2017	1	2018
Objective Simulation Framework (OSF) 1.0.3	1	2018	1	2018
Missile Defense Space Warning Tool (MDST) v16.3	1	2018	1	2018
International Simulation v8.5	1	2018	1	2018
Flight Test, Operational (FTO) 03 E1 HWIL System Pre-Mission Test (SPMT)	1	2018	1	2018
GTX-07b	1	2018	1	2018
FTG-11 (OT) HWIL System Post Flight Reconstruction (SPFR)	2	2018	2	2018
CTV-03 HWIL System Pre-Mission Test (SPMT)	2	2018	2	2018
Global Response GREx 07b 3Q-FY 2018	3	2018	3	2018
Flight Test, Operational 03 E1 (FTO-03 E1) Count Down Exercise	3	2018	3	2018
CTV-03 Count Down Exercise	3	2018	3	2018
FTM-29 HWIL System Post Flight Reconstruction (SPFR)	3	2018	3	2018
Flight Test, Operational (FTO) 03 E2 HWIL System Pre-Mission Test (SPMT)	4	2018	4	2018
Flight Test, Operational 03 E2 (FTO-03 E2) Count Down Exercise	4	2018	4	2018
(WG) Multi-National Missile Defense Conference (MNC) 18	4	2018	1	2019

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD31 / Modeling & Simulation
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Events	Start		End	
	Quarter	Year	Quarter	Year
Performance Assessment (PA07b OT)	1	2019	1	2019
International Simulation v8.6	1	2019	1	2019
Objective Simulation Framework v2.0	1	2019	1	2019
Flight Test, Operational (FTO) 03 E1 HWIL System Post Flight Reconstruction (SPFR)	1	2019	1	2019
FTG-17 (GM Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)	1	2019	1	2019
Ground Test, Distributed (GTD) 07b Part 1	1	2019	1	2019
CTV-03 HWIL System Post Flight Reconstruction (SPFR)	1	2019	1	2019
Flight Test, Operational (FTO) 03 E2 HWIL System Post Flight Reconstruction (SPFR)	2	2019	2	2019
FTM-35 (AEGIS 5.1 Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)	2	2019	2	2019
FTT-19 (TH Intercept Flight Test) HWIL System Pre-Mission Test (SPMT)	2	2019	2	2019
Ground Test, Distributed 07b Part 2 (GTD-07b Part 2)	2	2019	2	2019
Global Responder GREx 08 Part 1 3Q-FY 2019	3	2019	3	2019
FTG-17 Count Down Exercise	3	2019	3	2019
GTX-08 Part 1	3	2019	3	2019
(EX) KEEN Sword 19	3	2019	1	2020
(WG) Multi-National Missile Defense Conference (MNC) 19	4	2019	1	2020
International Simulation v8.7	1	2020	1	2020
FTG-17 (GM Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)	1	2020	1	2020
FTX-26 (SN Target Only Flight Test) HWIL System Pre-Mission Test (SPMT)	1	2020	1	2020
FTO-04 HWIL System Pre-Mission Test (SPMT)	1	2020	1	2020
GTX-08 Part 2	1	2020	1	2020
Objective Simulation Framework 2.0.3 (FY 2020 update 1)	2	2020	2	2020
FTT-19 (TH Intercept Flight Test) HWIL System Post Flight Reconstruction (SPFR)	2	2020	2	2020
Flight Test, Operational 04 (FTO-04) Count Down Exercise	3	2020	3	2020
(EX) KEEN Sword 21	3	2020	2	2021
Objective Simulation Framework v.2.0.4	4	2020	4	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD31 / <i>Modeling &amp; Simulation</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Ground Test, Integrated 08 (GTI-08)	4	2020	4	2020
Ground Test, Distributed 08 Part 1 (GTD-08 Part 1)	4	2020	4	2020
(WG) Multi-National Missile Defense Conference (MNC) 20	4	2020	1	2021
International Simulation v8.8 - 1Q-FY 2021	1	2021	1	2021
Flight Test, Operational (FTO-04) HWIL System Post Flight Reconstruction (SPFR)	1	2021	1	2021
FTG-16 HWIL System Pre-Mission Test (SPMT)	1	2021	1	2021
FTX-25 HWIL System Pre-Mission Test (SPMT)	1	2021	1	2021
Ground Test, Distributed 08 Part 2 (GTD-08 Part 2)	1	2021	1	2021
FTG-16 Count Down Exercise	3	2021	3	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MC31 / M&S Cyber Operations			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC31: M&S Cyber Operations	-	0.204	0.225	0.253	-	0.253	0.258	0.263	0.268	0.274	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Project MC31 is the Defensive Cyber Operations Project established in this Program Element (PE) for PB 2015. Funds were previously reported in Project MD31 of this PE.

**A. Mission Description and Budget Item Justification**

The funds in this project sustain MDA DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager (PM/IAM) Plans of Action and Milestones (POAMs) for enabling M&S mission systems. This project maintains the Certification and Accreditation (C&A) data repository, capturing the DIACAP documentation (artifacts, validation results, Information Assurance Risk Assessment results, and Designated Approving Authority (DAA) accreditation decisions) and POAM on all M&S information systems.

This project supports the monitoring and tracking of Cybersecurity mitigations detailed in Information Technology security POAMs. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/Certification Authority (CA) and DAA. Independent Verification and Validation 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.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Network/System Certification and Accreditation (C&A) for Modeling & Simulation (M&S)	0.204	0.225	0.253
<b>Articles:</b>	-	-	-
<b>Description:</b> See Mission Description Above.			
<b>FY 2015 Accomplishments:</b>			
- Conducted Cybersecurity/information assurance engineering and architecture planning for Enabling information technology systems.			
- Planned and tested the information assurance controls for Enabling systems.			
- Developed Enabling M&S DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages.			
- Conducted Controls Validation Testing (CVT) of Enabling systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC31 / M&S Cyber Operations
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<p>- Conducted annual information assurance reviews to assess compliance in implementing and maintaining information assurance controls.</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct Cybersecurity/information assurance engineering and architecture planning for M&amp;S information technology systems.</li> <li>- Plan and test the information assurance controls for M&amp;S systems.</li> <li>- Develop M&amp;S DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages.</li> <li>- Conduct Controls Validation Testing (CVT) of M&amp;S systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.</li> <li>- Conduct annual information assurance reviews to assess compliance in implementing and maintaining information assurance controls.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct Cybersecurity/information assurance engineering and architecture planning for Engineering information technology systems.</li> <li>- Plan and test the information assurance controls for Engineering systems.</li> <li>- Develop Engineering DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages.</li> <li>- Conduct Controls Validation Testing of systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.</li> <li>- Conduct annual information assurance reviews to assess compliance in implementing and maintaining information assurance controls.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	0.204	0.225	0.253

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC31 / M&S Cyber Operations
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<b>Support (\$ in Millions)</b>				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) for Modeling & Simulation (M&S) - CSS	C/CPFF	Torch Technologies : CO, AL	0.000	0.204		0.225	Nov 2015	0.253	Nov 2016	-		0.253	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.204		0.225		0.253		-		0.253	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.204	0.225	0.253	-	0.253	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC31 / M&S Cyber Operations
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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
MC31 M&S Cyber Operations					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MC31 / M&S Cyber Operations
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC31 M&S Cyber Operations	1	2016	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD32: <i>Quality, Safety, and Mission Assurance</i>	148.024	29.358	29.986	31.022	-	31.022	29.582	29.970	31.470	31.967	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The FY 2017 increase in funding allows for additional Audits and Quality On-Site Support as well as Pedigree and Design Certification deferred from prior years. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

**A. Mission Description and Budget Item Justification**

**Quality:** Provides on-site Quality Assurance (QA) inspection for all ground and flight tests to ensure that all processes and procedures are adhered to and no short cuts or deviations occur. Quality management system audits are performed on the sub tier supply chain to determine adequacy of contractor requirement flow down and sub tier supplier compliance to industry standards. Quality Subject Matter Experts (SMEs) attend BMDS configuration control boards to ensure quality is implemented across all Programs. Provides quality on-site formal inspection and resolution when troubled suppliers are identified and also initiates and leads on-site Joint Government and Industry Team field support and expertise to assist when critical sole source suppliers are failing. Conducts initiatives to revamp sole source suppliers by assisting them to get healthy and perform at world class levels, establishes consistent acquisition and award fee contractual requirements to ensure that a strategic approach is applied to all mission critical systems and maintains MDA Assurance Provisions for the Agency.

**Safety:** Responsible for system safety of the BMDS and for the Safety and Occupational Health of personnel located in the National Capital Region (NCR); Huntsville, Alabama; Fort Greely, Alaska; Vandenberg Air Force Base (VAFB), California; and, Dahlgren, VA. additionally responsible for ensuring the overall safety of the civilian, contractor and military workforce. BMDS Safety Officers (BSO) provide on-site support 24 hours a day, 7 days a week, 365 days a year to ensure operational safety of systems. Quality, Safety, and Mission Assurance verifies that all systems are functioning and tracking against actual verified targets and that all associated processes and procedures are strictly followed.

**Mission Assurance:** Provides in-plant MDA Assurance Representatives (MARs) for the MDA at government and contractor facilities. MARs are Government Mission Assurance and Quality experts who provide quality and technical oversight of contractor manufacturing. Mission Assurance Audits are conducted which focus on design margin, the effectiveness of acceptance testing and the sufficiency of manufacturing processes. Audits are performed for contractual requirements, internal requirements, and industry best practices. These audits are one of MDA's most effective methods of enabling change among the MDA contractors and suppliers. Quality, Safety, and Assurance provides Subject Matter Experts (SMEs) who attend all technical reviews (i.e. Design, Test, Mission Readiness Reviews, and Failure Review Boards) to ensure mission assurance principles are consistently implemented across the Ballistic Missile Defense System (BMDS). Quality, Safety, and Mission Assurance develops overarching design and quality standards such as the MDA Assurance Provisions (MAP) for MDA which enhances BMDS reliability. Hardware acceptance reviews and pedigree documentation reviews are performed to ensure all manufacturing rework and repair is performed within approved processes.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Title:</b> Quality, Safety &amp; Mission Assurance</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b> Quality:</p> <ul style="list-style-type: none"> <li>- Provided Government inspection and process control for flight test operations</li> <li>- Performed non-conformance reporting, tracking, and mitigation for all major flight and ground tests Provided non-advocate independent quality oversight/support to Agency operations such as configuration control boards, engineering forums, and material release activities</li> <li>- Performed configuration management verification and reconciliation for all major flight and ground test assets</li> <li>- Delivered detailed training on the updated MDA standards for quality, safety, and mission assurance to more than 160 MDA personnel</li> </ul> <p>Safety:</p> <ul style="list-style-type: none"> <li>- Maintained on-site safety oversight at key suppliers and Government facilities</li> <li>- Conducted safety risk assessments per Department of Defense Standards on all test and operational systems to ensure catastrophic risks remain improbable. All safety risks which were higher in probability were presented to MDA senior leadership for acceptance prior to experiencing risk.</li> <li>- Conducted system analysis/assessments such as safety risk assessments, failure modes and effects criticality analysis, safety hazards analysis etc., to minimize flight and operational system risks</li> <li>- Coordinated with NORTHCOM and STRATCOM to reduce safety risks possibly introduced into the BMDS by testing of ITW/AA radar systems.</li> <li>- Released the RFP for the first MDA Technical, Engineering, Analysis, and Management Support (TEAMS) contract, for follow on safety support when the MiDAESS contract.</li> </ul>	29.358	29.986	31.022
	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Mission Assurance:</p> <ul style="list-style-type: none"> <li>- Provided the MDA Director non-advocate, independent technical assessments on system, subsystem and component design, manufacturing and test activities in support of operational deployment and flight test activities.</li> <li>- Provided non-advocate technical support to MDA and Program risk boards, configuration control boards, technical interchange meetings and failure review boards</li> <li>- Conducted Mission Assurance audits throughout the Missile Defense Agency's supply chain. Provided in-plant Mission Assurance and Quality Representatives at 23 critical locations/ suppliers.</li> <li>- Performed on-site Mission Assurance oversight for major flight and ground tests. Provided dedicated software quality and reliability support to various MDA Program Offices.</li> </ul> <p>BMDS Safety Officers (BSOs):</p> <ul style="list-style-type: none"> <li>- Provided 24 hours a day, 7 days a week, 365 days a year safety monitoring of operational and test systems to ensure safe transition between test and operations</li> <li>- Monitored and tracked non-conformance behavior of the operational and flight test systems</li> <li>- Performed software and hardware configuration verification along with supporting the Warfighter to asset management</li> <li>- Provided safety support for Eastern, Western and Pacific Range activities such as safety training and certification</li> </ul> <p>MDA Parts and Materials Program:</p> <ul style="list-style-type: none"> <li>- Enhanced BMDS reliability through the following activities:</li> <li>- Enforced Program compliance to the MDA Part, Material and Processes Assurance Provisions (PMAP)</li> <li>- Provided a Part and Material knowledge center to address Program and Supplier part and material issues arising from development or fielded systems</li> <li>- Updated the Agency's preferred parts and materials list database to include 250,000 items to facilitate new system design and to identify</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>part obsolescence issues</p> <ul style="list-style-type: none"> <li>- Pursued remedies against counterfeit parts that enter the supply chain. Analyzed eight suspect counterfeit parts for authenticity.</li> <li>- Conducted corrosion assessments and mitigation actions on MDA systems.</li> </ul> <p>Acquisition Support:</p> <ul style="list-style-type: none"> <li>- Ensured all new acquisitions are in compliance with the MDA Assurance Provisions (MAP), the MDA Parts, Materials and Processes Assurance Provisions and all applicable Defense Federal Acquisition Regulation (DFAR), Federal Acquisition Regulation (FAR), and clauses regarding quality, safety and mission assurance</li> <li>- Improved MDA's acquisition through participation in multiple source selections</li> </ul> <p>Technical Assistance to MDA Elements:</p> <ul style="list-style-type: none"> <li>- Performed independent/non-advocate reviews, such as design certification, pedigree, failure, preliminary design, critical design and technical interchange reviews to ensure compliance with industry best practices</li> <li>- Provided mission assurance support to major failure review boards to ensure comprehensive mitigation strategies for operational assets are employed</li> <li>- Provided propulsion, solid rocket motor, avionics, mechanical structures, guidance, navigation and control, and parts, materials, and processes expertise to enhance reliability</li> </ul> <p>Intra-Agency &amp; Industry Activities:</p> <ul style="list-style-type: none"> <li>- Performed major stakeholder quality initiatives to improve quality of products, improve onsite processes, and internal requirements at critical sole source suppliers</li> <li>- Participated in the Defense Standardization Board to ensure that MDA has an equal voice in the specification and standard requirements used across the DoD</li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / <i>BMD Enabling Programs</i>	<b>Project (Number/Name)</b> MD32 / <i>Quality, Safety, and Mission Assurance</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Delivered training on the updated MDA standards for quality, safety, and mission assurance to more than 45 DCMA and Air Force and more than 40 industry personnel</p> <p>Safety and Occupational Health:</p> <ul style="list-style-type: none"> <li>- Ensured compliance with DoD Safety and Occupational Health regulations and requirements</li> <li>- Performed all required Occupational Safety and Health inspections of MDA facilities including those in the National Capital Region, Huntsville, AL, Colorado, Vandenberg Air Force Base, Dahlgren, VA and selected OCONUS locations.</li> <li>- Monitored/responded to reports of incidents affecting the health and safety of MDA employees and investigated accidents involving Agency personnel, equipment and operations.</li> <li>- Participated in the monthly DoD Safety and Occupational Health Integrating Council and the quarterly Field Federal Safety and Health Councils located in regions where MDA operates.</li> </ul> <p><b>FY 2016 Plans:</b> Continuation of FY 2015 plans.</p> <p><b>FY 2017 Plans:</b> The FY 2017 increase in funding allows for additional Audits and Quality On-Site Support as well as Pedigree and Design Certification deferred from prior years</p> <p>Quality:</p> <ul style="list-style-type: none"> <li>- Provide Government inspection and process control for flight test operations</li> <li>- Perform non-conformance reporting, tracking, and mitigation for all major flight and ground tests Provide non-advocate independent quality oversight/support to Agency operations such as configuration control boards, engineering forums, and material release activities</li> <li>- Perform configuration management verification and reconciliation for all major flight and ground test assets</li> </ul> <p>Safety:</p> <ul style="list-style-type: none"> <li>- Maintain on-site safety oversight at key suppliers and Government facilities</li> <li>- Conduct safety risk assessments per Department of Defense Standards on all test and operational systems to ensure catastrophic risks remain improbable</li> </ul>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Conduct system analysis/assessments such as safety risk assessments, failure modes and effects criticality analysis, safety hazards analysis etc., to minimize flight and operational system risks</p> <p>Mission Assurance:</p> <ul style="list-style-type: none"> <li>- Provide the MDA Director non-advocate, independent technical assessments on system, subsystem and component design, manufacturing and test activities in support of operational deployment and flight test activities Provide non-advocate technical support to MDA and Program risk boards, configuration control boards, technical interchange meetings and failure review boards</li> <li>- Conduct Mission Assurance audits throughout the MDA's supply chain Provide in-plant Mission Assurance and Quality Representatives at 23 Mission Critical Suppliers</li> </ul> <p>BMDS Safety Officers (BSOs):</p> <ul style="list-style-type: none"> <li>- Provide 24 hours a day, 7 days a week, 365 days a year safety monitoring of operational and test systems to ensure safe transition between test and operations</li> <li>- Monitor and track non-conformance behavior of the operational and flight test systems</li> <li>- Perform software and hardware configuration verification along with supporting the Warfighter to asset management</li> <li>- Provide safety support for Eastern, Western and Pacific Range activities such as safety training and certification</li> </ul> <p>MDA Parts and Materials Program:</p> <ul style="list-style-type: none"> <li>- Enhance BMDS reliability through the following activities:</li> <li>- Enforce Program compliance to the MDA Part, Material and Processes Assurance Provisions (PMAP)</li> <li>- Provide a Part and Material knowledge center to address Program and Supplier part and material issues arising from development or fielded systems</li> <li>- Update the Agency's preferred parts and materials list database to facilitate new system design and to identify part obsolescence issues</li> <li>- Pursue remedies against counterfeit parts</li> </ul> <p>Acquisition Support:</p> <ul style="list-style-type: none"> <li>- Ensure all new acquisitions are in compliance with the MDA Assurance Provisions (MAP), the MDA Parts, Materials and Processes Assurance Provisions</li> </ul>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>and all applicable Defense Federal Acquisition Regulation (DFAR), Federal Acquisition Regulation (FAR), and clauses regarding quality, safety and mission assurance</p> <ul style="list-style-type: none"> <li>- Update the MDA Assurance Provisions (MAP) and the MDA Parts Materials and Processes Mission Assurance Plan (PMAP) to incorporate design, test, manufacturing, quality, safety, and mission assurance methods to further improve future product reliability</li> <li>- Improve MDA's acquisition strategy through participation in the definition and determination of all award fees</li> </ul> <p>Technical Assistance to MDA Elements:</p> <ul style="list-style-type: none"> <li>- Perform independent/non-advocate reviews, such as design certification, pedigree, failure, preliminary design, critical design and technical interchange reviews to ensure compliance with industry best practices</li> <li>- Provide mission assurance support to major failure review boards to ensure comprehensive mitigation strategies for operational assets are employed</li> <li>- Provide propulsion, solid rocket motor, avionics, mechanical structures, guidance, navigation and control, and parts, materials, and processes expertise to enhance reliability</li> </ul> <p>Intra-Agency &amp; Industry Activities:</p> <ul style="list-style-type: none"> <li>- Perform major stakeholder quality initiatives to improve quality of products, improve onsite processes, and internal requirements at critical sole source suppliers</li> <li>- Participate in the Defense Standardization Board to ensure that MDA has an equal voice in the specification and standard requirements used across the DoD</li> <li>- Initiate and lead quality, safety, and mission assurance forums to obtain lessons learned and understand/promote new requirements or methods</li> </ul> <p>Safety and Occupational Health:</p> <ul style="list-style-type: none"> <li>- Ensure compliance with DoD Safety and Occupational Health regulations and requirements</li> <li>- Perform all required Occupational Safety and Health inspections of MDA facilities including those in the National Capital Region, Huntsville, AL, Colorado, Vandenberg Air Force Base and Dahlgren, VA.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Monitor/respond to reports of incidents affecting the health and safety of MDA employees.			
<b>Accomplishments/Planned Programs Subtotals</b>	29.358	29.986	31.022

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The Quality, Safety and Mission Assurance program is a collaboration between subject matter expertise in the Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), Contract Support Services (CSS), and Industry.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
Quality, Safety & Mission Assurance - Agency Safety & Occupational Health	C/CPFF	Various Multi : AL, CO, AK, DC	1.779	0.288		0.260	Oct 2015	0.266	Sep 2017	-		0.266	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Audits & Quality On-site Support	MIPR	NSWC Corona : AL, CA	13.542	3.297		3.000	Oct 2015	3.338	Sep 2017	-		3.338	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - BMDS Mission Assurance Agency Operations	C/CPFF	AI Solutions : AL	5.445	1.102		1.198	Oct 2015	1.009	Sep 2017	-		1.009	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - BMDS Quality Support	C/CPFF	AI Solutions : AL	6.004	0.593		1.300	Oct 2015	1.710	Sep 2017	-		1.710	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - BMDS Safety	C/CPFF	APT, INC : AL	7.268	1.180		1.180	Oct 2015	1.208	Sep 2017	-		1.208	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - BMDS Safety Officers	MIPR	AMRDEC : AL	3.368	0.330		0.318	Oct 2015	0.281	Sep 2017	-		0.281	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - HQ & Core Management	MIPR	AMRDEC : AL	1.850	0.300		0.300	Oct 2015	0.300	Sep 2017	-		0.300	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - In-Plant Quality Support (MARS)	C/CPFF	Various Multi : AL, AK, AZ, CA, CO, FL,	8.269	1.802		1.355	Oct 2015	1.413	Sep 2017	-		1.413	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance
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<b>Support (\$ in Millions)</b>				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			
		HI, NJ, MA, MO, MD, UT													
Quality, Safety & Mission Assurance - Independent Readiness Review Team	C/CPFF	AI Solutions : AL	3.740	0.529		0.540	Oct 2015	0.550	Sep 2017	-		0.550	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Mission Assurance Subject Matter Experts	C/CPFF	APT, INC. : AL	5.751	0.839		0.522	Oct 2015	0.531	Sep 2017	-		0.531	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Operations Support	MIPR	Various Multi : AL, CA	4.376	0.233		0.200	Oct 2015	0.200	Sep 2017	-		0.200	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Parts, Materials and Processes (PMP) Program	MIPR	Various Multi : AL, CA, IN	7.765	2.100		2.155	Oct 2015	2.015	Sep 2017	-		2.015	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Parts, Materials and Processes - PMP - Program	C/CPFF	APT, INC : AL	2.886	0.559		0.641	Oct 2015	0.600	Sep 2017	-		0.600	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Pedigree & Design Certification - FFRDC	MIPR	Aerospace : AL, CA	15.167	2.900		3.000	Oct 2015	3.000	Sep 2017	-		3.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			87.210	16.052		15.969		16.421		-		16.421	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance
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<b>Test and Evaluation (\$ in Millions)</b>				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			

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance HQ & Core Management (MDA CIV)	Allot	MDA QS : AL, VA, MD, CA, AZ, HI, AK, MA, NJ, FL, AR, UT	41.949	10.800		11.584	Oct 2015	11.751	Oct 2016	-		11.751	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance Operations Support	C/CPFF	MDA QS : AL, DC, VA	6.309	1.406		1.295	Oct 2015	1.527	Nov 2016	-		1.527	Continuing	Continuing	Continuing
Quality, Safety & Mission Assurance - Quality, Safety & Mission Assurance Operations Support (Travel/PCS)	Allot	MDA QS : AL, CO, AK, DC, VA	12.556	1.100		1.138	Oct 2015	1.323	Nov 2016	-		1.323	Continuing	Continuing	Continuing
<b>Subtotal</b>			60.814	13.306		14.017		14.601		-		14.601	-	-	-

**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
<b>Project Cost Totals</b>	148.024	29.358	29.986	31.022	-	31.022	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs			<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance			
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>

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



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance
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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
MD32 Quality, Safety, and Mission Assurance					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD32 / Quality, Safety, and Mission Assurance

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD32 Quality, Safety, and Mission Assurance	1	2016	4	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs				<b>Project (Number/Name)</b> MD40 / Program-Wide Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	88.202	18.924	17.992	18.483	-	18.483	19.655	20.873	22.014	22.982	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of decreases in BMD Enabling Programs and in FY 2017 PWS reflects a proportional change as a result of increases in BMD Enabling Programs.  
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts and Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	18.924	17.992	18.483
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	18.924	17.992	18.483

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various Multi: AL, CO, CA, VA etc.	7.523	0.600		6.934	Jan 2016	7.063	Jan 2017	-		7.063	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various: Multi: AL, CA, CO, VA	5.411	0.005		0.000		0.236	Jul 2017	-		0.236	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	C/CPAF	Various: Multi: AL, CO, NM, VA, various	0.000	5.602		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	MDA: AK, AL, CA, CO, VA	32.378	0.000		0.000		0.000		-		0.000	32.378	64.756	0
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various: Multi: AL, CO, CA, VA	42.890	12.717		10.253	Nov 2015	10.253	Nov 2016	-		10.253	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various: Multi: AK, AL, CA, CO, VA	0.000	0.000		0.805	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services MIPRs	MIPR	Various: Multi: AK, AL, CO, CA, HI, MD, VA, NJ, NY, OCONUS	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - FFRDC	C/CPFF	JHU: CA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance SRM	MIPR	Various: Multi: AL, CA, AL, AK	0.000	0.000		0.000		0.931	Jul 2017	-		0.931	Continuing	Continuing	Continuing
<b>Subtotal</b>			88.202	18.924		17.992		18.483		-		18.483	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	88.202	18.924	17.992	18.483	-	18.483	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603890C / BMD Enabling Programs	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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Schedule Details

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



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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603891C / <i>Special Programs - MDA</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	789.077	301.201	400.387	321.607	-	321.607	307.410	284.785	264.031	268.024	Continuing	Continuing
MD27: <i>Special Programs</i>	789.077	301.201	400.387	321.607	-	321.607	307.410	284.785	264.031	268.024	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	310.261	400.387	349.606	-	349.606
Current President's Budget	301.201	400.387	321.607	-	321.607
Total Adjustments	-9.060	0.000	-27.999	-	-27.999
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.567	0.000			
• SBIR/STTR Transfer	-5.493	0.000			
• Other Adjustment	0.000	0.000	-27.999	-	-27.999

**Change Summary Explanation**

FY 2015 reprogramming decreases PE0603891C and increases PE0603274C. Details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

FY 2017 other adjustments reflect realignment to Department of Defense priorities. Details are reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / <i>AEGIS BMD</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	4,376.715	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
MD09: <i>Aegis BMD</i>	4,239.262	669.587	719.565	846.028	-	846.028	733.184	593.543	497.562	435.442	Continuing	Continuing
MC09: <i>Cyber Operations</i>	0.820	0.880	0.870	0.879	-	0.879	0.885	0.884	0.884	0.901	Continuing	Continuing
MX09: <i>Aegis BMD Development Support</i>	-	32.016	73.118	68.283	-	68.283	66.770	70.406	63.884	64.285	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	136.633	59.163	37.094	43.876	-	43.876	40.899	35.763	30.610	28.116	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 increase is to fund pre-production development and test All-Up Rounds aligned with sub-vendor material delivery schedules for integration into AURs; commencement of the BMD 6.x baseline to align to the Advanced Capability Build-20 Navy Capabilities Document; increased Discrimination Efforts; and a proportional change in Program Wide Support.

**A. Mission Description and Budget Item Justification**

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies, and to increase this capability by delivering evolutionary improvements as part of BMDS upgrades. The Aegis BMD element of the BMDS capitalizes upon and evolves from the existing United States Navy Aegis Weapons System (AWS) and Standard Missile (SM) infrastructures. Aegis BMD provides a forward-deployable, mobile capability to detect and track Ballistic Missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBMs), Medium-Range Ballistic Missiles (MRBMs), and Intermediate-Range Ballistic Missiles (IRBMs) in the midcourse phase of flight, and shorter range missiles in the terminal phase of flight. Aegis BMD also provides a Long Range Surveillance and Track (LRS&T) capability to the BMDS. Upgrades to both the Aegis BMD Weapon System and the Standard Missile-3 (SM-3) configuration enable Aegis BMD to provide effective, supportable defensive capability against longer range, more sophisticated threats and an enduring Aegis Ashore defensive capability.

This Program Element includes support for discrimination improvement efforts, which aim to develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture more capable of discriminating and destroying a re-entry vehicle with a high degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near -term, Mid-term, and Far-term discrimination capability fielding. The discrimination improvements require a coordinated effort between Systems Engineering (PE 0603890C), Ground-based Midcourse Defense (PE 0603882C), BMD Sensors (PE 0603884C), C2BMC (PE 0603896C), Aegis BMD, and Advanced C4ISR (PE 0603179C).

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.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	764.224	843.355	762.740	-	762.740
Current President's Budget	761.646	830.647	959.066	-	959.066
Total Adjustments	-2.578	-12.708	196.326	-	196.326
• Congressional General Reductions	0.000	-0.708			
• Congressional Directed Reductions	0.000	-12.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	9.999	0.000			
• SBIR/STTR Transfer	-12.577	0.000			
• Other Adjustment	0.000	0.000	196.326	-	196.326

**Change Summary Explanation**

Decrease in FY 2015 reflects realignment of Department of Defense priorities

Increase in FY 2017 is attributed to the following:

- Incremental funding increased from FY2016 levels to match manufacturing expenditure profile for seventeen FY16 contracted SM-3 Block IIA All Up Rounds (AUR)'s, funding requirements aligned with next FY2017 increment of component, sub-section and section manufacturing and delivery schedules to support AUR deliveries beginning FY2018
- Increased funding for SM-3 BLK IIA Development due to Transition of Kinetic Warhead (KW) hardware commonality effort (from design to material purchases) to system integration testing in order to demonstrate technology readiness level 7, Implementation of updated missile software build, test and qualification for FTM-29 and FTO-03 flight testing, Increased integration testing with Aegis Baseline based on matured test requirements, Guidance Section Circuit Card Assembly manufacturing environmental test capability improvements to reduce Average Unit Production Price (AUPP), Build up SM-3 BLK IIA AUR for FTM-29 from residual SCD hardware to address schedule impact from late long lead material for FY2016 manufacturing contract
- Commencement of the BMD 6.x baseline to align to the Advanced Capability Build-20 Navy Capabilities Document
- Increased Discrimination Efforts
- Program Wide Support reflects a proportional change as a result of increases in Aegis BMD

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD				<b>Project (Number/Name)</b> MD09 / Aegis BMD			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD09: Aegis BMD	4,239.262	669.587	719.565	846.028	-	846.028	733.184	593.543	497.562	435.442	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Increase in FY 2017 is attributed to the following:

- Incremental funding increased from FY2016 levels to match manufacturing expenditure profile for seventeen FY16 contracted SM-3 Block IIA All Up Rounds (AUR)'s, funding requirements aligned with next FY2017 increment of component, sub-section and section manufacturing and delivery schedules to support AUR deliveries beginning FY2018
- Commencement of the BMD 6.x baseline to align to the Advanced Capability Build-20 Navy Capabilities Document

**A. Mission Description and Budget Item Justification**

Aegis Ballistic Missile Defense (BMD) continues development of a sea-based BMD capability, in support of the MDA's mission to protect the homeland, deployed forces, friends and allies from ballistic missile threats of all ranges and in all stages of flight.

Aegis BMD efforts primarily enhance Missile Defense to defend deployed forces, allies and friends against theater threats:

- Aegis BMD 5.0 Capability Upgrade (CU) expands the threat set and increases the raid size
- Aegis BMD 4.1 backfits the Aegis 5.0 CU(endo-atmospheric(ENDO) and exo-atmospheric(EXO) into the BMD 4.0 architecture
- Aegis BMD 5.1 expands the threat set through the introduction of Engage on Remote(EoR) and the integration of the Standard Missile-3(SM-3) Block IIA
- Aegis BMD 4.x/5.3.x merges Aegis BMD 4.1 (including BMD 5.0 CU capability) and U.S. Navy Baseline 5.3 into a single computer program for the BMD 4.0 architecture.
- Aegis BMD 6.x will apply the Advanced Capabilities Baseline(ACB)-20 BMD capability to Guided Missile Destroyer (DDG) Flight III in alignment with the Navy: provides increased organic engagement, search & track and Integrated Air and Missile Defense (IAMD) capability based on SPY-6, also known as the Air & Missile Defense Radar (AMDR)

Aegis BMD 5.0 Capability Upgrade (CU) will enhance Aegis BMD 5.0 by improving the ENDO and EXO capability, increasing the maximum number of SM-3's in flight simultaneously, expanding the threat set to include those for EPAA Phase II, and increasing this capability by delivering improvements as part of the Ballistic Missile Defense System (BMDS) upgrades.

Aegis BMD 4.1 builds upon Aegis BMD 4.0 and adds Aegis BMD 5.0 CU capabilities providing European Phased Adaptive Approach (EPAA) Phase II EXO threat capability increase, SM-3 Maximum number Missiles In Flight (MAX MIF) improvements, multi-mission (Anti-Air Warfare (AAW) and BMD) warfare integration, , Mark (MK)-41 Vertical Launching System (VLS) and Mission Planner capabilities.

Aegis BMD 5.1 builds upon BMD 5.0 CU and will further expand the threat set which is required for EPAA Phase III. This includes the introduction of an EoR capability and the integration of the SM-3 Block IIA. An EoR engagement allows the use of active and passive off board sensor information to launch and guide the SM-3 Block

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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IIA to final intercept. The increased kinematic envelope of the SM-3 Block IIA when combined with EoR will expand the battlespace and increase the number of threats engaged over previous baselines.

Aegis BMD 4.x/5.3.x merges Aegis BMD 4.1 and USN Baseline 5.3 into a single integrated computer program. BMD 5.3.x increases BMD threat capability and exploits track and detection improvements of the SPY-1 Low Noise Amplifier (LNA) Refurbishment.

- Legacy Aegis BMD Cruisers and Destroyers possess two separate, certified computer programs: BMD 4.1 for Ballistic Missile Defense missions and Aegis Baseline 5.3 for Anti-Air Warfare (AAW), Surface Warfare (SUW), and Undersea Warfare (USW). This integration remedies the current need for the warfighter to switch between Baseline 5.3 and BMD 4.0 based on the warfighting mission requirement.

Benefits of the single computer program are:

- Enables warfighter to switch between BMD missions or AAW/SUW/USW missions
- Integrates Air and Missile Defense into a single computer program on legacy computer program architecture
- Enables future capability enhancements and threats with Aegis BMD 4.x
- Enables future SPY-1 Low Noise Amplifier (LNA) Refurbishment efforts to maintain ship relevance through End of Service Life

Aegis BMD 6.x provides an increased BMD capability by incorporating the Air and Missile Defense Radar (AMDR), now designated for SPY-6 for the introduction on the first DDG Flight III. The objective is to achieve tracking and discrimination improvements to counter evolving threats and raids in support of homeland/regional defense. BMD 6.x will enable BMDS element utilization of AMDR data for remote engagement and supplement deployed assets with simultaneous multi-mission capabilities (e.g. IAMD). It will include updates for advanced planning; search, track, and discrimination; and kill assessment. SPY-6 will support force-level (multi-asset) approach to raid defense and enable Navy ships greater stand-off range from threat environments.

The SM-3 Block IB improves Aegis BMD's ability to engage longer range, more sophisticated ballistic missiles that may deploy countermeasures and launch in larger raid sizes. The SM-3 Block IB Kinetic Warhead's (KW) two-color infra-red (IR) seeker and advanced signal processor provides a real-time discrimination and characterization capability while improving sensitivity for longer range targets and performance against more sophisticated threats. Additionally, the new Throttleable Divert and Attitude Control System (TDACS) KW divert engine has been upgraded over the SM-3 Block IA to provide a more flexible divert in order to maneuver the KW to intercept.

The SM-3 Block IIA is a cooperative project developed by Aegis BMD and the Japan Ministry of Defense. The SM-3 Block IIA consists of a spiral upgrade to a 21-inch diameter SM-3 missile and will expand available battlespace to include Intermediate Range Ballistic Missile (IRBM) and selected longer-range threats. When combined with Aegis BMD 5.1 weapon system modifications the SM-3 Block IIA will provide EoR capability.

The discrimination improvements effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. AEGIS BMD will continue targeted discrimination improvements, enterprise improvements to detect, track, discriminate and correlation, and threat data and modeling updates.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Aegis Ballistic Missile Defense (BMD) 4.x Development	72.610	39.983	28.264

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<p align="right"><i>Articles:</i></p> <p><b>Description:</b> Aegis BMD 4.1 incorporates the BMD 5.0 CU capability of EPAA Phase II ENDO/EXO requirements including EPAA Phase II Exo-atmospheric threats, integration of the SM-3 Block IB Threat Upgrade (TU), re-introduction of other Aegis capabilities integrated with the SM-2 Block IV and SM-6 Dual I, and provides comparable Aegis Modernization capabilities to the MIL-SPEC computer program architecture based BMD 4.X ships. Aegis BMD 4.1 builds upon Aegis BMD 4.0 and captures Aegis BMD 5.0CU. Aegis BMD 4.1 also increases Maximum Missiles In Flight &amp; Maximum Engagements over Aegis BMD 4.0.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued development of BMD 4.1 (backfit of BMD 5.0 CU capability into the BMD 4.0 architecture)</li> <li>- Prepared for and supported BMDS Flight and Ground Test events as reflected in the Integrated Master Test Plan (IMTP) and the Exhibit R-4 schedule</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Decrease from FY 2015 is due to the completion of 4.1 baseline development as the baseline transitions to co-development with the Navy on merging BMD 4.1 and Navy Aegis Baseline 5.3.</p> <ul style="list-style-type: none"> <li>- Conduct a Test Readiness Review of BMD 4.1 to determine readiness to begin formal testing by evaluating the preparedness of personnel, plans, and test resources</li> <li>- Conduct an Engineering Evaluation of BMD 4.1 to demonstrate baseline capabilities as a risk reduction activity during development</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>Decrease from FY 2016 to FY 2017 is due to completion of 4.1 computer program development in 2016.</p> <ul style="list-style-type: none"> <li>- Begin merger of BMD Baseline 4.1 and Navy Aegis Baseline 5.3 into a single computer program (BMD 4.x/5.3.x) within the legacy computer program architecture</li> <li>- Execute coordinated development with US Navy on the combined computer program</li> <li>- Conduct System Design Review (SDR)</li> <li>- Conduct Preliminary Design Review (PDR)</li> </ul>	-	-		-
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<p><b>Title:</b> Aegis Ballistic Missile Defense (BMD) 5.0 Development</p> <p align="right"><i>Articles:</i></p> <p><b>Description:</b> Aegis BMD 5.0 Capability Upgrade (CU) is a combined weapon system developed with the US Navy. It will integrate Aegis BMD 4.0 capability into the Baseline 9 (Open Architecture) common source library. Aegis BMD 5.0 CU will expand the EXO capability, increasing the maximum number of missiles in flight simultaneously and expanding the threat set to include</p>	84.296	19.944		0.000
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>those for EPAA Phase II. Aegis BMD 5.0 CU is an essential capability to meet the requirements of EPAA Phase II and will provide evolutionary improvements in support of deployed forces, friends, and allies.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Conducted a Mission Readiness Assessment (MRA)</li> <li>- Conducted an Engineering Assessment (EA)</li> <li>- Continued development of BMD 4.1 (backfit of BMD 5.0CU capability into the BMD 4.0 architecture)</li> <li>- Supported Aegis Intercept Flight Test as reflected in the IMTP and the Exhibit R-4 schedule</li> <li>- Supported Aegis Ashore Intercept Flight Test with Aegis BMD 5.0CU</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Decrease from FY 2015 is attributed to the following:</p> <ul style="list-style-type: none"> <li>- Completion of the 5.0 development efforts and transition of the baseline from development to fielding. The follow-on capability, Baseline 5.1 is included under Project MD09, Aegis Ballistic Missile Defense (BMD) 5.x Development</li> <li>- Continue Aegis BMD 5.0 CU co-development with Navy for Aegis Modernization</li> <li>- Complete certification and post-certification effort of European Phased Adaptive Approach (EPAA) Phase II into the Navy's Open Architecture baselines for fielding in the operational Ballistic Missile Defense System</li> <li>- Complete Aegis Intercept Flight Test as reflected in the IMTP and the Exhibit R-4 schedule for initial operational evaluation of operational effectiveness and suitability</li> <li>- Continue VLS development of the Ordnance Alteration (ORDALT) kit and Quality Assurance (QA) to support fielding of 5.0CU capability on USN ships. Activities support the procurement and fielding of hardware and software associated with the MK 41 VLS to be capable to launch SM-3 Block IA/IB and other missile variants</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>Funding for completion of DT/OT testing of Aegis BMD 5.0 CU captured in Aegis Test 0604878C. No further funding requested for development.</p>				
<b>Title:</b> Aegis Ballistic Missile Defense (BMD) 5.x Development		183.749	180.628	92.364
<b>Description:</b> Aegis BMD 5.1 builds upon BMD 5.0 CU and will further expand the threat set to include those threats required for EPAA Phase III through the introduction of an Engage on Remote(EoR) capability and the integration of the SM-3 Block IIA. An EoR engagement allows the use of active and passive off board sensor information to launch and guide the SM-3 Block IIA to final intercept. The increased kinematic envelope of the SM-3 Block IIA when combined with EoR will expand the battlespace and increase the threat set engaged over previous baselines. Aegis BMD 5.1 Combat System certification occurs in 2018.		<b>Articles:</b> -	-	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>- Continued software development for the BMD 5.1 Standard Missile-3 Cooperative Development Program (SCD) configuration for the SCD Flight Tests.</li> <li>- Completed preparations for CDR which will finalize the Baseline Program Performance requirements for the Ballistic Missile Defense (BMD) 5.1 Capability to include EoR and BMDS integration</li> <li>- Conducted BMD 5.1 CDR and Navy Review Team (NRT) data package review</li> <li>- Commenced software development of the BMD 5.1 Phase 2 Tactical Computer Program to achieve partial European Phased Adaptive Approach (EPAA) Phase III threats and capabilities by 2018</li> <li>- Completed development of BMD 5.1 Element Capabilities Specification (ECS) and System Specification for Aegis Modernization Advanced Capability Build 12 requirements needed to adapt BMD 5.1 for the Aegis Ashore configuration</li> <li>- Conducted development of BMD 5.1 Prime Item Development Specification requirements needed to adapt BMD 5.1 for the Aegis Ashore configuration</li> <li>- Conducted BMD 5.1 VLS Formal Integration and Qualification Testing in support of SM-3 Block IIA development.</li> <li>- Designed, coded, integrated, and tested BMD 5.1 Interface Change Proposals in the Command and Control Processor (C2P) v3.9</li> <li>- Developed Deterministic Routing algorithms to support BMD 5.1</li> <li>- Implemented BMD 5.1 Interface Change Proposals in the Multi-Link System Test and Training Tool (MLST3)</li> <li>- Designed, developed, and tested dual data path via the BMDS Overhead Architecture (BOA)</li> <li>- Completed development of the BMD 5.1 C4I Top Level Requirements document to ensure consistency between BMD 5.1 C4I requirements and Navy C4I Programs of Record</li> <li>- Completed development of the Common C4I Top Level Requirements Document to ensure C4I consistency with Navy across B/L 9.C2</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <p>Decrease from FY 2015 is inclusive of all the following</p> <ul style="list-style-type: none"> <li>- Development life cycle shift from requirement and design efforts to implementation and testing of functionality</li> <li>- Development of major functionality complete by mid-year 2016 and program shift to primarily testing</li> <li>- Reduction of software development efforts for Aegis BMD 5.1 capability as cycle of program moves to focus on efforts in support of scheduled flight tests</li> </ul> <p>- Aegis Ballistic Missile Defense (BMD) Phase 1 capabilities include Standard Missile-3 (SM-3) Block IIA missile integration, SM-3 weapons selection algorithm, enhanced tracking, discrimination and mission planner updates to support organic engagements, Launch-on-Remote (LoR) engagements, and Long Range Surveillance &amp; Tracking (LRS&amp;T) missions. Aegis BMD 5.1 Phase 1 integration, testing, and evaluation (IT&amp;E) events include various lab-based and shipboard weapon-system-to-missile integration</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>testing utilizing the Virtual Operational Missile (VOM) and the Inert Operational Missile (IOM), as well as participation in Ballistic Missile Defense System-wide (BMDS-wide) ground test campaigns.</p> <ul style="list-style-type: none"> <li>- Aegis BMD 5.1 Phase 1 development supports early integration and testing with the SM-3 BLK IIA missile testing planned for SFTM-1 and SFTM-2. The development of partial capability is contiguous across both Phase 1 and Phase 2 and supports delivery for EPAA Phase III.</li> <li>- Aegis BMD 5.1 Phase 1 System Development: Continue Engineering, Development, Integration and Testing of the tactical Weapons System computer program, and integration of the SM-3 Block IIA missile. This development reduces risk to Aegis BMD 5.1 Phase 2 and EPAA Phase III by front-loading the development of the weapons system/missile functionality and integration in the development phase to support the upcoming SCD Flight Test Mission-1 (SFTM-1) and SFTM-2 flight tests.</li> <li>- Conduct Engineering Assessment (EA) of Aegis BMD 5.1 functionality, stability, performance and readiness for the test execution of SFTM-1 and SFTM-2 as reflected in the IMTP</li> <li>- Support SFTM-1 using the Aegis BMD 5.1 Phase 1 tactical computer program for the first SM-3 Block IIA intercept test</li> <li>- Continue software development for the partial Aegis BMD 5.1 Phase 2, which includes all Phase 1 capabilities, and partial EPAA Phase III capabilities and threats</li> <li>- Continue assessment cycles to prepare certification and deployment of Aegis BMD 5.1 computer program at sea and ashore for European Phased Adaptive Approach (EPAA) Phase III</li> <li>- Conduct Aegis BMD 5.1 Vertical Launch System (VLS) Formal Integration and Qualification Testing required for the fielding of 5.1 capability on DDG Flight I &amp; II configured USN ships and Aegis Ashore</li> <li>- Continue Aegis BMD VLS modifications required for the fielding of 5.1 capability on DDG Flight IIA configured USN ships</li> <li>- Evaluate Mark (MK) 41 VLS performance results during Controlled Test Vehicle-1 (CTV-1) and CTV-2 and apply results to design to verify the capability of MK 41 VLS to fire the SM-3 BLK IIA prior to shipboard testing</li> <li>- Conduct Aegis BMD 5.1 MK 41 VLS Formal Integration and Qualification Testing in support of fielding on DDG Flight I and IIA ship configurations</li> <li>- Provide MK 41 VLS support to Aegis Integration Event (AIE) to verify the compatibility of the MK 41 VLS firing the SM-3 BLK IIA with Aegis BMD 5.1 and perform regression testing</li> <li>- Conduct Aegis BMD 5.1 MK 41 VLS Certification and Safety Assessments for shipboard fielding to obtain Naval Ordnance System Safety Activity authorization for the placement of the SM-3 BLK IIA in the MK 41 VLS approving the safe firing the SM-3 Block IIA</li> <li>- Provide Aegis BMD 5.1 MK 41 VLS support to the execution of SFTM-1 and SFTM-2 and evaluate the VLS performance results demonstrating the capability of the MK 41 VLS to launch the SM-3 BLK IIA missile.</li> <li>- Execute provisions for transition to production of Aegis BMD 5.1 MK 41 VLS modifications required on USN ships for the fielding of 5.1 capability with SM-3 Block IIA</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
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<p>All efforts on schedule to meet EPAA Phase III deployment.</p> <p><b>FY 2017 Plans:</b>                      Decrease from FY 2016 to FY 2017 is due to:</p> <ul style="list-style-type: none"> <li>- Completion of major development functionality and shifting focus to implementation and development testing at-sea</li> <li>- Completion of VLS Development efforts and transition to fielding and sustainment</li>   <li>- Continue software development for the Aegis BMD 5.1 Phase 2, which includes all BMD 5.1 capabilities, including EPAA Phase III capabilities and threats</li> <li>- Incorporate developmental and maintenance Computer Program Correction Reports (CPCRs) as defined from Developmental Testing (DT)</li> <li>- Provide post-mission analyses for SFTM-01</li> <li>- Provide lab-based and shipboard Integration Testing &amp; Evaluation (IT&amp;E), preparation activities and post-mission analyses for SFTM-02 flight test, fulfilling agreement with Japan in the SM-3 Block IIA Cooperative Development program.</li> <li>- Conduct integration testing for C2P Tech Refresh and Common Data Link Management System (CDLMS) 3.9 to support pre-mission analysis of EoR engagement</li> <li>- Conduct Jamming Exercise (JAMEX), Functional Assessments (FA) and System Functional Tests (SFT) in preparation for the Demonstration of Aegis BMD 5.1</li> <li>- Conduct demonstration of Aegis BMD 5.1 to assess and accurately characterize the BMD 5.1 Aegis Combat System (ACS) computer program implementation for the deployment and execution of developmental test / operational test as reflected in the IMTP</li> <li>- Support BMDS ground test events as reported in the IMTP</li> <li>- Perform assessment cycles to prepare certification and deployment of Aegis BMD 5.1 computer program at sea and ashore for European Phased Adaptive Approach (EPAA) Phase III</li> <li>- Conduct pre-mission analyses, integration testing events, Test &amp; Evaluation Working Group (TEWG) planning activities in support of the IMTP</li> </ul> <p>All efforts on schedule to meet EPAA Phase III deployment.</p>			
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<p><b>Title:</b> Aegis Ballistic Missile Defense 6.x Development</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> U.S. Navy is developing the Advance Capability Build (ACB) 20 Combat System (CS) and the Air and Missile Defense Radar (AMDR), now designated SPY-6, for introduction on the first DDG Flight III. BMD 6.x will integrate BMD capability with the ACB 20 CS, to include new SPY-6 requirements; this will enable BMDS element utilization of AMDR data for remote engagements and supplement deployed assets with simultaneous multi-mission capabilities (e.g. IAMD). It will include updates</p>	0.000 -	0.000 -	26.305 -
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<p>for advanced planning; search, track, and discrimination; and kill assessments. SPY-6 will support a force-level (multi-asset) approach to raid defense and enable Navy ships greater stand-off range from threat environments.</p> <p>BMD 6.x will build upon B/L 9 Capabilities (e.g. BMD 5.1) as point of departure. BMD 6.x will also serve as the path forward to achieve BMDS Increment 6 threats, Electro Optical (EO/IR) Integration for remote engagements and increased raid capacity.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Plans:</b> Increase from FY 2016 to FY 2017 attributed to commencement of the BMD 6.x baseline to implement performance requirement allocations from the BMDS Element System Specifications and align to the ACB 20 Navy Capabilities Document (NCD) for design efforts.</p> <ul style="list-style-type: none"> <li>- Prepare for System Functional Review (SFR) to finalize the BMD components of the ACB 20 Combat System Requirements (A-Spec)</li> <li>- Assess feasibility analysis of BMD 6.Element Specification (ES) performance requirements</li> <li>- Conduct trade studies and concepts supporting A-Spec development</li> <li>- Conduct Aegis BMD low-level performance analysis supporting SFR</li> <li>- Develop supporting engineering planning documents</li> <li>- Compile SFR data package and conduct Navy Review Team (NRT) review to validate system requirements</li> <li>- Conduct development of BMD 6 ES</li> <li>- Initiate development of the ACB 20 Prime Item Development Specification (PIDS)requirements and Critical Item Development Specification (CIDS)requirements</li> <li>- Prepare for Preliminary Design Review (PDR) to finalize the BMD components of the ACB 20 PIDS</li> <li>- Conduct trade studies and concepts supporting PIDS and CIDS development</li> <li>- Conduct Aegis BMD performance analysis supporting PDR</li> <li>- Compile PDR data package and begin Navy Review Team (NRT) review to validate system requirements</li> </ul>				
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<b>Title:</b> Standard Missile-3 (SM-3) Block IB Development	38.245	41.242		1.958
<b>Articles:</b>	-	-		-

**Description:** See Description below.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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**FY 2015 Accomplishments:**  
 - Completed IB Threat Update (IBTU) for 5.0 Capability Upgrade (5.0CU) and additional threats.  
 - Prepared for and supported Ballistic Missile Defense System (BMDS) flight test as reflected in the Integrated Master Test Plan (IMTP) and the exhibit R-4 schedule.

**FY 2016 Plans:**  
 - Assess the SM-3 Block IB missile capability against evolving threat characteristics to define improvements in missile discrimination processes to counter threat changes  
 - Begin development of common avionics architecture between SM-3 Block IB and SM-3 Block IIA. This includes a SM-3 Block IB sized Read Out Integrated Circuit (ROIC) based on SM-3 Block IIA technology for increased acquisition range for greater capability against extended range threats, repackage SM-3 Block IIA Kinetic Warhead (KW) Guidance Electronic Unit (GEU) hardware to fit within SM-3 Block IB allowing implementation of SM-3 Block IIA software improvements to enhance missile performance against advanced threats

**FY 2017 Plans:**  
 Decrease from FY 2016 to FY2017 is due to deferral of further development of the SM-3 Block IB sized Read Out Integrated Circuit (ROIC) based on SM-3 Block IIA technology for increased acquisition range.

- Continue to assess the SM-3 Block IB capability against evolving threat characteristics to define improvements in missile discrimination processes to counter threat changes  
 - Continue design agent specific support for pre-flight test and post flight test efforts

<b>Title:</b> Standard Missile-3 (SM-3) Block IIA Development	61.819	78.246	213.271
<b>Articles:</b>	-	-	-

**Description:** The SM-3 Block IIA is required to meet EPAA Phase III. It will increase the area that can be defended by Aegis BMD, increase the probability of kill against a larger threat set, and leverage enhanced capability provided by BMDS sensor upgrades.

**FY 2015 Accomplishments:**  
 - Conducted Aegis Ballistic Missile Defense (BMD) 5.1 weapon system and SM-3 Block IIA Missile integration and testing  
 - Began Kinetic Warhead (KW) Guidance Electronic Unit (GEU) hardware commonality development efforts to enhance missile performance against advanced threats  
 - Began adaptations to the SM-3 Block IIA missile to include software and G-switch modifications that meet range safety requirements for Aegis Ashore

**FY 2016 Plans:**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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Increase from FY 2015 is due to beginning implementation of SM-3 Block IIA cost reduction initiatives to support meeting cost goals to reduce the current estimated Average Unit Production Price (AUPP) of the missile

- Continue Aegis BMD 5.1 weapon system and SM-3 Block IIA Missile integration and testing
- Continue Kinetic Warhead (KW) Guidance Electronic Unit (GEU) hardware commonality development efforts to enhance missile performance against advanced threats
- Conduct SM-3 Block IIA software update to support engagements against additional complex threats identified during Aegis BMD 5.1 design process conducted after missile Critical Design Review
- Continue adaptations to the SM-3 Block IIA missile to include software and G-switch modifications that meet range safety requirements for Aegis Ashore

**FY 2017 Plans:**  
Increase from FY 2016 to FY 2017 is due to:

- Transition of Kinetic Warhead (KW) hardware commonality effort (from design to material purchases) to system integration testing in order to demonstrate technology readiness level 7
- Implementation of updated missile software build, test and qualification for FTM-29 and FTO-03 flight testing,
- Increased integration testing with Aegis Baseline based on matured test requirements,
- Guidance Section Circuit Card Assembly manufacturing environmental test capability improvements to reduce Average Unit Production Price (AUPP),
- Build up SM-3 Block IIA All Up Round(AUR)for FTM-29 from residual Standard Missile-3 Cooperative Development(SCD)Program hardware to address schedule impact from long lead material for FY2016 manufacturing contract

Efforts will also:

- Continue SM-3 Block IIA engineering integration and testing with the Aegis BMD 5.1 Weapon System
- Continue SM-3 Block IIA software updates to support engagements against additional complex threats identified post Aegis BMD 5.1 Critical Design Review
- Conduct End to End Distributed Development System (ETEDDS) integration testing; and flight test support
- Support Parts, Materials, Processes, Mission Assurance, and System Engineering as it relates to the SM-3 Block IIA
- Continue implementation of SM-3 Block IIA cost reduction initiatives to support meeting cost goals to reduce the current estimated Average Unit Production Price (AUPP)
- Continue adaptations to the SM-3 Block IIA missile to include software and G-switch modifications that meet range safety requirements for Aegis Ashore

<b>Title:</b> Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion	12.346	23.169	30.345
<b>Articles:</b>	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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**Description:** Aegis BMD Core System Engineering enables cross-baseline specification management and capability assessments to ensure consistent application of technical standards, processes, and procedures across the Aegis BMD program. Includes systems engineering and architecture (process and execution), modeling & simulation, test & evaluation support, ship integration, mission assurance and safety. Further develops Aegis BMD System Architecture and overarching system concepts. Conducts BMDS system level requirements development, trace, validation & verification, and configuration management for coordination with all participating external agencies and organizations. Ensures consistency and alignment of Command, Control, Communications, Computers, & Intelligence (C4I) implementation across Aegis BMD baselines.

**FY 2015 Accomplishments:**

- Managed, tracked, and traced BMD performance requirements across all Aegis BMD baselines
- Conducted Modeling and Simulation activities to support the Aegis BMD Ground Test as reflected in the IMTP
- Performed analyses to ensure alignment between Aegis BMD capability baselines and the BMDS for performance requirements, design space, and threat capabilities
- Developed Critical Engagement Conditions and Empirical Measurement Events (CEC/EMEs) to support Aegis BMD test and evaluation efforts
- Updated Extended Air Defense Simulation (EADSIM) to support engagement coordination modeling and assessments
- Began development of Objective Simulation Framework (OSF) architecture to support ABMD integration testing
- Developed discrimination algorithms to counter identified threats through the Aegis Long Range Surveillance and Track (LRS&T) capability to achieve stated discrimination improvement objectives and preferred solutions. The capability insertion process enabled the acceleration of algorithm development and integration into Aegis BMD 4.0.3, which was certified in July 2015.
- Conducted Phase 1 Aegis BMD Remote Engagement critical experiment, with the purpose of demonstrating integration of off board Electro-Optical/Infrared (EO/IR) sensor data into the Aegis Weapon System (AWS) to support Launch on Remote (LoR) engagements using multiple data links. This effort was successfully completed May 2015.

**FY 2016 Plans:**

- Increase from FY 2015 is attributed to development of the Planned Product Improvement for both Divert and Attitude Control System (DACS) and Third Stage Rocket Motor (TSRM) for SM-3
- Conduct requirements development, trace and configuration management for Aegis BMD Weapon System and Missile System Specifications
  - Conduct medium fidelity Monte Carlo Analysis contributing to Aegis BMD Capability Baselines and BMDS alignment for performance requirements, design space and threat capability assessments
  - Conduct development of Performance Assessment Matrix, Threat Compliance and Critical Engagement Conditions/Empirical Measurement Events (CEC/EMEs) to influence Aegis BMD Test and Evaluation efforts through a requirements-based input to the MDA's IMTP


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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Conduct Systems Engineering tasking for model development and Verification and Validation (V&amp;V) of the following models in support of Commander Operational Test &amp; Evaluation Force (COMOPTEVFOR) accreditation: FirmTrack X, Command and Decision Simulation (C&amp;DSim), Link, Weapons Control System (WCS), Argo, and Standard Missile-3 (SM-3) 6 Degrees of Freedom (DOF)</li> <li>- Conduct Modeling and Simulation (M&amp;S) Reviews in support of Aegis BMD Ground Tests</li> <li>- Conduct Extended Air Defense Simulation (EADSIM) development required for participation in exercises and wargames in support of the Warfighter</li> <li>- Conduct Aegis BMD Tier 2 Hardware-in-the-Loop (HWIL) Single Stimulation Framework (SSF) transition to the Objective Simulation Framework (OSF) BMDS initiative with focus on; Next Generation Simulation (NGS) OSF Interface development for Aegis BMD 4.1 and BL 9C.2.</li> <li>- Implement OSF Core Truth Model (CTM) updates for NGS including Aegis BMD signatures, lethality, environments, and truth interactions</li> <li>- HWIL OSF driven V&amp;V for interface and CTM modifications of the Aegis BMD NGS</li> <li>- Conduct Aegis BMD NGS OSF BMDS integration testing</li> <li>- Conduct systems engineering for digital M&amp;S transition to OSF</li> <li>- Conduct M&amp;S Integrated Master Assessment Plan (IMAP) assessment activities</li> <li>- Conduct development of advanced discrimination algorithms as related to the Aegis BMD baselines in support of discrimination improvement requirements</li> <li>- Demonstrate updated discrimination and develop a plan for insertion into the Aegis BMD Baselines and SM-3 variants to eliminate gaps and enable future BMDS architectures in support of DIHD requirements</li> <li>- Participate in discrimination improvement threat models specification.</li> <li>- Update element models to support the discrimination improvement program.</li> <li>- Participate in planning and conduct technology trades and analysis to refine capabilities to mitigate the discrimination improvements threats.</li> <li>- Fund efforts and studies to address the BMDS emergent threat.</li> </ul> <p><b>FY 2017 Plans:</b> Increase from FY 2016 to FY 2017 is attributed to the addition of critical experiment execution and Firing Event Analysis Team (FEAT) execution support.</p> <ul style="list-style-type: none"> <li>- Continue requirements development and trace and configuration management for Aegis BMD Weapon and Missile System specifications</li> <li>- Conduct Systems Engineering for medium fidelity Monte Carlo Analysis which will contribute to Aegis BMD capability baselines and BMDS alignment for performance requirements, design space, and threat capability assessments</li> </ul>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Continue to develop Performance Assessment Matrix, Threat Compliance and CEC/EME's to influence Aegis Test and Evaluation efforts through a requirements based input to the IMTP</li> <li>- Develop C4I System Safety Program to address concerns with inadvertent launch and incorrect reporting of non-real ballistic missile tracks</li> <li>- Develop and implement Integrated Reliability Surveillance Plan (IRSP) to improve system availability while achieving an overall reduction in cost</li> <li>- Provide consolidated analysis and reporting for firing events</li> <li>- Provide Integrated Master Assessment Plan (IMAP) assessments for BMDS EPAA for Aegis BMD M&amp;S needs and capabilities and limitations</li> <li>- Continue to maintain/upgrade the Aegis BMD M&amp;S requirements and capabilities identified to meet the MDA's evolving system level M&amp;S Enterprise needs for the Hardware in the Loop (HWIL) and Tier 2 Digital OSF</li> <li>- Build Aegis BMD M&amp;S to OSF Native Interface (NI) upon receipt of OSF NI requirements and Interface Control Document</li> <li>- Implement Aegis BMD M&amp;S Core Truth Model (CTM) updates for HWIL and Tier 2 Digital including phenomenology, lethality, environments, and threats for all Aegis BMD baselines to meet MDA's evolving system level M&amp;S Enterprise</li> <li>- Conduct Systems Engineering tasking for model development and Verification &amp; Validation (V&amp;V) of the following Aegis BMD models in support of Commander Operational Test &amp; Evaluation Force (COMOPTEVFOR) accreditation: FirmTrack X, Command and Decision Simulation (C&amp;DSim), Link, Weapons Control System (WCS), Argo, Multi-Target Effectiveness Determined Under Simulation for Aegis (MEDUSA) and Standard Missile-3 (SM-3) 6 DOF</li> <li>- Conduct Aegis BMD M&amp;S Reviews</li> <li>- Conduct Verification, Validation and Accreditation (VV&amp;A) of Aegis BMD common input models</li> <li>- Provide Aegis BMD M&amp;S Enterprise Requirements Management and Change Control</li> <li>- Continue model development required for participation in exercises and force-on-force analysis in support of the warfighter/ Combatant Commands (CCMDs)</li> <li>- Provide Aegis BMD M&amp;S support for Operational Test (OT) Runs for Record (RFR)planning</li> <li>- Provide Aegis BMD M&amp;S support for BMDS assessments and perform OSF/BMDS requirements development and analysis</li> <li>- Provide Aegis BMD M&amp;S planning and integration in preparation for continuous Tier 2 Digital events</li> <li>- Continue research/development of a common Aegis BMD M&amp;S framework to enable plug and play configurations and common M&amp;S tools and processes across Aegis BMD M&amp;S</li> <li>- Conduct BMDS-level Validation &amp; Verification activities and provide results to MDA System Verification Team and the Operational Test Agency (OTA) in support of BMD system level accreditation for BMDS events</li> <li>- Execute Critical Experiments for proposed capability development efforts requiring HWIL verification. Proposed capabilities requiring HWIL include: Sensor Coordination &amp; Planning, Electro-Optical/Infrared (EO/IR) Sensor Integration, and Infrared/Radio Frequency (IR/RF) Data Fusion and Correlation</li> <li>- Continue to improve the design of critical components to alleviate limiting legacy assumptions and caveats; provide a stronger basis for subsequent design initiatives</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Aegis BMD will complete development of discrimination improvements:                      Implement threat data and modeling updates                      Field enterprise improvements to detect, track, discriminate and correlate threats                      -Continue Far-term countermeasure mitigation capability development:                      Execute system requirements review for radar electronic protection improvements</p>				
<p><b>Title:</b> Fielding - Aegis Weapon System (AWS)</p> <p><b>Articles:</b></p>		12.922	0.000	0.000
<p><b>Description:</b> See Description below.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Installed three (3) AMOD (Aegis Modernization program) BMD 5.0CU DDGs shipsets inline.</li> <li>- Updated BMD 4.0 to 4.1 software for current ships.</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>No funding requested for FY 2016 under this program element. All Aegis BMD Weapon System Fielding efforts and hardware purchases have transitioned to Aegis Procurement account captured in PE 0208866C.</p> <p><b>FY 2017 Plans:</b></p> <p>N/A</p>		-	-	-
<p><b>Title:</b> Program Operations</p> <p><b>Articles:</b></p>		108.892	113.734	113.038
<p><b>Description:</b> This activity funds the Government, contractor, and Federally Funded Research and Development Center (FFRDC) workforce that manage the overall Aegis Ballistic Missile Defense (BMD) program and enable the program to develop, build, and test standard missiles and the associated Aegis Weapon Systems. Includes all operations support for the Aegis program office in Engineering, Testing, Logistics, Acquisition, Safety, Quality Assurance, Finance, Budget Formulation and Execution, Cost Estimation, and Earned Value Management in support of development activities.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Ensured Aegis BMD program complied with internal and external directives, policies, laws and regulations</li> <li>- Conducted Internal Baseline Reviews (IBRs) that align with the MDA approved baselines</li> <li>- Conducted a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management (CM), Manufacturing, Engineering, Security, and Safety</li> <li>- Provided Quality Safety and Mission Assurance operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability to ensure high quality products are delivered for BMDS test events</li> </ul>		-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provided program management, subcontract management, quality assurance, verification of hardware and software development, technical oversight and testing execution</li> <li>- Provided technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, Configuration Management and integration activities</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Ensure Aegis BMD program compliance with internal and external directives, policies, laws and regulations</li> <li>- Conduct Internal Baseline Reviews (IBRs) that align with the MDA approved baselines</li> <li>- Conduct a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management (CM), Manufacturing, Engineering, Security, and Safety</li> <li>- Provide Quality Safety and Mission Assurance operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability to ensure high quality products are delivered for BMDS test events</li> <li>- Provide program management, subcontract management, quality assurance, verification of hardware and software development, technical oversight and testing execution</li> <li>- Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, Configuration Management and integration activities</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Ensure Aegis BMD compliance with internal and external directives, policies, laws and regulations</li> <li>- Conduct Internal Baseline Reviews (IBRs) that align with the MDA approved baselines</li> <li>- Conduct a Mission Assurance and Manufacturing Engineering Program to include Quality, Configuration Management (CM), Manufacturing, Engineering, Security, and Safety</li> <li>- Provide Quality Safety and Mission Assurance operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability to ensure high quality products are delivered for BMDS test events</li> <li>- Provide program management, subcontract management, quality assurance, verification of hardware and software development, technical oversight and testing execution</li> <li>- Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities</li> </ul>				
<b>Title:</b> Fleet Integration		5.797	0.000	0.000
		<b>Articles:</b>	-	-
<p><b>Description:</b> Provide Fleet operations and mission support to enable the conduct of sustained BMD operations; advocate war fighter requirements and fleet feedback in baseline development and capability upgrades to Aegis BMD weapon system; provide analysis and Mission Planning support for Geographic Combatant Commanders for operational application of Maritime BMD capabilities; and provide BMD Capabilities Analysis and Exercise Support for Aegis BMD baselines under development or currently employed in the Operational Fleet.</p>				

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
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<p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>- Provided In-service Engineering support to Aegis BMD</li> <li>- Provided leadership and engineering/technical support to conduct Aegis BMD Combat System Readiness</li> <li>- Responded to Fleet issues related to Aegis BMD installations, BMD operations and BMD events.</li> <li>- Provided reach back analytical support to the CCMDs for real world operations</li> <li>- Provided maintenance and update of Force on Force Modeling and Simulation</li> <li>- Provided BMD specific training to BMD ships, CCMD/Fleet Staffs; prepare/coordinate training documents for new BMD baselines.</li> </ul> <p><b><i>FY 2016 Plans:</i></b> All efforts for this accomplishment have transitioned to Budget Project, MX09 Fleet Integration.</p> <p><b><i>FY 2017 Plans:</i></b> N/A</p>			
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<b><i>Title:</i></b> SM-3 Manufacturing	18.368	136.217	254.654
<b><i>Articles:</i></b>	-	-	-

***Description:*** Purchase of FY 2016 SM-3 Block IIA All Up Round (AUR) for the purposes of flight testing and delivery to the fleet as operational assets prior to an initial production decision.

***FY 2015 Accomplishments:***

- Began purchase of hardware material needed to support the manufacture of SM-3 Block IIA missile components.
- Established purchase orders for hardware material including, but not limited to, power devices, raw materials, lower level assemblies, and optics hardware.

***FY 2016 Plans:***  
Increase from FY 2015 is to allow for the award of the follow-on full scope of effort to produce SM-3 Block IIA missiles in support of flight testing and delivery to fleet for initial deployment in FY 2018

- Continue funding for SM-3 Block IIA All Up Rounds (AURs) for use in support of flight test events (FTO-03 E1, FT0-03 E2, FTX-23 etc) as reflected in the Integrated Master Test Plan (IMTP), and initial deployment in support of European Phased Adaptive Approach (EPAA) Phase III. SM-3 Block IIA AURs validate the Engineering Manufacturing Readiness Level 3 criteria for an Initial Production Decision in FY 2017

Funding for DoD Civilian and Contractor support moved to Project MD09, Program Operations

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<p>Funding for Aegis Systems Engineering efforts moved to Project MD09, Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion</p> <p><b>FY 2017 Plans:</b> Increase in FY 2017 is attributed to the following:</p> <ul style="list-style-type: none"> <li>- Incremental funding increased from FY2016 levels to match manufacturing expenditure profile for seventeen FY16 contracted SM-3 Block IIA All Up Rounds (AUR)'s, funding requirements aligned with next FY2017 increment of component, sub-section and section manufacturing and delivery schedules to support AUR deliveries beginning FY2018</li> <li>- Realignment of funding from IIA Development to support for manufacturing, assembly, test, and missile integration issues and assessing vendor non-conformances, process changes, variances, change notices, drawing changes, deviations and compliance actions</li> <li>- Continue funding for quantity 17 SM-3 Block IIA AUR's (delivered FY 2018 through FY 2020) for use in flight test events (FTO-03 E1, FTO-03 E2, FTX-23, etc) as reflected in the IMTP, and initial deployment of EPAA Phase III. SM-3 Block IIA AURs validate the Engineering Manufacturing Readiness Level 3 criteria for an Initial Production Decision in 4Q FY 2017.</li> </ul>				
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<b>Title:</b> Modeling & Simulation HWIL Framework, Simulations, Models	35.293	41.580		40.084
<b>Articles:</b>	-	-		-

**Description:** The M&S Hardware-in-the-Loop (HWIL) Framework, Models and Simulations effort develops, maintains and deploys the HWIL framework hardware and software for use at element laboratories and Combatant Command (CCMD) locations to support IMTP events, BMDS capability delivery assessments, Warfighter training, exercises, and wargames.

**FY 2015 Accomplishments:**

- Transitioned Single Stimulation Framework (SSF) support for Post Flight Reconstruction activities to the initial version of the Objective Simulation Framework (OSF).
- Continued Optimistic Sensor Model (OSM) integration into OSF.
- Began OSF sustainment, maintenance and product support for use in activities supporting MDA stakeholders and allies/coalition partners.
- Delivered improved debris and phenomenology modeling capabilities to support Aegis future baselines.
- Continued deployment and integration of BMDS Hardware-in-the-loop (HWIL) SSF and OSF Objective Hardware for MDA Elements and a releasable configuration for Allied and Coalition partners.

**FY 2016 Plans:**

- Develop Objective Simulation Framework (OSF) upgrades to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving system level Modeling and Simulation Enterprise needs.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Begin implementation of new capabilities needed to support MDA's Tier 2 Digital requirements, including hardware and software, data storage and transmission, and verification tools.</li> <li>- Control and maintain M&amp;S Integration and Development Laboratories for Element M&amp;S.</li> <li>- Develop plans, procedures and documentation for scheduled events including Wargames and CCMD Exercises and the Distributed, Focused and Integrated Hardware-In-the-Loop Events as presented in the Integrated Master Test Plan (IMTP).</li> <li>- Develop, maintain, test, field, and operate model representations for use in system level events and other MDA M&amp;S stakeholder application areas. Deploy hardware and software updates to CONUS and OCONUS distributed sites. Perform regular maintenance and critical repairs of hardware and software.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop, maintain, test, field, and operate model representations for use in events and other MDA M&amp;S stakeholder application areas. Deploy hardware and software updates to Continental U.S. (CONUS) and Outside CONUS (OCONUS) distributed sites. Perform regular maintenance and critical repairs of hardware and software</li> <li>- Enhance and publish the OSF framework interface to facilitate element integration in support of the GT-07 campaign</li> <li>- Evolve the OSF product to integrate and take advantage of new Core Truth Models in support of the GT Re-architecture efforts</li> <li>- Implement OSF into the Flight Test and Warfighter Training venues</li> <li>- Sustain and enhance framework products to maintain capabilities supporting stakeholders</li> <li>- Control and maintain the Modeling and Simulation Integration and Development Laboratories for Element M&amp;S</li> <li>- Implement Objective Simulation Framework capabilities to incorporate advanced tracking, discrimination, engagement and associated upper tier debris mitigation capabilities, as well as other requirements and capabilities to meet MDA's evolving Modeling and Simulation Enterprise needs</li> </ul>			
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<b>Title:</b> Systems Engineering & Integration	15.033	19.109	19.405
<b>Articles:</b>	-	-	-

**Description:** Perform requirements development, engineering analysis, capability integration, and performance verification for Aegis BMD development and BMDS integration, including Aegis BMD compliance with the BMDS Specification, BMDS Description Document, and Master Integration Plan (MIP).

**FY 2015 Accomplishments:**

- Identified BMDS architecture alternatives that improve the system's performance and are complementary to and interoperable with NATO systems and theaters around the world.
- Developed and refined Capability Planning specifications for future BMDS Elements/Components.
- Developed functional performance, interface, and design suitability requirements in collaboration with BMDS element engineers to flow-down and allocate requirements to Programs.
- Conducted system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Responded to Warfighter, CCMD and other requests for analyses and requests for information; provided analytical support for real-world events.</li> <li>- Conducted non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Defense of the Homeland, Defense of Israel and Theater/Regional BMD)</li> <li>- Conducted extensive analysis of data collected in BMD test events to evaluate BMD operations and performance.</li> </ul> <p><b>FY 2016 Plans:</b> FY 2016 increase is due to increased capability integration and assessment support for Aegis BMD/BMDS leading to EPAA Phase II Technical Capability Declaration.</p> <ul style="list-style-type: none"> <li>- Conduct system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts.</li> <li>- Perform top-down system level engineering analysis, capability integration, and performance verification for Aegis BMD development and BMDS integration, including Aegis BMD compliance with the BMD System Specification, BMD System Description Document, and Master Integration Plan (MIP).</li> <li>- Identify architecture alternatives that improve the BMD System's performance and are complementary to and interoperable with NATO systems and theaters around the world.</li> <li>- Develop functional performance, interface, and design suitability requirements in collaboration with Aegis BMD engineers to ensure correct flow-down and allocation of BMD System-level requirements to Aegis BMD.</li> <li>- Respond to Warfighter, CCMD and other requests for analyses and requests for information; provide analytical support for real-world events.</li> <li>- Conduct non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Theater/Regional BMD)</li> <li>- Conduct extensive analysis of data collected in BMD test events to evaluate BMD System operations and performance.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct system level performance analyses to support ongoing BMDS Architecture and Systems Engineering efforts</li> <li>- Perform top-down system level engineering analysis, capability integration, and performance verification for Aegis BMD development and BMDS integration, including Aegis BMD compliance with the BMD System Specification, BMD System Description Document, and Master Integration Plan (MIP)</li> <li>- Identify architecture alternatives that improve the BMD System's performance and are complementary to and interoperable with NATO systems and theaters around the world</li> <li>- Define BMDS technical content expectations and develop system requirements, to include integration of new capabilities, such as the Navy's Air and Missile Defense Radar (AMDR)</li> <li>- Develop functional performance, interface, and design suitability requirements in collaboration with Aegis BMD engineers to ensure correct flow-down and allocation of BMD System-level requirements to Aegis BMD</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Respond to Warfighter, Combatant Command and other requests for analyses and requests for information; provide analytical support for real-world events</li> <li>- Conduct non-advocate assessments of BMDS capabilities and limitations prior to capability delivery decisions to determine fielding readiness (including Theater/Regional BMD)</li> <li>- Conduct extensive analysis of data collected in BMD test events to evaluate BMD System operations and performance</li> </ul>			
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<b>Title:</b> M&S Digital Framework, Simulation, Models	4.071	4.989	4.978
<b>Articles:</b>	-	-	-

**Description:** The Modeling and Simulation (M&S) Digital Framework, simulation, and models effort includes: development and sustainment of digital products and the architecture framework, and delivery/maintenance of infrastructure for BMDS performance assessments.

**FY 2015 Accomplishments:**

- Continued the transition of real-time digital simulation capability to the Objective Simulation Framework (OSF) to support Warfighter Exercises, Warfighter Training, Element spiral development, and Ground Test campaigns.
- Provided integrated and functionally qualified end to end BMDS simulations supporting various events (utilizing the OSF and Element-provided medium/high-resolution models) enabling full-envelope BMDS Digital Performance Assessments.

**FY 2016 Plans:**

- Continue re-architecting of MDA's BMD International Simulation (I-SIM) to adapt to growing distributed event requirements in support of CCMD and International Wargames, conceptual planning, BMD visualizations, BMD training/orientation, M&S demonstrations, and the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD) Material & Fielding Requirements List (MFRL).
- Integrate, test, functionally qualify, and deliver BMDS M&S tools for use in MDA test events, Wargames, and exercises
- Continue the transition of real-time digital simulation capability to the OSF to support BMD System and Element Intended Uses.
- Provide threat representations (kinematic trajectories, radar cross section (RCS), and infrared (IR) signature data) for use in real-world events, simulations, exercises, wargames, and test and evaluation activities across the DoD.
- Perform operational planning for the FY 2017 BMDS assessment events.

**FY 2017 Plans:**

- Integrate, test, and verify the M&S enterprise supporting BMDS testing, assessment, exercises, and wargaming, including testing infrastructure. Guide and facilitate integration testing of MDA's M&S frameworks and core truth models, and all M&S components into virtual representations of the BMDS that are credible, affordable, and provide decision makers with the data needed
- Integrate, test, functionally qualify, and deliver M&S tools and complex test architectures to provide system test capabilities to support MDA IMTP based test events, wargames, and exercises
- Continue the transition of real-time digital simulation capability to the OSF to support Intended Uses



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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- Provide HWIL/M&S Benchmarking/Integration documentation and coordination  
 - Conduct M&S system integration and verification to support M&S system architecture development. Provide developmental integration testing to support M&S system architecture integration

<b>Title:</b> BMDS Verification, Validation & Assessment (VV&A)	16.146	20.724	21.362
<b>Articles:</b>	-	-	-

**Description:** See Description below.

**FY 2015 Accomplishments:**

- Conducted verification and validation (V&V) in support of MDA BMD system level accreditation for Ground Test and Performance Assessment events.
- Developed integrated VV&A and V&V event plans and reports for events as reflected in the IMTP and the Exhibit R-4 schedule.
- Conducted system pre-mission testing events, system post-flight reconstructions, and element post-flight reconstructions to optimize the body of evidence and analysis for BMD System-level accreditation. Performed all system-level V&V associated with these events as reflected in the IMTP and the Exhibit R-4 schedule.
- Conducted system-level V&V of threat trajectory and signature end-to-end environmental implementation; ensured that communications and architecture behaved properly and that interoperability was adequately addressed.

**FY 2016 Plans:**

- FY 2016 increase is due to increased assessment and validation activities supporting capability declaration for EPAA phase II.
- Conduct extensive analysis of data collected in BMDS ground and flight test events, instrumental to understanding BMD System operations and performance and anchoring models and simulations.
- Identify mitigation approaches for BMDS performance issues uncovered during system level analysis and assessment.
- Monitor development and recommend improvements to the Missile Defense Agency wide simulation enterprise based on an evaluation of the validity of Component, Element and System-level models, frameworks, and participation in system level assessment activities and Modeling and Simulation events.
- Conduct verification and validation (V&V) in support of MDA BMD System level accreditation process in support of BMDS Ground Test and performance assessment events.
- Develop integrated Verification, Validation and Accreditation (VV&A) and V&V event Plans and Reports for events as reflected in the Integrated Master Test Plan (IMTP) and the Exhibit R-4 schedule.
- Conduct specified BMD System post-flight reconstructions, element post-flight reconstructions, and pre-mission testing events so as to optimize the body of evidence and analysis supporting system-level BMDS accreditation. Perform all system-level V&V associated with these events as reflected in the IMTP and the Exhibit R-4 schedule.

**FY 2017 Plans:**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Verify BMDS performance, and produce BMDS verification status reports</li> <li>- Conduct extensive analysis of data collected in BMDS ground and flight test events, instrumental to understanding BMD System operations and performance and anchoring models and simulations</li> <li>- Identify mitigation approaches for BMDS performance issues uncovered during system level analysis and assessment</li> <li>- Maintain M&amp;S Verification, Validation and Accreditation (VV&amp;A) database, and verification data for BMD System Specification Change Notices</li> <li>- Develop, maintain, and update the M&amp;S VV&amp;A tool kit</li> <li>- Provide recommendations for improving assessment confidence, including M&amp;S and testing issue resolutions</li> <li>- Conduct verification and validation (V&amp;V) in support of MDA BMD System level accreditation process in support of BMDS Ground Test and performance assessment events</li> <li>- Conduct specified BMD System post-flight reconstructions, element post-flight reconstructions, and pre-mission testing events so as to optimize the body of evidence and analysis supporting system-level BMDS accreditation</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	669.587	719.565	846.028

**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
• 0604878C: Aegis BMD Test	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604880C: Land Based SM-3 (LBSM3)	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
• 0604881C: AEGIS SM-3 Block IIA Co-Development	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961

**Remarks**

**D. Acquisition Strategy**

The Aegis BMD element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall BMDS capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the SM-3 and the Aegis BMD Weapon System, respectively.

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks, as well as develop and deliver models of Aegis systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Aegis BMD prime contractors, with

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

<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>	<b>Project (Number/Name)</b>
0400 / 4	PE 0603892C / <i>AEGIS BMD</i>	MD09 / <i>Aegis BMD</i>

additional technical standards and engineering oversight provided by Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARCs).

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev -MD09- Aegis Techrep	MIPR	AEGIS Techrep : Moorestown, NJ	0.676	1.438		0.000		1.324	Nov 2016	-		1.324	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - Corona	MIPR	NSWC Corona : CA	0.676	1.134		3.746	Nov 2015	0.146	Nov 2016	-		0.146	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 - D	MIPR	MDA : VA	20.309	0.000		5.342	Nov 2015	2.122	Jul 2017	-		2.122	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 - Dahlgren	MIPR	NSWC/DD : DAHLGREN, VA	77.939	4.304		9.711	Nov 2015	1.184	Nov 2016	-		1.184	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 - JHU/APL	MIPR	JHU/APL/MD : COLUMBIA, MD	29.994	1.944		2.803	Nov 2015	0.386	Nov 2016	-		0.386	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 - Lockheed Martin	SS/CPIF	LOCKHEED MARTIN : MOORESTOWN, NJ	716.579	37.122		6.415	Nov 2015	22.996	Nov 2016	-		22.996	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 - Raytheon	SS/CPAF	RAYTHEON/AZ : TUCSON, AZ	12.411	3.220		11.966	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x Development - BMD 4.0 Dev. - MD09 -NSWC PHD	MIPR	NSWC/PHD : PT. HUENEME, CA	13.896	1.301		0.000		0.106	Nov 2016	-		0.106	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 4.x	MIPR	NAVSEA -LM : Washington DC	0.000	22.147		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Development - BMD 4.0 Dev. - NAVSEA															
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09	SS/CPIF	LOCKHEED MARTIN : MOORESTOWN, NJ	707.201	49.799		13.016	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 -	MIPR	MITRE : CECOM	1.829	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - 20117142316263	MIPR	NSWC/DD : DAHLGREN, VA	83.056	17.934		3.220	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - 20117142316266	MIPR	NSWC/PHD : PT. HUENEME, CA	4.987	2.105		0.142	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - 20117142316267	MIPR	JHU/APL/MD : COLUMBIA, MD	39.852	8.973		2.998	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - 20117142316272	C/CPAF	RAYTHEON/AZ : TUCSON, AZ	0.030	0.422		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - 20117142316278 - 2012628495024	MIPR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09 - Tech Rep	MIPR	Aegis Tech Rep : Moorestown, NJ	0.000	1.354		0.094		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0	MIPR	Various : VA, IN, CA, AZ	0.000	1.290		0.474		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Development - MD09 Various															
Aegis Ballistic Missile Defense (BMD) 5.0 Development - MD09-MIT/LL	MIPR	MIT/LL : MA	0.000	1.133		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.0 Development - NAVSEA	MIPR	NAVSEA : Washington DC	0.000	1.286		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - AA Development	MIPR	PMRF : Hawaii	0.000	0.000		5.967		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09	MIPR	AEGIS BMD : AZ, VA, CA	55.673	4.349		0.906	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - 20117142323680	MIPR	NSWC/DD : DAHLGREN, VA	39.308	0.000		7.237	Nov 2015	9.863	Nov 2016	-		9.863	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - 20117142323684	MIPR	NSWC/PHD : PT HUENEME, CA	1.947	0.866		5.060	Nov 2015	4.858	Nov 2016	-		4.858	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - 20117142323686	MIPR	JHU/APL/MD : COLUMBIA, MD	34.054	6.075		6.169	Nov 2015	5.808	Nov 2016	-		5.808	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - 20117142323689	SS/CPAF	LOCKHEED MARTIN : MOORESTOWN, NJ	332.216	125.416		133.685	Nov 2015	68.130	Nov 2016	-		68.130	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - 20126284501509	MIPR	SPAWAR : CA	6.829	3.504		3.079	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - AG	SS/CPAF	RAYTHEON/AZ : TUCSON, AZ	35.714	0.000		16.745	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - AW	MIPR	Aegis Tech Rep : Moorestown, NJ	0.000	2.049		0.000		3.705	Nov 2016	-		3.705	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - NAVSEA	MIPR	NAVSEA : Washington, DC	0.000	31.774		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - TD	MIPR	Various : MA, MD, VA, NJ	27.255	4.258		1.780	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09 - Wallops	MIPR	SCSC Wallops : VA	0.000	2.153		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) 5.x Development - MD09-SEG	MIPR	SEG : CA	0.000	3.305		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense 6.x Development - D	MIPR	Various : VA,AL	0.000	0.000		0.000		2.123	Jul 2017	-		2.123	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense 6.x Development - Hanscom AFB - MIT/LL - TD	MIPR	Hanscom AFB - MIT/LL : MA	0.000	0.000		0.000		0.406		-		0.406	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense 6.x Development - JHU/APL	SS/CPFF	JHU/APL : MD	0.000	0.000		0.000		7.241	Nov 2016	-		7.241	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense 6.x Development - Lockheed Martin	C/CPFF	Lockheed Martin : NJ	0.000	0.000		0.000		12.260	Nov 2016	-		12.260	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Aegis Ballistic Missile Defense 6.x Development - MD09 - DD	MIPR	NSWC/DD : Dahlgren, VA	0.000	0.000		0.000		3.971	Nov 2016	-		3.971	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense 6.x Development - NSWC DD - TD	MIPR	NSWC DD : VA	0.000	0.000		0.000		0.304		-		0.304	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09	SS/CPAF	Raytheon : Tucson, AZ	992.494	15.413		41.242	Nov 2015	0.972	Nov 2016	-		0.972	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - 20117142332255	MIPR	NSWC/DD : Dahlgren, VA	36.121	0.900		0.000		0.059	Nov 2016	-		0.059	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - 20117142332256	MIPR	JHU/APL/MD : Columbia, MD	49.831	3.062		0.000		0.217	Nov 2016	-		0.217	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - 20117142332259	MIPR	NSWC/PHD : Port Hueneme, CA	14.082	0.000		0.000		0.335	Nov 2016	-		0.335	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - 20117142332261	MIPR	NSWC Carderock : MD	18.282	0.921		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - AFRL	MIPR	AFRL : Edward AFB, CA	0.000	1.560		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - Aegis Tech Rep	MIPR	TechRep : Tucson, AZ	0.000	1.022		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - Aerojet	SS/CPAF	Aerojet : TBD	0.000	12.290		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09 - Corona	MIPR	NSWC Corona : Corona, CA	1.349	0.000		0.000		0.375	Nov 2016	-		0.375	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Standard Missile-3 (SM-3) Block IB Development - MD09 - Various	MIPR	Various - MDA : MD, NJ, CA	0.000	1.461		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IB Development - MD09-AFMETCAL	MIPR	AFMETCAL : Heath, OH	0.000	1.616		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - IDT	MIPR	IDT : VA	0.000	0.145		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA AFFORDABILITY DEVELOPMENT	SS/CPIF	Raytheon : Tucson, AZ	0.000	0.000		12.100	Nov 2015	25.424	Nov 2016	-		25.424	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION	SS/CPIF	Raytheon : Tucson, AZ	0.000	60.992		42.900	Nov 2015	159.247	Nov 2016	-		159.247	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION - APL	MIPR	JHU/APL : Laurel, MD	0.000	0.225		13.400	Nov 2015	14.300	Nov 2016	-		14.300	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MD09 - SM-3 BLK IIA INTEGRATION - DD	MIPR	NSWC DD : Dahlgren, VA	0.000	0.401		9.846	Nov 2015	10.000	Nov 2016	-		10.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - MIT/LL	MIPR	MIT/LL : MA	0.000	0.000		0.000		0.600	Oct 2016	-		0.600	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - NSWC IH	MIPR	NSWC IH : Indianhead, MS	0.000	0.000		0.000		0.450	Oct 2016	-		0.450	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - NSWC Corona	MIPR	NSWC Corona : Corona, CA	0.000	0.010		0.000		0.400	Oct 2016	-		0.400	Continuing	Continuing	Continuing

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Standard Missile-3 (SM-3) Block IIA Development - NSWC PHD	MIPR	NSWC PHD : CA	0.000	0.046		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - NSWC/Crane	MIPR	NSWC/Crane : IN	0.000	0.000		0.000		0.300	Oct 2016	-		0.300	Continuing	Continuing	Continuing
Standard Missile-3 (SM-3) Block IIA Development - Various	MIPR	Various : CA, VA, MD	0.000	0.000		0.000		2.550	Oct 2016	-		2.550	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - ATK	MIPR	ATK : Elkton MD	0.000	0.000		0.000		7.995	Sep 2017	-		7.995	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - NAVSEA	MIPR	NAVSEA : Tewksbury, MA	0.000	0.000		1.100	Nov 2015	1.237	Feb 2017	-		1.237	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD APL	MIPR	JHU/APL : Columbia, MD	0.000	3.336		5.737	Nov 2015	5.311	Nov 2016	-		5.311	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD LM	C/CPFF	Lockheed Martin : Moorestown, NJ	0.000	3.375		4.700	Nov 2015	4.441	Nov 2016	-		4.441	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MIT	MIPR	Hanscom AFB - MIT/LL : Lexington, MA	0.000	3.085		2.200	Nov 2015	1.982	Dec 2016	-		1.982	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD MITRE	MIPR	CECOM - MITRE : Dahlgren, VA	0.000	0.000		0.345	Nov 2015	0.338	Dec 2016	-		0.338	Continuing	Continuing	Continuing

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 - TD NSWCCD	MIPR	NSWC DD : Dahlgren, VA	0.000	1.390		7.087	Nov 2015	7.236	Feb 2017	-		7.236	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - MD09 Raytheon	SS/CPAF	Raytheon : AZ	0.000	0.857		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Technology Design and Insertion - FT DIHD Support (DE)	MIPR	Various - MDA : AL,VA	0.000	0.000		2.000	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Missile Defense (BMD) Technology Design and Insertion - Various - MDA	MIPR	Various - MDA : AL,VA,CA	0.000	0.303		0.000		1.805	Jan 2017	-		1.805	Continuing	Continuing	Continuing
Fielding - Aegis Weapon System (AWS) - MD09 - Japan	MIPR	Ship Repair Facility : Japan	0.000	3.500		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fielding - Aegis Weapon System (AWS) - MD09 - SUPSHIP	MIPR	SUPSHIP - Bath : Bath, ME	0.000	1.120		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fielding - Aegis Weapon System (AWS) - MD09 - Various	MIPR	Various : AL, VA, IN, CA, MD	0.000	1.395		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fielding - Aegis Weapon System (AWS) - Production and Deployment - LM	SS/CPIF	Lockheed Martin : Moorestown, NJ	259.221	3.813		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fielding - Aegis Weapon System (AWS) - Production and Deployment - NSWC PHD	MIPR	NSWC/PHD : Port Hueneme, CA	53.610	3.094		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Fleet Integration - 20098185191945	MIPR	NSWC/PHD : Port Hueneme, CA	17.366	0.222		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MD09	MIPR	SMDC/ARSTRST : Huntsville, AL	9.062	0.391		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MD09 - 20117142371317	MIPR	CSCS : Dahlgren, VA	12.123	1.614		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MD09 - 20117142371318	MIPR	JHU/APL/MD : Columbia, MD	8.073	1.133		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MD09 - 2011714237132	MIPR	NSWC/DD : Dahlgren, VA	17.974	2.437		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MD09 - 2012723031274	MIPR	MDA : VA	2.072	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SM-3 Manufacturing - MIT/LL	MIPR	MIT/LL : MA	0.000	0.000		0.000		0.500	Nov 2016	-		0.500	Continuing	Continuing	Continuing
SM-3 Manufacturing - NSWC/DD	MIPR	NSWC/DD : Dahlgren, VA	0.000	0.000		0.000		1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
SM-3 Manufacturing - SM-3 MANUFACTURING - MD09	SS/CPAF	Raytheon : Tucson, AZ	337.105	18.368		136.217	Dec 2015	251.154	Nov 2016	-		251.154	Continuing	Continuing	Continuing
SM-3 Manufacturing - Various	MIPR	Various : CA, VA, MD	0.000	0.000		0.000		1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
Modeling & Simulation HWIL Framework, Simulations, Models - M&S HWIL Engineering	Various	MDA : AL, VA	0.000	4.569		4.467	Nov 2015	4.269	Nov 2016	-		4.269	Continuing	Continuing	Continuing
Modeling & Simulation HWIL Framework, Simulations, Models - M&S HWIL Engineering - CSS Support	C/CPFF	Sparta : AL, CO	11.165	2.345		2.588	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Modeling & Simulation HWIL Framework, Simulations, Models - M&S HWIL Engineering - Engineering Support	C/CPAF	Northrop Grumman : CO	7.723	5.221		4.700	Nov 2015	6.222	Nov 2016	-		6.222	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Product Development (\$ in Millions)</b>				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			
Modeling & Simulation HWIL Framework, Simulations, Models - M&S HWIL Engineering - Integration	MIPR	AMRDEC : AL	6.417	5.691		4.347	Nov 2015	4.043	Nov 2016	-		4.043	Continuing	Continuing	Continuing
Modeling & Simulation HWIL Framework, Simulations, Models - M&S HWIL Engineering - Prime	C/CPFF	Teledyne Brown Engineering : AL, CO	49.182	17.467		25.478	Nov 2015	25.550	Nov 2016	-		25.550	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering	MIPR	MDA : VA, AL	40.396	8.324		6.852	Nov 2015	6.787	Nov 2016	-		6.787	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - CSS	C/CPFF	CSC : VA	10.930	2.073		1.224	Nov 2015	1.533	Nov 2016	-		1.533	Continuing	Continuing	Continuing
Systems Engineering & Integration - Systems Engineering - Industry	C/CPAF	Boeing : VA	22.271	4.636		11.033	Nov 2015	11.085	Nov 2016	-		11.085	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - Digital Simulation Architecture - CSS	C/CPFF	Teledyne Brown Engineering : AL, CO	0.000	0.000		0.000		0.950	Nov 2016	-		0.950	Continuing	Continuing	Continuing
M&S Digital Framework, Simulation, Models - Digital Simulation Architecture - MD09	C/CPAF	Northrop Grumman : CO	19.982	4.071		4.989	Nov 2015	4.028	Nov 2016	-		4.028	Continuing	Continuing	Continuing
BMDs Verification, Validation & Assessment (VV&A) - Verification & Assessment - CSS Support	C/CPFF	CSC : AL	0.000	4.720		3.852	Nov 2015	3.960	Nov 2016	-		3.960	Continuing	Continuing	Continuing
BMDs Verification, Validation & Assessment (VV&A) - Verification & Assessment - CSS Support (2)	C/CPFF	Sparta : AL	0.000	0.505		0.525	Nov 2015	0.555	Nov 2016	-		0.555	Continuing	Continuing	Continuing

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date:</b> February 2016				
<b>Appropriation/Budget Activity</b> 0400 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD					<b>Project (Number/Name)</b> MD09 / Aegis BMD				

<b>Product Development (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - Industry	C/CPAF	Boeing : AL	0.000	1.075		6.914	Nov 2015	6.927	Nov 2016	-		6.927	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - Labs	MIPR	MITRE : VA	0.000	3.632		1.476	Nov 2015	1.539	Nov 2016	-		1.539	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - OGA	MIPR	AMRDEC : AL	0.000	5.095		7.957	Nov 2015	7.338	Nov 2016	-		7.338	Continuing	Continuing	Continuing
BMDS Verification, Validation & Assessment (VV&A) - Verification & Assessment - UARC	MIPR	GTRI : GA, AL	0.000	1.119		0.000		1.043	Nov 2016	-		1.043	Continuing	Continuing	Continuing
<b>Subtotal</b>			4,239.262	560.695		605.831		732.990		-		732.990	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Program Operations - MD09 - Civ Sal	MIPR	MDA : Arlington, VA	0.000	25.282		35.328	Oct 2015	34.746	Nov 2016	-		34.746	Continuing	Continuing	Continuing
Program Operations - MD09 - DA/DAC	MIPR	MDA : Arlington, VA	0.000	2.379		0.264	Nov 2015	0.264	Nov 2016	-		0.264	Continuing	Continuing	Continuing
Program Operations - MD09 - DD PM	MIPR	NSWC DD : Dahlgren, VA	0.000	7.017		7.632	Nov 2015	8.792	Nov 2016	-		8.792	Continuing	Continuing	Continuing
Program Operations - MD09 - IT	MIPR	MDA : Arlington, VA	0.000	0.181		0.519	Nov 2015	0.500	Nov 2016	-		0.500	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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<b>Support (\$ in Millions)</b>				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 Operations - MD09 - MDA Travel	MIPR	MDA : Arlington, VA	0.000	1.610		2.065	Oct 2015	3.100	Nov 2016	-		3.100	Continuing	Continuing	Continuing
Program Operations - MD09 - MDAESS	MIPR	MDA : Arlington, VA	0.000	43.352		48.168	Oct 2015	47.523	Nov 2016	-		47.523	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA	MIPR	NAVSEA : Washington, D.C	0.000	10.200		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA Civ Sal	MIPR	NAVSEA : Washington, DC	0.000	12.825		13.856	Oct 2015	12.503	Nov 2016	-		12.503	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA RB Sal	MIPR	NAVSEA : Washington, DC	0.000	1.161		2.109	Oct 2015	2.132	Nov 2016	-		2.132	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA Train	MIPR	NAVSEA : Washington, DC	0.000	0.055		0.069	Oct 2015	0.053	Nov 2016	-		0.053	Continuing	Continuing	Continuing
Program Operations - MD09 - NAVSEA Travel	MIPR	NAVSEA : Washington, DC	0.000	1.027		1.056	Oct 2015	1.056	Nov 2016	-		1.056	Continuing	Continuing	Continuing
Program Operations - MD09 - PCS	MIPR	MDA : Arlington, VA	0.000	0.092		0.105	Nov 2015	0.100	Nov 2016	-		0.100	Continuing	Continuing	Continuing
Program Operations - MD09 - PE Comms	C/CPAF	Lockheed Martin : Moorestown, NJ	0.000	1.395		0.960	Nov 2015	0.618	Nov 2016	-		0.618	Continuing	Continuing	Continuing
Program Operations - MD09 - Security	MIPR	Various : VA	0.000	1.165		1.603	Nov 2015	1.651	Nov 2016	-		1.651	Continuing	Continuing	Continuing
Program Operations - MD09-IU	MIPR	Various : VA	0.000	1.151		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	108.892		113.734		113.038		-		113.038	-	-	-

**Remarks**  
 New accomplishment developed to align to Aegis Ballistic Missile Defense (BMD) FY 2014 restructure: - Funding was previously allocated within each budget accomplishment in Project MD09.

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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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			

**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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	4,239.262	669.587	719.565	846.028	-	846.028	-	-	-

**Remarks**  
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, MIPRs, and civilian salaries on the R-3.



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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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
BMD 5.1 Demo											▲																	
BMD 5.1 Development	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦																
BMD 5.1 Critical Design Review (CDR)	△																											
BMD 5.0 CU Development	✦	✦																										
BMD 5.0 CU Certification			▲																									
BMD 4.0 Ship Installations	✦																											
BMD 5.0 Ship Installations	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦																
BMD 5.1 Certification													▲															
BL 5.3.x/BMD 4.x SDR/PDR									✦																			
BL 5.3.x/BMD 4.x CDR													✦															
BL 5.3.x/BMD 4.x EA															✦													
BL 5.3.x/BMD 4.x Certification																			★									
BMD 6.x SRR							✦																					
BMD 6.x SFR											✦																	
BMD 6.x PDR													✦															
BMD 6.x CDR																							✦					
BMD 6.x Demo																											▲	
BMD 6.x Certification																												

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD09 / Aegis BMD
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BMD 5.1 Demo	3	2017	3	2017
BMD 5.1 Development	1	2015	4	2017
BMD 5.1 Critical Design Review (CDR)	1	2015	1	2015
BMD 5.0 CU Development	1	2015	2	2015
BMD 5.0 CU Certification	3	2015	3	2015
BMD 4.0 Ship Installations	1	2015	1	2015
BMD 5.0 Ship Installations	1	2015	4	2017
BMD 5.1 Certification	3	2018	3	2018
BL 5.3.x/BMD 4.x SDR/PDR	2	2017	2	2017
BL 5.3.x/BMD 4.x CDR	1	2018	1	2018
BL 5.3.x/BMD 4.x EA	1	2019	1	2019
BL 5.3.x/BMD 4.x Certification	4	2019	4	2019
BMD 6.x SRR	4	2016	4	2016
BMD 6.x SFR	3	2017	3	2017
BMD 6.x PDR	1	2018	1	2018
BMD 6.x CDR	2	2019	2	2019
BMD 6.x Demo	2	2021	2	2021
BMD 6.x Certification	2	2022	2	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD				<b>Project (Number/Name)</b> MC09 / Cyber Operations			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC09: <i>Cyber Operations</i>	0.820	0.880	0.870	0.879	-	0.879	0.885	0.884	0.884	0.901	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Increase from FY 2016 to FY 2017 is attributed contract cost adjustments.

**A. Mission Description and Budget Item Justification**

The funds in this project sustain Missile Defense Agency (MDA) DoD Information Assurance Certification and Accreditation Program (DIACAP) and Controls Validation Testing (CVT) 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 Aegis Ballistic Missile Defense (BMD) mission systems. 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 cyber security mitigation detailed in Information Technology Security POA&Ms. Activities include preparation of C&A documentation and accreditation recommendations to the MDA Senior Information Assurance Officer (SIAO)/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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Network / System Certification and Accreditation (C&A)	0.880	0.870	0.879
<b>Articles:</b>	-	-	-
<b>Description:</b> See Description below.			
<b>FY 2015 Accomplishments:</b>			
- Conducted cyber security / information assurance engineering and architecture planning for Aegis BMD information technology systems.			
- Planned and tested the IA controls for Ballistic Missile Defense System (BMDS) Aegis BMD systems.			
- Developed Aegis BMD DIACAP certification and accreditation packages.			
- Conducted Controls Validation Testing (CVT) of Aegis BMD mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.			
- Conducted annual information assurance reviews on the Aegis BMD enclaves to assess compliance in implementing and maintaining IA controls.			
<b>FY 2016 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MC09 / Cyber Operations

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Increase from FY 2015 is due to all cyber security efforts being moved from MD09 to MC09 to match execution. FY 2015 amounts will be updated accordingly to match actual costs at the end of FY 2015.</p> <ul style="list-style-type: none"> <li>- Conduct cybersecurity engineering and architecture requirements planning for Aegis BMD systems</li> <li>- Plan and test the Risk Management Framework (RMF) controls for Ballistic Missile Defense System (BMDS) in regards to Aegis BMD systems to comply with new directive, RMF for DoD Information Technology (DoDI 8510.01) to replace the DoD Information Assurance Certification and Accreditation Process (DIACAP).</li> <li>- Coordinate the development of Aegis BMD Risk Management Framework (RMF) accreditation packages</li> <li>- Conduct Controls Validation Testing (CVT) of Aegis BMD systems and provide a Risk Assessment Report (RAR) to mitigate cybersecurity deficiencies</li> <li>- Conduct annual cybersecurity reviews on the Aegis BMD systems to assess compliance in implementing and maintaining RMF controls</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue cybersecurity engineering and architecture requirements planning for Aegis BMD systems</li> <li>- Continue to plan and test the Risk Management Framework (RMF) controls for Ballistic Missile Defense System (BMDS) in regards to Aegis BMD systems to comply with new directive, RMF for DoD Information Technology (DoDI 8510.01) to replace the DoD Information Assurance Certification and Accreditation Process (DIACAP)</li> <li>- Continue coordination of the development of Aegis BMD RMF accreditation packages</li> <li>- Conduct regular Controls Validation Testing (CVT) of Aegis BMD systems and provide a Risk Assessment Report (RAR) to mitigate cybersecurity deficiencies</li> <li>- Conduct annual cybersecurity reviews on the Aegis BMD systems to assess compliance in implementing and maintaining RMF controls</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	0.880	0.870	0.879

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MC09 / Cyber Operations
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<i>Control, Battle Management &amp; Communication</i>											
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0604878C: <i>Aegis BMD Test</i>	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
• 0604881C: <i>AEGIS SM-3 Block IIA Co-Development</i>	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961
• 0901598C: <i>Management HQ - MDA</i>	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

Full and Open contract support through Missile Defense Agency Program Management Office.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MC09 / Cyber Operations
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<b>Support (\$ in Millions)</b>				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) - BOOZ ALLEN HAMILTON INC	C/CPIF	MDA : MCLEAN, VA	0.643	0.000		0.640	Nov 2015	0.644	Oct 2016	-		0.644	Continuing	Continuing	Continuing
Network / System Certification and Accreditation (C&A) - CND/IA Advisory and Assistance Services	C/CPIF	Torch Technologies : Huntsville, AL	0.177	0.880		0.230	Nov 2015	0.235	Oct 2016	-		0.235	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.820	0.880		0.870		0.879		-		0.879	-	-	-

**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
<b>Project Cost Totals</b>	0.820	0.880	0.870	0.879	-	0.879	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MC09 / Cyber Operations
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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
MC09 Cyber Operations					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MC09 / Cyber Operations
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC09 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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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
MX09: Aegis BMD Development Support	-	32.016	73.118	68.283	-	68.283	66.770	70.406	63.884	64.285	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Aegis Ballistic Missile Defense (BMD), in accordance with negotiated agreements between the United States Navy and the Missile Defense Agency (MDA) has identified and segregated funding for Developmental Support of Aegis BMD specific elements resident aboard Aegis capable Navy ships. Computer Program Support consists of, but is not limited to, reviews of Technical Observation Reports (TORs) that are generated by ship crews during exercises or deployments, determination of root causes and preparation of Computer Program Change Request (CPCR) to correct TORs, updates to the in-service computer program to apply, test and certify multiple CPCRs, and tests installation of Aegis Weapon System (AN/SPY-radar/Fire Control Section (FCS)) alignment updates as required. Aegis BMD provides support to Annual Integration Events (AIEs) to ensure any updated Aegis Combat System (ACS) computer programs do not degrade BMD equipped ships and provides distance and technical support for BMD equipped ships. Additionally, Aegis BMD continues to analyze the Ballistic Missile Defense System (BMDS) elements to ensure that any and all interoperability impacts are captured and resolved to eliminate any impact to the warfighter. Aegis continues to work with Program Executive Office (PEO) Integrated Warfare Systems (IWS) and PEO Command, Control, Communications, Computers, & Intelligence (C4I), Aegis' Navy counterparts, in order to maintain common C4I top level requirements for all Aegis BMD Baselines.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Fleet Integration	0.000	6.132	6.552
<b>Articles:</b>	-	-	-
<b>Description:</b> Provide Fleet operations and mission support to enable the conduct of sustained BMD operations; advocate war fighter requirements and fleet feedback in baseline development and capability upgrades to Aegis BMD weapon system; provide analysis and Mission Planning support for Geographic Combatant Commanders for operational application of Maritime BMD capabilities; and provide BMD Capabilities Analysis and Exercise Support for Aegis BMD baselines under development or currently employed in the Operational Fleet.			
<b>FY 2015 Accomplishments:</b> N/A			
<b>FY 2016 Plans:</b> Beginning in FY 2016, transferred from Project MD09, Fleet Integration - Provide In-service Engineering support to Aegis Ballistic Missile Defense (BMD) ships and resolve any identified issues.			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
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<ul style="list-style-type: none"> <li>- Provide leadership, engineering, and technical support to conduct Aegis BMD Combat System Readiness to resolve any identified issues.</li> <li>- Respond to Fleet training, analysis, and operational integration of maritime capabilities as part of Aegis BMD installations, BMD operations and BMD events and resolve any interoperability issues.</li> <li>- Provide reach back analytical support to the Combatant Commanders (COCOMs) for real world operations and resolve any readiness issues Aegis BMD ships might encounter.</li> <li>- Provide maintenance and updates for Force on Force Modeling and Simulation to ensure accurate characterization of capability is provided to the warfighter community.</li> <li>- Prepare and coordinate training documents for new BMD baselines to ensure that operators are provided current BMD baseline material for training.</li> <li>- Provide BMD specific training to BMD ships, COCOM, and Fleet Staffs to ensure full interoperability between Aegis BMD ships and Fleet staffs.</li> </ul> <p><b>FY 2017 Plans:</b> Increase from FY 2016 to FY 2017 is due to transition of responsibility for Aegis Scenario Development System to Fleet Integration from Aegis BMD Weapon System Support. This system enables Aegis BMD shipboard training for developmental Aegis BMD baselines.</p> <ul style="list-style-type: none"> <li>- Research and define certification and warfighter acceptance requirements for Aegis BMD baselines to ensure successful capability transition to warfighter and baseline acceptance into MDA Operational Capacity Baseline (OCB)</li> <li>- Execute Aegis BMD capabilities analysis for Combatant Commanders and Fleet staffs</li> <li>- Define, develop and review Joint and Fleet Doctrine for incorporation of Aegis BMD capability</li> <li>- Develop Aegis BMD training simulations and scenarios to support shipboard training for developmental Aegis BMD baselines, including BMD Qualifications(BMDQ) and higher level exercises</li> <li>- Develop and execute warfighter feedback process to enhance Aegis BMD functional capability development and influence future Aegis BMD requirements</li> <li>- Support MDA Test Community and Combatant Commanders in BMD Exercises and Wargames using Extended Air Defense Simulation(EADSim), a portable simulation of Aegis BMD capability</li> </ul>			
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<p><b>Title:</b> Infrastructure Upgrades</p> <p><b>Description:</b> Special Access Program (SAP) infrastructure labor to include Contractor Program Security Officers, Information Assurance Officers, and System Administrators that will oversee the data transfer efforts. Funds IT services in support of the Aegis RDT&amp;E mission. This includes: IT help-desk services; portal and data services; records management; business automation services; and desktop and Special Purpose Processing Nodes (SPPNs) maintenance and licenses. In addition,</p>	<p><b>Articles:</b></p> <p>1.877</p> <p>-</p>	<p>18.658</p> <p>-</p>	<p>20.439</p> <p>-</p>
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
funds will be used to replace critical IT infrastructure at end-of-life and to implement DoD mandated projects in support of the Joint Information Environment (JIE) initiative.				
<p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Began transfer of necessary data between collateral and SAP environments to comply with Federal and DoD mandates (Cybersecurity and Joint Information Environment)</li> <li>- Coordinated configuration and data management to ensure Modeling and Simulation (M&amp;S) and software builds are identical in collateral and SAP environment</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Increase from FY 2015 to FY 2016 is attributed to new security efforts as directed by the Security Classification Guide (SCG) and the consolidation and realignment of funds from MD09, MD40 and MT09 for IT services in support of the Aegis RDT&amp;E mission.</p> <ul style="list-style-type: none"> <li>- Transfer necessary data between collateral and SAP environments to comply with Federal and DoD mandates (Cybersecurity and Joint Information Environment)</li> <li>- Configuration and data management to ensure Modeling and Simulation (M&amp;S) and software builds are identical in collateral and SAP environment</li> <li>- Fund Aegis IT services such as IT help-desk services; portal and data services; records management; business automation services; and desktop and SPPN maintenance and licenses.</li> <li>- Fund critical end-of-life IT equipment replacements</li> <li>- Fund IT infrastructure upgrade planning and implementation efforts to accomplish DoD mandated IT projects (JIE and DoD CIO Information Resources Management (IRM) initiatives)</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>Increase from FY 2016 to FY 2017 is attributed to additional security efforts as directed by the Security Classification Guide (SCG)</p> <ul style="list-style-type: none"> <li>- Transfer necessary data between collateral and SAP environments to comply with Federal and DoD mandates (Cybersecurity and Joint Information Environment)</li> <li>- Configuration and data management to ensure Modeling and Simulation (M&amp;S) and software builds are identical in collateral and SAP environment</li> <li>- Fund Aegis IT services such as IT help-desk services; portal and data services; records management; business automation services; and desktop and SPPN maintenance and licenses.</li> <li>- Fund critical end-of-life IT equipment replacements</li> <li>- Fund IT infrastructure upgrade planning and implementation efforts to accomplish DoD mandated IT projects (JIE and DoD CIO IRM initiatives)</li> </ul>				
<b>Title:</b> Aegis Ballistic Weapon System Support		30.139	48.328	41.292

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p align="right"><i>Articles:</i></p> <p><b>Description:</b> This project provides Command, Control, Computer, Communications and Intelligence (C4I) systems engineering for the development and fielding of Aegis Ballistic Missile Defense (BMD) communications systems which includes Aegis BMD and BMDS interoperability, integration of space and joint sensors systems with Aegis BMD and Aegis BMD baseline certifications; Integrated Air and Missile Defense (IAMD) planning; and maintaining Top Level Requirements (TLR) between the Missile Defense Agency and the Navy. It also provides Aegis BMD Mission and Quality Assurance, supporting assessment of flight test readiness and ensuring identification of root causes of failures/non conformances and sufficiency of corrective actions.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Provided Sustainment of Standard Missile-3 (SM-3) to include recertification, transportation, integrated logistics support, VLS Canister support, quality and reliability, minor repairs, and surveillance.</li> <li>- Provided In-service Engineering support to Aegis BMD configured ships and sites</li> <li>- Provided engineering/technical support necessary to achieve Aegis BMD Combat System Readiness</li> <li>- Provided assistance/engineering support to resolve Fleet issues related to casualties on Aegis BMD hardware/software</li> <li>- Provided reach back analytical support to the Fleets/COCOMs for real world operations</li> <li>- Provided software/hardware maintenance updates to Aegis BMD ships/sites</li> <li>- Provided BMD specific training to BMD ships, COCOM/Fleet Staffs, and Regional Maintenance Centers</li> <li>- Developed, certified, fielded BMD 4.0.3 which corrected software errors and incorporated Discrimination Improvements for Homeland Defense</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Increase from FY 2015 to FY 2016 attributed to funding for Computer Program Development Support efforts previously transferred from Project MX09, Aegis BMD Operations and Support</p> <ul style="list-style-type: none"> <li>- Conduct Command, Control, Computer, Communications and Intelligence (C4I) systems engineering for the development of Aegis BMD requirements, analysis of development efforts by other BMDS element for potential Aegis BMD interoperability issues, and resolve any identified interoperability problems</li> <li>- Implement C4I systems for operational deployment by Aegis BMD ships and elements</li> <li>- Maintain C4I Top Level Requirements (TLRs) for development of systems supporting command and control, and communications equipment between Navy and MDA Program Executive Offices</li> <li>- Certify Deterministic Routing for Aegis Ashore and Aegis BMD ships, including development of Concepts of Operation (CONOPS), and Tactics for use of this capability, and deployment of operational assets</li> <li>- Conduct Navy and Joint Link certifications required for BMD Baseline certifications for operational deployment</li> <li>- Certify overhead satellite data sources to meet Aegis BMD fire control capabilities in support of dual path requirement in Aegis BMD 5.1</li> </ul>	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Develop and implement collaborative Integrated Air and Missile Defense (IAMD) planning tools for ensuring effective Strategic Homeland, Regional, and Theater Aegis BMD employment</li> <li>- Implement and manage C4I aspects of the BMDS Test Site (BTS) San Diego upgrade plan to maintain fleet representative C4I configurations to support testing, troubleshooting, and Fleet operations</li> <li>- Conduct Mission and Quality Assurance (QA) reviews for failures and non-conformance for the SM-3 Block IIA</li> <li>- Support all phases of computer program baseline functionality by providing engineering development testing, certification testing, and special testing</li> <li>- Perform system troubleshooting and maintenance as required for Aegis BMD related systems</li> <li>- Provide preventative and corrective maintenance services and upgrades in support of Aegis BMD systems and associated support systems</li> <li>- Support the fielded Aegis BMD computer programs baselines approved as an Operational Capability Baseline</li> <li>- Provide engineering support to Operationally Capable Baseline ships that participate in BMD test events</li> <li>- Conduct test event analysis to investigate Technical Observation Reports (TORs) and BMD Deficiency Reports (BDRs) in order to provide an engineering solution for impacts to Aegis BMD capabilities</li> <li>- Develop Computer Program Change Requests (CPCRs) and determine appropriate baseline for insertion</li> <li>- Monitor and address Fleet feedback concerns raised during waterfront technical exchanges and ship visits</li> <li>- Update threat adaptation data to keep pace with emergent threats</li> <li>- Provide support for contingency operations of National interest</li> </ul> <p><b>FY 2017 Plans:</b> Decrease in funding from FY 2016 to FY 2017 is due to: -Completion of Operational Testing for BMD 3.6 and BMD 4.0 transferred computer program sustainment activities for these baselines to Operations &amp; Maintenance appropriation</p> <p>FY 2017 requirement supports: - Prior to completion of operational testing, sustain Aegis BMD computer program baseline variants of Baseline 9 Common Source Library (CSL) - Provide one Baseline 9 maintenance build - Sustain the Beowulf classified computing infrastructure - Sustain the Automated Test and Analysis (ATA) / Automated Test and Retest (ATRT) tool - Provide test site usage for maintenance and support of baselines under development - Provide C4I Systems Engineering for the development of requirements, analysis of BMDS elements, and interoperability - Certify Deterministic Routing of Aegis Ashore and Aegis BMD including Concepts of Operations(CONOPS)/Tactics, Techniques, and Procedures (TTP) - Implement and certify BMD capabilities in C4I systems</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Conduct Navy and Joint Link certifications required for BMD baseline certifications</li> <li>- Certify Overhead Persistent Infrared (OPIR) for dual path requirement in BMD 5.1</li> <li>- Develop and implement IAMD planning capabilities and BMD collaborative planning concepts</li> <li>- Provide FFRDC) and URDC evaluation of technical proposals and proposed technical solutions by small industry business partners; Provide feasibility analysis of proposed solutions and testing of hardware prototypes</li> <li>- Facilitate preliminary integration efforts to incorporate Space Based Infrared Systems (SBIRS) and Future Naval Capability (FNC) projects into Aegis BMD architecture</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	32.016	73.118	68.283

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0604878C: Aegis BMD Test	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604880C: Land Based SM-3 (LBSM3)	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
• 0604881C: AEGIS SM-3 Block IIA Co-Development	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961

**Remarks**

**D. Acquisition Strategy**

The Aegis Ballistic Missile Defense (BMD) element acquisition approach supports evolutionary development, continuously building upon demonstrated capabilities to advance overall Ballistic Missile Defense System (BMDS) capability. After considering all the technical and management aspects of the program and to meet the requirements presented by an evolving ballistic missile threat, the Aegis BMD program awarded sole source contracts to Raytheon and Lockheed Martin to continue development of the Standard Missile-3 (SM-3) and the Aegis BMD Weapon System, respectively.

Competition will be maximized for purchase of any products or services as appropriate.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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			
Fleet Integration - MX09 - Fleet APL	C/CPAF	JHU/APL/MD : Columbia, MD	0.000	0.000		1.342	Nov 2015	1.681	Nov 2016	-		1.681	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet DD	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		2.913	Nov 2015	2.863	Nov 2016	-		2.863	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet PHD	MIPR	NSWC PHD : Port Huenmene	0.000	0.000		0.432	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet SMDC	MIPR	SMDC/ARSTRST : Huntsville, AL	0.000	0.000		0.369	Nov 2015	0.529	Nov 2016	-		0.529	Continuing	Continuing	Continuing
Fleet Integration - MX09 - Fleet CSCS	MIPR	CSCS : Dahlgren, VA	0.000	0.000		1.076	Nov 2015	1.479	Nov 2016	-		1.479	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - ICT Funding	SS/CPAF	Northrop Grumman : AL,CA,CO,NM,VA,HI	0.000	0.000		11.832	Oct 2015	9.771	Oct 2016	-		9.771	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S APL	SS/CPAF	JHU/APL : Laurel, MD	0.000	0.000		0.400	Nov 2015	0.650	Nov 2016	-		0.650	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S Corona	MIPR	NSWC Corona : Corona, CA	0.000	0.000		0.630	Nov 2015	1.000	Nov 2016	-		1.000	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S LM	C/CPAF	Lockheed Martin : Moorestown, NJ	0.000	0.928		1.296	Nov 2015	2.410	Nov 2016	-		2.410	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S MIT	C/CPAF	MIT : Lexington, MA	0.000	0.000		0.120	Nov 2015	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S RMS	C/CPAF	Raytheon : Tucson, AZ	0.000	0.000		3.720	Nov 2015	2.100	Nov 2016	-		2.100	Continuing	Continuing	Continuing
Infrastructure Upgrades - MX09 - S DD	MIPR	NSWC DD : Dahlgren, VA	0.000	0.949		0.660	Nov 2015	0.710	Nov 2016	-		0.710	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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<b>Support (\$ in Millions)</b>				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
Infrastructure Upgrades - MX09- TD SPAWAR	MIPR	SPAWAR : CA	0.000	0.000		0.000		3.598	Jan 2017	-		3.598	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW APL	SS/CPFF	JHU/APL : Columbia, MD	0.000	2.890		0.900	Nov 2015	0.945	Nov 2016	-		0.945	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW DD	MIPR	NSWC DD : Dahlgren, VA	0.000	8.991		5.000	Nov 2015	3.156	Nov 2016	-		3.156	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW LM	C/CPFF	Lockheed Martin : Moorestown, NJ	0.000	10.740		12.000	Nov 2015	8.856	Nov 2016	-		8.856	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW NAVSEA	MIPR	NAVSEA : Washington, DC	0.000	0.863		17.038	Nov 2015	17.953	Nov 2016	-		17.953	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW SSCPAC	MIPR	SPAWAR : San Diego, CA	0.000	0.000		2.390	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW TECH REP	MIPR	Tech Rep : Moorestown, NJ	0.000	0.000		0.600	Nov 2015	0.345	Nov 2016	-		0.345	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW Wallops	MIPR	SCSC : Wallops Island, VA	0.000	0.000		2.000	Nov 2015	0.299	Nov 2016	-		0.299	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - D	MIPR	MDA : Arlington, VA	0.000	0.000		1.037	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - IH	MIPR	NSWC Indian Head : MD	0.000	0.249		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - Raytheon	SS/CPAF	Raytheon : AZ	0.000	5.644		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD Corona	MIPR	NSWC Corona : Corona, CA	0.000	0.762		0.240	Nov 2015	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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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<b>Support (\$ in Millions)</b>				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			
Aegis Ballistic Weapon System Support - MX09 - TD JHU/APL	SS/CPFF	JHU/APL : Columbia, MD	0.000	0.000		0.750	Nov 2015	0.906		-		0.906	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD MITRE	MIPR	CECOM - MITRE : Dahlgren, VA	0.000	0.000		0.900	Nov 2015	1.328		-		1.328	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD NSWC DD	MIPR	NSWC DD : Dahlgren, VA	0.000	0.000		0.820	Nov 2015	1.110		-		1.110	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD PHD	MIPR	NSWC PHD : Port Hueneme, CA	0.000	0.000		0.250	Nov 2015	0.319		-		0.319	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - TD SSCPAC	MIPR	SPAWAR : San Diego, CA	0.000	0.000		3.903	Nov 2015	5.388		-		5.388	Continuing	Continuing	Continuing
Aegis Ballistic Weapon System Support - MX09 - AW PHD	MIPR	NSWC PHD : Port Hueneme, CA	0.000	0.000		0.500	Nov 2015	0.687	Nov 2016	-		0.687	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	32.016		73.118		68.283		-		68.283	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	0.000	32.016	73.118	68.283	-	68.283	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support
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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
MX09 Aegis BMD Development Support																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MX09 / Aegis BMD Development Support

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MX09 Aegis BMD Development Support	1	2016	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD				<b>Project (Number/Name)</b> MD40 / Program-Wide Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	136.633	59.163	37.094	43.876	-	43.876	40.899	35.763	30.610	28.116	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of decreases in BMD Aegis and in FY 2017, reflects a proportional change as a result of increases in BMD Aegis.

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

**A. Mission Description and Budget Item Justification**

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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	59.163	37.094	43.876
<b>Articles:</b>	-	-	-
<b>Description:</b> See description below			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	59.163	37.094	43.876

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

NA

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, CO, CA, VA, AK	0.000	0.174		0.000		1.220	Jan 2017	-		1.220	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	0.108	1.245		0.000		0.876	Jul 2017	-		0.876	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations User Services	C/CPAF	Various/Multi: AL, CA, CO, : NM, VA, various	0.000	0.623		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries	Allot	MDA : Multi: AK, AL, CO, CA, VA	95.790	38.391		33.229	Nov 2015	36.828	Nov 2016	-		36.828	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/AL/CA/CO/HI/MD/VA/NJ/NY/OCONUS	18.017	12.962		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	21.661	4.645		3.621	Nov 2015	4.705	Aug 2017	-		4.705	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and materiel and Readiness	MIPR	Naval Surface Warfare Center : AL, VA	0.000	1.123		0.244	Mar 2016	0.247	Mar 2017	-		0.247	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	MIPR	Various : Multi: AL, CA, CO, VA	1.057	0.000		0.000		0.000		-		0.000	1.615	2.672	0
<b>Subtotal</b>			136.633	59.163		37.094		43.876		-		43.876	-	-	-

**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
<b>Project Cost Totals</b>	136.633	59.163	37.094	43.876	-	43.876	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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<b>Remarks</b> N/A									
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**Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603892C / AEGIS BMD	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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Schedule Details

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

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</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	708.951	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
MD12: <i>Space Tracking and Surveillance System (STSS)</i>	703.345	27.716	27.214	30.751	-	30.751	32.228	33.111	34.344	34.879	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	5.606	1.814	1.391	1.378	-	1.378	1.641	1.773	1.859	1.942	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

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

**A. Mission Description and Budget Item Justification**

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

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

Early missile tracking capability from space provides a cost effective and operationally suitable means of providing global persistent surveillance and engagement, directly addressing the number one missile defense priority need for Combatant Commanders. STSS will emphasize continued research and development to address the more sophisticated threats the Agency expects in the far term by demonstrating technologies that support development and capability delivery of future MDA space-layer options. The STSS satellites demonstrate the ability of a space sensor to provide high precision, real time tracking of missiles and midcourse objects, thus enabling simultaneous regional, theater, and strategic missile defense systems to be cued to track well beyond their organic detection capability. Data from on-going STSS testing has validated the ability to track cold, midcourse objects from space and close the fire control loop with BMDS interceptors. During several MDA flight tests, STSS has provided real-time data that met the Aegis Ballistic Missile Defense Systems' Quality of Service requirements for "Remote Engagement Authorized." Finally, STSS demonstrates the benefit of future MDA space-layer capabilities that, when combined with radars, will provide robust tracking and discrimination capabilities against current and advanced countermeasures.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>
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MDA developed and is using two STSS satellites to demonstrate key functions of space sensors to reduce risk for future BMDS space-layer options. STSS testing is funded as part of a capabilities development program and reflected in the Program Element submission. The wealth of data and lessons learned from the STSS satellites efforts continue to provide insights as MDA pursues longer term space sensor needs.

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

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

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

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

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> / BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>
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**Change Summary Explanation**

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

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

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>				<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD12: <i>Space Tracking and Surveillance System (STSS)</i>	703.345	27.716	27.214	30.751	-	30.751	32.228	33.111	34.344	34.879	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

Space Tracking and Surveillance System (STSS) satellites provide on-orbit assets with visible and infrared sensors in low earth orbit for testing with other BMDS elements, with a goal to demonstrate space-based capabilities including persistent tracking and integrated BMDS discrimination improvements. These two satellites provide valuable risk reduction for threat object acquisition, tracking, and discrimination functionality to include stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. The program is demonstrating the functions and interfaces required for space data delivery to the BMDS, validating the data quality necessary for interceptors to launch and/or engage on STSS sensor data. The two satellites are operated from the ground station processing center at the Missile Defense Space Center (MDSC) by a government and contractor team. The STSS satellites demonstrate MDA space-layer capabilities and reduce risk for future systems by viewing high-value Targets of Opportunity and participating in BMDS flight tests in FY 2015 and beyond.

On-orbit sensors collect invaluable background, scene and target signatures to support future MDA space-layer and other weapon sensor development trade studies. STSS activities provide information for integration of space-based missile tracking (midcourse phase); remote sensor and weapons cueing via the C2BMC; features and discrimination; and hit/impact point assessments. STSS enables early capability assessment to address the Warfighter's need for highly available early missile tracking from space, providing an operationally suitable means of global persistent surveillance and engagement. Capabilities being assessed for future MDA space-layer capabilities include detecting and acquiring ballistic missiles; tracking ballistic missiles and their deployed objects; performing autonomous acquisition-to-track handover within a satellite; performing tracking handover to a satellite from a ground cue; performing uplink and downlink of mission, health, and status data both directly and via crosslink between two satellites; reporting ballistic missile and intercept event to close the fire-control loop; filtering reports to C2BMC; and providing near real-time object data to external users.

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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discrimination, kill and impact point assessments into the BMDS and other non-MDA mission areas, including Space Situational Awareness, technical intelligence, and battle space characterization. This effort is a continuation of work previously performed in program element 0603895C that supported the STSS program.

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

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

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Demonstration Satellites</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Space Tracking and Surveillance System (STSS) demonstration satellites collect and deliver critical space and missile characterization data used to design and inform the BMDS and space-layer future capabilities. Also funded are the facilities and activities required for safe STSS satellite operations and sustainment at the Missile Defense Space Center (MDSC). The two STSS satellites have operated past six years on orbit, exceeding the four year design life and continue to be viable MDA space assets.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Executed 8400 collections in support of the Missile Defense, Space Situational Awareness, Technical Intelligence and Battlespace Awareness missions</li> <li>- Operated 24 hours a day/7 days a week with 99% availability</li> <li>- Collected data of the most complex scene to date during FTX-20 test event (Oct 2014)</li> <li>- Participated in multiple Air Force Global Strike Command Glory Trip events</li> <li>- Completed collects for Air Force Space Command's (AFSPC) Operational Assessment Panel allowing STSS data to support an AFSPC mission area</li> <li>- Completed Earth Limb Polar Vortex collections</li> </ul>	26.068	27.214	30.751
	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Collection of scientific data for refinement of BMDS-relevant models, demonstration and trade space determination for a potential follow-on BMDS space layer</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Perform risk reduction for future MDA tracking and surveillance initiatives and Overhead Persistent Infra-red (OPIR) Enterprise integration and demonstrations across OPIR cueing, Joint Tasking Operations, and data utility</li> <li>- Conduct STSS demonstration satellites data collections to support joint OPIR mission utility assessments across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities</li> <li>- Continue STSS participation in the Integrated Master Test Plan events</li> <li>- Demonstrate STSS providing precision tracking, cues, and discrimination support to future versions of C2BMC and BMDS weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures</li> <li>- Conduct testing with the STSS satellites to continue to demonstrate critical space capabilities that may include:               <ul style="list-style-type: none"> <li>-- Ability to support BMDS integrated discrimination efforts</li> <li>-- Engage on STSS against lethal object</li> <li>-- Launch on/Engage on using STSS against multiple targets</li> <li>-- Launch on/Engage on using STSS against a raid</li> <li>-- Ability to support Hit/Kill assessment from space</li> <li>-- Ability to cue BMDS sensors from space</li> <li>-- Ability to integrate space into emerging fire control loops</li> <li>-- Ability to provide precision cue to BMDS sensors</li> </ul> </li> <li>- Perform satellite functionality testing and calibration as part of the satellite operations</li> <li>- Conduct missile tracking experiments as identified in the test specific sections</li> <li>- Provide Air Force Space Command Space Situational Awareness support</li> <li>- MDSC efforts related to STSS include               <ul style="list-style-type: none"> <li>-- Support Hardware-in-the Loop (HWIL) Engage-On STSS satellites tests and fulfill Overhead Persistent Infrared (OPIR) requests for STSS data based on satellite availability</li> <li>-- Conduct analysis of space radiation environment and its influence on MDA space system performance</li> <li>-- Conduct analysis of space based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid future tracking and discrimination architectures</li> <li>-- Support concept studies and analysis for alternative sensor payload configurations (e.g. hosted payloads)</li> <li>-- Sustain MDSC resources for all participant activities to include, but not be limited to, data, voice, and/or video communications, to include support to MDA Cyber Security directives</li> </ul> </li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-- Document the requirements definition and perform tracking, design, implementation, and verification necessary for the MDSC facility</p> <p>- Implement emerging cyber security requirements</p> <p><b>FY 2017 Plans:</b> Increase from FY 2016 to FY 2017 is due to the following:</p> <ul style="list-style-type: none"> <li>- Planned critical equipment replacements and service level agreements</li> <li>- STSS ground system is aging necessitating more complex methods to implement current cyber security requirements</li> <li>- Test and Analysis and Configuration Management efforts were significantly reduced to meet FY 2016 funding constraints. FY 2017 funding request restores this effort to pre-FY 2016 levels to pace the required workload.</li> <li>- FY 2017 planned testing entails more major test events than FY 2016. These tests also have higher complexity than events planned in FY2016 requiring more pre-test planning and post-test data analysis.</li> <li>- Perform risk reduction for future MDA tracking and surveillance initiatives and Overhead Persistent Infra-red (OPIR) Enterprise integration and demonstrations across OPIR cueing, Joint Tasking Operations, and data utility</li> <li>- Conduct Space Tracking and Surveillance System (STSS) demonstration satellites data collections to support joint OPIR mission utility assessments across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities</li> <li>- Continue STSS participation in the Integrated Master Test Plan events</li> <li>- Demonstrate STSS providing precision tracking, cues, and discrimination support to future versions of C2BMC and BMDS weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures</li> <li>- Continue demonstration of critical space capabilities, including:               <ul style="list-style-type: none"> <li>-- Ability to support BMDS integrated discrimination for Homeland Defense</li> <li>-- Engage on STSS against lethal object</li> <li>-- Launch on/Engage on using STSS against multiple targets</li> <li>-- Launch on/Engage on using STSS against a raid</li> <li>-- Ability to support hit assessment from space</li> <li>-- Ability to cue BMDS sensors from space</li> <li>-- Demonstrate precision cue to BMDS sensors</li> </ul> </li> <li>- Perform satellite functionality testing and calibration as part of satellite operations</li> <li>- MDSC efforts related to STSS include               <ul style="list-style-type: none"> <li>-- Conduct missile tracking experiments as identified in the test specific sections</li> <li>-- Provide Air Force Space Command Space Situational Awareness support</li> </ul> </li> </ul>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-- Support Hardware-in-the Loop (HWIL) Engage-On STSS satellites tests and fulfill Overhead Persistent Infrared (OPIR) requests for STSS data based on satellite availability</p> <p>-- Conduct analysis of space radiation environment and its influence on MDA space system performance</p> <p>-- Conduct analysis of space based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid future tracking and discrimination architectures</p> <p>-- Support concept studies and analysis for alternative sensor payload configurations (e.g. hosted payloads)</p> <p>-- Sustain MDSC resources for all participant activities to include, but not be limited to, data, voice, and/or video communications, to include support to MDA Cyber Security directives</p> <p>-- Document the requirements definition and perform tracking, design, implementation, and verification necessary for the MDSC facility</p> <p>-- Implement emerging cyber security requirements</p>				
<p><b>Title:</b> BMDS Level Testing</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Space Tracking and Surveillance System (STSS) demonstration satellites participate in the BMDS Integrated Master Test Plan (IMTP) events to verify, validate, and accredit modeling and simulation representations used for assessing system performance and prove the capability of space based sensors contributions to the BMDS mission.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Conducted risk reduction for future MDA space-layer to include OPIR Enterprise integration and demonstrations across OPIR cuing, Joint Tasking Operations, and data utility</li> <li>- Conducted STSS data collections to support joint OPIR mission utility assessments across Space Situation Awareness, Battle Space Awareness, and Technical Intelligence missions to include integration, analysis, and studies to confirm data sharing capabilities</li> <li>- Demonstrated STSS providing precision tracking, cues, and discrimination support to future versions of C2BMC and BMDS weapon systems (sensors and shooters) to evaluate performance, Concept of Operations, and Tactics, Techniques, and Procedures.</li> <li>- Supported STSS participation in the Integrated Master Test Plan is described in the R4</li> </ul> <p><b>FY 2016 Plans:</b> Beginning in FY 2016, the BMDS Level Testing effort is captured in the Demonstration Satellites accomplishment. This effort is now fully integrated and un-severable from standard satellite operations performed by the prime contractor. Funding will also go towards emerging cyber security requirements.</p> <p><b>FY 2017 Plans:</b></p>		0.978 -	0.000 -	0.000 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>

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

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
<i>Control, Battle Management &amp; Communication</i>											
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>											
• 0603914C: <i>Ballistic Missile Defense Test</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The Space Tracking and Surveillance System (STSS) demonstration satellites program follows MDAs capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS effort utilizes a single prime contractor, Northrop Grumman Aerospace Systems (NGAS), formerly known as Northrop Grumman Space Technology (NGST), with the subcontractor Raytheon providing the sensor payload. This contract implements MDA's capability-based acquisition strategy by using existing satellite hardware as a low risk opportunity, building upon the lessons learned from previous development efforts, and establishing a series of planned enhancements to bring added capability to the BMDS.

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

**E. Performance Metrics**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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<b>Product Development (\$ in Millions)</b>				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			
Demonstration Satellites - Capability Based R&D	SS/CPAF	NGAS : Redondo Beach, CA, Schriever AFB, CO	550.548	18.578		17.095	Oct 2015	19.101	Oct 2016	-		19.101	Continuing	Continuing	Continuing
Demonstration Satellites - STSS Support to Missile Defense Space Center (MDSC)	SS/CPAF	NGIS : Schriever AFB, CO	17.376	1.212		3.039	Oct 2015	3.763	Nov 2016	-		3.763	Continuing	Continuing	Continuing
Demonstration Satellites - Systems Engineering	FFRDC	Aerospace : Los Angeles CA, Schriever AFB CO	51.583	0.693		0.357	Oct 2015	0.263	Nov 2016	-		0.263	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) - Prime Contract	SS/CPAF	Orbital Sciences Corporation : AZ	1.690	0.147		0.000		0.000		-		0.000	0	1.837	1.837
Near Field Infrared Experiment (NFIRE) - Various	C/Various	Various : Various	1.935	0.523		0.000		0.000		-		0.000	0	2.458	2.458
<b>Subtotal</b>			623.132	21.153		20.491		23.127		-		23.127	-	-	-

**Remarks**

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

<b>Support (\$ in Millions)</b>				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			
Demonstration Satellites - Contract Support Services (CSS)	C/Various	MDA : AL, CO	16.941	2.262		2.897	Oct 2015	3.106	Nov 2016	-		3.106	Continuing	Continuing	Continuing
Demonstration Satellites - IT User Services	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.551		0.506	Oct 2015	0.439	Oct 2016	-		0.439	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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<b>Support (\$ in Millions)</b>				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			
Demonstration Satellites - MDA Civilian	Allot	MDA : Schriever AFB, CO	9.228	1.557		2.410	Oct 2015	3.146	Oct 2016	-		3.146	Continuing	Continuing	Continuing
Demonstration Satellites - Other Government Agency (OGA) Civilian	MIPR	SMC : Schriever AFB, CO	11.095	0.451		0.315	Oct 2015	0.316	Oct 2016	-		0.316	Continuing	Continuing	Continuing
Demonstration Satellites - Program Mission Support	Various	Various : Various	21.666	0.399		0.229	Oct 2015	0.250	Oct 2016	-		0.250	Continuing	Continuing	Continuing
Demonstration Satellites - UARC	C/CPFF	Utah University, Space Dynamics Laboratory : AL, AK, CA, CO, HI, MA, UT, VA	0.000	0.365		0.366	Nov 2015	0.367	Nov 2016	-		0.367	Continuing	Continuing	Continuing
<b>Subtotal</b>			58.930	5.585		6.723		7.624		-		7.624	-	-	-

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

<b>Test and Evaluation (\$ in Millions)</b>				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			
BMDS Level Testing - BMDS Integration-Test Engineering and Resources	SS/CPAF	NGAS : Redondo Beach, CA	21.283	0.978		0.000		0.000		-		0.000	0	22.261	0
<b>Subtotal</b>			21.283	0.978		0.000		0.000		-		0.000	0.000	22.261	0.000

**Remarks**  
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.  
  
Effort will continue in Demonstration Satellites accomplishment beginning in FY 2016

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	703.345	27.716	27.214	30.751	-	30.751	-	-	-

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

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

Significant Event Complete ▲    Milestone Decision Complete ★    Element Test Complete ◆    System Level Test Complete ●    Complete Activity Planned Activity ✦  
 Significant Event Planned △    Milestone Decision Planned ☆    Element Test Planned ◇    System Level Test Planned ○

	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		
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	▲																													
FTX-20 (AEGIS 5.0, Target Only Flight Test)	▲																													
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	✦	✦	✦	✦																										
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015		▲																												
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015			▲																											
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015				▲																										
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2016				▲																										
STSS Demonstration Satellites On-Orbit Operations - 1Q2016-4Q2016				✦	✦	✦	✦																							
MIS Operations - 1Q2016-4Q2016				✦	✦	✦	✦																							
Mission Planning, Tasking and Analysis - 1Q2016-4Q2016				✦	✦	✦	✦																							
MDSC TIL Operations - 1Q2016-4Q2016				✦	✦	✦	✦																							
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2016				△																										
GM CTV-02 Plus (GM, Intercept Flight Test)				△																										
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016					△																									
FTX-21 (AEGIS SBT, Target Only Flight Test)					✦																									
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016						△																								
SFTM-01 (AEGIS 5.1, Intercept Flight Test)						△																								
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017							△																							
FTG-15 (GM, Intercept Flight Test)							△																							
FTM-27 (AEGIS SBT, Intercept Flight Test)							△																							
STSS Demonstration Satellites On-Orbit Operations - 1Q2017-4Q2017							✦	✦	✦	✦																				



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

Significant Event Complete ▲    Milestone Decision Complete ★    Element Test Complete ◆    System Level Test Complete ●    Complete Activity Planned Activity ✦  
 Significant Event Planned △    Milestone Decision Planned ☆    Element Test Planned ◇    System Level Test Planned ○

	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
MIS Operations - 1Q2017-4Q2017																												
Mission Planning, Tasking and Analysis - 1Q2017-4Q2017								✦	✦	✦	✦																	
MDSC TIL Operations - 1Q2017-4Q2017								✦	✦	✦	✦																	
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017								△																				
FTT-15 (TH, Intercept Flight Test)								△																				
SFTM-02 (AEGIS 5.1, Intercept Flight Test)								△																				
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2017									△																			
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2017										△																		
FTX-24 (AEGIS SBT, Target Only Flight Test)										△																		
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018											△																	
FTM-29 (AEGIS 5.1, Intercept Flight Test)											△																	
STSS Demonstration Satellites On-Orbit Operations - 1Q2018-4Q2018											✦	✦	✦	✦														
MIS Operations - 1Q2018-4Q2018											✦	✦	✦	✦														
Mission Planning, Tasking and Analysis - 1Q2018-4Q2018											✦	✦	✦	✦														
MDSC TIL Operations - 1Q2018-4Q2018											✦	✦	✦	✦														
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2018												△																
FTG-11 (IOT&E) (GM, Intercept Flight Test)											△																	
STSS Demonstration Satellites-BMDS Flight Tests/Target of Opportunity - 3Q2018												△																
FTM-28 (AEGIS SBT, Intercept Flight Test)												△																
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2018													△															
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2019														△														
FTM-31 (AEGIS SBT, Intercept Flight Test)														△														
STSS Demonstration Satellites On-Orbit Operations - 1Q2019-4Q2019															✦	✦	✦	✦										

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</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
MIS Operations - 1Q2019-4Q2019																												
Mission Planning, Tasking and Analysis - 1Q2019-4Q2019																✦	✦	✦	✦									
MDSC TIL Operations - 1Q2019-4Q2019																✦	✦	✦	✦									
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2019																△												
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2019																	△											
FTM-32 (AEGIS SBT, Intercept Flight Test)																	△											
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2019																		△										
FTT-19 (TH, Intercept Flight Test)																		△										
FTM-35 (AEGIS 5.1, Intercept Flight Test)																		△										
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2020																			△									
STSS Demonstration Satellites On-Orbit Operations - 1Q2020-4Q2020																				✦	✦	✦	✦					
MIS Operations - 1Q2020-4Q2020																				✦	✦	✦	✦					
Mission Planning, Tasking and Analysis - 1Q2020-4Q2020																				✦	✦	✦	✦					
MDSC TIL Operations - 1Q2020-4Q2020																				✦	✦	✦	✦					
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2020																					△							
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2020																						△						
FTT-16 (TH, Intercept Flight Test)																						△						
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020																							△					
FTM-30 (AEGIS 5.1, Intercept Flight Test)																							△					
STSS Demonstration Satellites On-Orbit Operations - 1Q2021-4Q2021																									✦			
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2021																								△				
MIS Operations - 1Q2021-4Q2021																									✦	✦	✦	✦
Mission Planning, Tasking and Analysis - 1Q2021-4Q2021																									✦	✦	✦	✦

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</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
MDSC TIL Operations - 1Q2021-4Q2021																												
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2021																												
FTX-26 (SN, Target Only Flight Test)																												
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)																												
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2021																												
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2021																												

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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 1Q2015	1	2015	1	2015
FTX-20 (AEGIS 5.0, Target Only Flight Test)	1	2015	1	2015
STSS Demonstration Satellites On-Orbit Operations - 1Q2015-4Q2015	1	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 2Q2015	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 3Q2015	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/TOO- 4Q2015	4	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2016	1	2016	1	2016
STSS Demonstration Satellites On-Orbit Operations - 1Q2016-4Q2016	1	2016	4	2016
MIS Operations - 1Q2016-4Q2016	1	2016	4	2016
Mission Planning, Tasking and Analysis - 1Q2016-4Q2016	1	2016	4	2016
MDSC TIL Operations - 1Q2016-4Q2016	1	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2016	2	2016	2	2016
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2016	3	2016	3	2016
FTX-21 (AEG IS SBT, Target Only Flight Test)	3	2016	3	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2016	4	2016	4	2016
SFTM-01 (AEGIS 5.1, Intercept Flight Test)	4	2016	4	2016
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2017	1	2017	1	2017
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
FTM-27 (AEGIS SBT, Intercept Flight Test)	1	2017	1	2017
STSS Demonstration Satellites On-Orbit Operations - 1Q2017-4Q2017	1	2017	4	2017
MIS Operations - 1Q2017-4Q2017	1	2017	4	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Mission Planning, Tasking and Analysis - 1Q2017-4Q2017	1	2017	4	2017
MDSC TIL Operations - 1Q2017-4Q2017	1	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2017	2	2017	2	2017
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	2	2017	2	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2017	3	2017	3	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2017	4	2017	4	2017
FTX-24 (AEGIS SBT, Target Only Flight Test)	4	2017	4	2017
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2018	1	2018	1	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
STSS Demonstration Satellites On-Orbit Operations - 1Q2018-4Q2018	1	2018	4	2018
MIS Operations - 1Q2018-4Q2018	1	2018	4	2018
Mission Planning, Tasking and Analysis - 1Q2018-4Q2018	1	2018	4	2018
MDSC TIL Operations - 1Q2018-4Q2018	1	2018	4	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2018	2	2018	2	2018
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2018	3	2018	3	2018
FTM-28 (AEGIS SBT, Intercept Flight Test)	3	2018	3	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2018	4	2018	4	2018
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2019	1	2019	1	2019
FTM-31 (AEGIS SBT, Intercept Flight Test)	1	2019	1	2019
STSS Demonstration Satellites On-Orbit Operations - 1Q2019-4Q2019	1	2019	4	2019
MIS Operations - 1Q2019-4Q2019	1	2019	4	2019
Mission Planning, Tasking and Analysis - 1Q2019-4Q2019	1	2019	4	2019
MDSC TIL Operations - 1Q2019-4Q2019	1	2019	4	2019

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD12 / <i>Space Tracking and Surveillance System (STSS)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2019	2	2019	2	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2019	3	2019	3	2019
FTM-32 (AEGIS SBT, Intercept Flight Test)	3	2019	3	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2019	4	2019	4	2019
FTT-19 (TH, Intercept Flight Test)	4	2019	4	2019
FTM-35 (AEGIS 5.1, Intercept Flight Test)	4	2019	4	2019
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2020	1	2020	1	2020
STSS Demonstration Satellites On-Orbit Operations - 1Q2020-4Q2020	1	2020	4	2020
MIS Operations - 1Q2020-4Q2020	1	2020	4	2020
Mission Planning, Tasking and Analysis - 1Q2020-4Q2020	1	2020	4	2020
MDSC TIL Operations - 1Q2020-4Q2020	1	2020	4	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2020	2	2020	2	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2020	3	2020	3	2020
FTT-16 (TH, Intercept Flight Test)	3	2020	3	2020
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2020	4	2020	4	2020
FTM-30 (AEGIS 5. 1, Intercept Flight Test)	4	2020	4	2020
STSS Demonstration Satellites On-Orbit Operations - 1Q2021-4Q2021	1	2021	1	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2021	1	2021	1	2021
MIS Operations - 1Q2021-4Q2021	1	2021	4	2021
Mission Planning, Tasking and Analysis - 1Q2021-4Q2021	1	2021	4	2021
MDSC TIL Operations - 1Q2021-4Q2021	1	2021	4	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2021	2	2021	2	2021
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)	3	2021	3	2021
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2021	3	2021	3	2021

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

Events	Start		End	
	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2021	4	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	5.606	1.814	1.391	1.378	-	1.378	1.641	1.773	1.859	1.942	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes as a result of decreases to the Space Tracking and Surveillance System program. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts and Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	1.814	1.391	1.378
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	1.814	1.391	1.378



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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	C/CPAF	Various : Multi: AL, CA, CO,	0.259	0.128		0.000		0.030	Jul 2017	-		0.030	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Various : Multi: AK/AL/CO/CA/HI/MD/VA/NJ/NY/OCONUS	1.062	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Northrop Grumman : CO	4.285	1.686		1.391	Jan 2016	1.348	Aug 2017	-		1.348	Continuing	Continuing	Continuing
<b>Subtotal</b>			5.606	1.814		1.391		1.378		-		1.378	-	-	-

**Remarks**  
N/A

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

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603893C / <i>Space Tracking and Surveillance System</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</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	46.748	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
MD33: <i>MD Space Exp Center (MDSEC)</i>	46.161	7.191	20.483	19.755	-	19.755	14.911	11.049	11.190	11.360	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	0.587	0.369	1.024	0.935	-	0.935	0.759	0.592	0.606	0.632	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

N/A

**A. Mission Description and Budget Item Justification**

This program element funds the Spacebased Kill Assessment (SKA) project, a Missile Defense Agency (MDA) experiment to demonstrate kill assessment from space. MDA experience with intercept testing on the Aegis BMD program provided solid understanding of the physics of kill assessment.

Several events set the stage for the kill assessment experiment that later became known as SKA:

- Section 237 in the FY 2014 National Defense Authorization Act directed MDA to improve kill assessment for the GMD program with an initial kill assessment capability by December 31, 2019
- An MDA study called the "Space Layer Option Study" found that disaggregated systems could provide sensor capabilities at lower costs
- A once in a decade opportunity became available when the commercial sector offered hosted payload services at costs far below what MDA could expect if it used traditional DOD space acquisition models

One feature of the SKA acquisition plays a crucial role in the execution of the experiment: schedule discipline. Since MDA cannot impact the schedule of the commercial host, maintaining schedule pace is priority #1 on the program. If SKA payloads are delivered late to the commercial host, they miss their opportunity to be launched into space.

SKA incorporates recent Government Accountability Office (GAO) recommendations to examine the operational feasibility of disaggregating large satellites (report number GAO-15-7) and to provide data for the business case for shared or dedicated satellite control, including the ground antenna networks (report number GAO-13-315). The SKA experiment will utilize a network of small IR sensors integrated onto commercial host satellites which, while on orbit, will observe missile defense intercepts and deliver a kill assessment declaration to the BMDS. If deemed successful by the warfighter, SKA has the opportunity to change the economics of the defense of the American homeland from enemy ballistic missiles.

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.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	6.389	23.289	21.433	-	21.433
Current President's Budget	7.560	21.507	20.690	-	20.690
Total Adjustments	1.171	-1.782	-0.743	-	-0.743
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.782			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.278	0.000			
• SBIR/STTR Transfer	-0.107	0.000			
• Other Adjustment	0.000	0.000	-0.743	-	-0.743

**Change Summary Explanation**

The FY 2015 adjustments reflect a reallocation of \$0.107M for SBIR/STTR Transfer and a reallocation of \$1.278M from PE 06039893C for Spacebased Kill Assessment development.

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>				<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD33: <i>MD Space Exp Center (MDSEC)</i>	46.161	7.191	20.483	19.755	-	19.755	14.911	11.049	11.190	11.360	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

The SKA system is made up of two segments: a space segment and a ground segment.

- The space segment is made up of a network of sensors (sensors, processor cards and cabling), each mated to a different satellite; and the total number of sensors and where they are placed in the network are specifically tailored for the kill assessment mission.
- The ground segment is a small network of desktop computers, servers and routers that monitor the health of the on-orbit sensors, command the sensors to perform the kill assessment mission and analyze the data to make a kill assessment determination for the BMDS. The ground segment also includes the equipment necessary for communications security and information assurance. The MDSC will act as the communications hub for SKA data.

The SKA sensors are hosted on satellites that are not developed by MDA, thus schedule performance is the highest priority of the experiment. Since the launch of the host satellites will not wait for hosted payloads that are delivered late, the management of the SKA project focuses on the ability to meet schedule commitments. In the past year, the commercial satellite host has announced small changes to its launch schedule; however, those changes have not affected SKA delivery commitments to the satellite integrator - the SKA project remains on schedule.

Through FY 2015 in program element 0603895C, the MDSC provided capabilities and infrastructure to support the BMDS as the single location for MDA elements to conduct space operations. It provided a multi-level security environment for sensor data management and integration across space and terrestrial sensor data activities. MDSC experiments leveraged DoD (Defense Support Program, Space Based Infrared System) and national security space capabilities. MDSC activities supported analysis, demonstration and integration of space sensor capabilities into developmental and operational MDA elements. MDSC enabled the development of advanced technology and algorithms including fusion of multiple sensor types (radar, overhead persistent infrared, electro-optical and other emerging sensor technologies). It also supported mission integration of space-based missile tracking, sensor and weapons cueing via Command and Control, Battle Management and Communications, features and discrimination, kill and impact point assessments into the BMDS and other non-MDA mission areas, including Space Situational Awareness, technical intelligence, and battle space characterization. This effort will continue in program element 0603893C beginning in FY 2016.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Missile Defense Space Center (MDSC)	3.592	0.000	0.000
<b>Articles:</b>	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Description:</b> The MDSC provides a central collaborative environment to develop, operate, exploit, and integrate Joint Space Capabilities for the BMDS. This effort will continue in program element 0603893C beginning in FY 2016.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Supported launch, integration, and operations of future MDA space capabilities</li> <li>- Supported Hardware-in-the Loop (HWIL) Engage-On STSS satellites tests and fulfill Overhead Persistent Infrared (OPIR) requests for STSS data based on satellite availability</li> <li>- Conducted analysis of space radiation environment and its influence on MDA space system performance</li> <li>- Conducted analysis of space based sensor data from STSS and OPIR observations, both individually and combined, to identify phenomenology and techniques to aid future tracking and discrimination architectures</li> <li>- Supported concept studies and analysis for alternative sensor payload configurations (e.g. hosted payloads)</li> <li>- Developed and integrated real-time algorithms for dim target detection and tracking, discrimination support, hit/kill assessment, and wideband infrared sensor data integration and exploitation</li> <li>- Conducted algorithm development, performance assessments, architecture assessments, and concept evaluations of future MDA space-layer options.</li> <li>- Provided future space-layer capability risk reduction through analysis, test and demonstration</li> <li>- Supported Air Force Space Command and joint mission partners with Space Situational Awareness, technical intelligence, battlespace awareness, and missile warning</li> </ul> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Plans:</b> N/A</p>				
<p><b>Title:</b> Spacebased Kill Assessment</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Experimental system designed to demonstrate kill assessment for Homeland Defense</p> <p><b>FY 2015 Accomplishments:</b> The following tasks were accomplished with the residual FY 2013 funds from program element 0604883C and appropriated funds in 0603895C</p> <ul style="list-style-type: none"> <li>- Assembled and delivered sensor assembly engineering model #1 and qualification model #1 and conducted testing</li> <li>- Completed build out of initial instantiation of the ground segment development facility and processing equipment in December 2014</li> </ul>		3.599 -	20.483 -	19.755 -



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Conducted Critical Design Review with warfighter and military service participation in January 2015</li> <li>- Conducted Flight Model Manufacturing Review (previously called Production Readiness Review) in April 2015</li> <li>- Conducted Mission Operations Review in May 2015</li> <li>- Began assembly of sensor flight models in May 2015</li> <li>- Conducted Pre-Environmental Review in August 2015</li> <li>- Conducted Ground System Mission Simulation #1 (of 4) in September 2015</li> </ul> <p><b>FY 2016 Plans:</b> Increase from FY 2015 to FY 2016 is for additional effort to complete development and begin integration and testing of the Spacebased Kill Assessment payload.</p> <ul style="list-style-type: none"> <li>- Conducted Ground System Mission Simulation #2 (of 4) in November 2015</li> <li>- Delivered first group of flight unit sensors to integrator in November 2015</li> <li>- Complete sensor assembly and testing of SKA flight units</li> <li>- Complete delivery of flight unit sensors to integrator</li> <li>- Integrating and testing of SKA payload onto host payload module</li> <li>- Integrating and testing of host payload module onto host satellite</li> <li>- Prepare for on-orbit checkout of first SKA sensors</li> </ul> <p><b>FY 2017 Plans:</b> Starting in FY 2017 funds begin to decrease for SKA as the project transitions from development to experimentation</p> <ul style="list-style-type: none"> <li>- Complete the integration and test of last SKA payloads onto hosted payload modules</li> <li>- Complete the integration and test of hosted payload modules onto host satellites</li> <li>- Complete preparations for on-orbit checkout of SKA sensors</li> <li>- Conduct on-orbit deployment, checkout, calibration and commissioning of the sensor network once on orbit</li> <li>- Test the integration and flow of data among the SKA sensors, the host communications network and the elements of the BMDS</li> <li>- Begin on-orbit operations by experimenting and participating in BMDS flight and ground tests as commissioned sensors become available</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	7.191	20.483	19.755

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

SKA leverages experience that the Johns Hopkins University Applied Physics Laboratory (JHU/APL) has with its extensive history of performing kill assessment activities and conducting experiments associated with the Aegis BMD program. JHU/APL is the developer of the SKA experiment and its primary subcontractor will be responsible for payload integration and hosting accommodation using a firm fixed price contract to contain costs. The SKA experiment uses a commercial satellite program as the platform host for a DOD payload, taking full advantage of a multi-billion dollar space and ground system that already exists. Since MDA and JHU/APL cannot impact the launch schedule of the commercial satellite host, fiscal stability and commitment is required which is a small tradeoff for the significant cost savings that commercial hosting provides.

MDSC functions and operations were financed through a 10-year MDSC Joint National Integration Center Research and Development Contract Services Contract. The sole-source contractor, Northrop Grumman Information Systems, was responsible for integrating Research, Development, Test and Evaluation, operations support,

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>

and resource and infrastructure management for the MDSC, providing customer support, while achieving efficiencies through approaches that exceed customer requirements. This effort will continue in program element 0603893C beginning in FY 2016.

**E. Performance Metrics**

N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date:</b> February 2016				
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>					<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>						

<b>Support (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Missile Defense Space Center (MDSC) - Contract Support Services (CSS)	C/Various	Various, MDA : CO/AL	5.255	0.668		0.000		0.000		-		0.000	0	5.923	0
Missile Defense Space Center (MDSC) - MDA Civilian	Allot	MDA : Schriever AFB, CO	2.219	0.930		0.000		0.000		-		0.000	0	3.149	0
Spacebased Kill Assessment - Contract Support Services (CSS)	C/Various	Various, MDA : CO/AL	0.000	0.122		0.142	Oct 2015	0.187	Nov 2016	-		0.187	Continuing	Continuing	Continuing
Spacebased Kill Assessment - FFRDC	FFRDC	Various : CO/AL/MD/VA	0.339	0.556		0.397	Oct 2015	0.748	Nov 2016	-		0.748	Continuing	Continuing	Continuing
Spacebased Kill Assessment - IT User Services	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		0.039	Oct 2015	0.043	Oct 2016	-		0.043	Continuing	Continuing	Continuing
Spacebased Kill Assessment - MDA Civilian	Allot	MDA : VA	0.000	0.194		0.205	Oct 2015	0.207	Oct 2016	-		0.207	Continuing	Continuing	Continuing
Spacebased Kill Assessment - Program Mission Support	C/Various	Various : CO/AL/MD/VA	0.150	0.726		0.032	Oct 2015	0.137	Oct 2016	-		0.137	Continuing	Continuing	Continuing
<b>Subtotal</b>			7.963	3.196		0.815		1.322		-		1.322	-	-	-

**Remarks**  
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.  
 Funding for the Spacebased Kill Assessment was initiated in PE 0604883C, budget project MD10.

<b>Management Services (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>
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<b>Management Services (\$ in Millions)</b>				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			

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

<b>Product Development (\$ in Millions)</b>				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			
Missile Defense Space Center (MDSC) - MDSC Support (JRDC Services Contract)	SS/CPAF	NGIS : Schriever AFB, CO	31.152	1.994		0.000		0.000		-		0.000	0	33.146	36.537
Missile Defense Space Center (MDSC) - MDSC/Enterprise Sensors Laboratory (ESL) Experiments	C/Various	Various : Various	7.046	0.000		0.000		0.000		-		0.000	0	7.046	7.351
Spacebased Kill Assessment - Spacebased Kill Assessment Development and Experimentation	C/CPFF	JHU/APL : Laurel, MD	0.000	2.001		19.668	Oct 2015	18.433	Oct 2016	-		18.433	Continuing	Continuing	Continuing
<b>Subtotal</b>			38.198	3.995		19.668		18.433		-		18.433	-	-	-

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

Funding for the Spacebased Kill Assessment was initiated in PE 0604883C, budget project MD10.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	46.161	7.191	20.483	19.755	-	19.755	-	-	-

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

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</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
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2015	▲																											
FTX-20 (AEGIS 5.0, Target Only Flight Test)	▲																											
STSS Demonstration Satellites Operations - 1Q2015-4Q2015	✦	✦	✦	✦																								
Mission Planning, Tasking and Analysis - 1Q2015-4Q2015	✦	✦	✦	✦																								
MIS Operations - 1Q2015-4Q2015	✦	✦	✦	✦																								
MDSC TIL Operations - 1Q2015-4Q2015	✦	✦	✦	✦																								
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2015		▲																										
Spacebased Kill Assessment (SKA) Critical Design Review		▲																										
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2015			▲																									
SKA Flight Model Manufacturing Review			▲																									
SKA Mission Operations Review			▲																									
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2015				▲																								
SKA Mission Simulation 1				▲																								
SKA Program Status Review					▲																							
SKA Mission Simulation 2					▲																							
SKA Flight Unit Development						✦	✦	✦																				
SKA Flight Model Assembly and Testing						✦	✦	✦																				
SKA Integration and Test - 1Q2016-4Q2016						✦	✦	✦	✦																			
SKA Flight Model Assembly Deliveries to Host Integrator						✦	✦	✦	✦																			
SKA Algorithm Development						✦	✦	✦	✦																			
SKA Mission Simulation 3									△																			
SKA Mission Simulation 4										△																		
FTG-15 (GM, Intercept Flight Test)											△																	
SKA Integration and Test - 1Q2017-4Q2017												✦	✦	✦	✦													
SKA Launch #1																												

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</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
SKA On-Orbit Check-Out - 3Q2017-1Q2018																												
SKA Launch #2																												
Spacebased Kill Assessment Launch #3																												
FTM-29 (AEGIS 5.1, Intercept Flight Test)																												
SKA Experimentation - 1Q2018-4Q2018																												
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)																												
SKA Experimentation - 1Q2019-4Q2019																												
FTT-19 (TH, Intercept Flight Test)																												
FTM-35 (AEGIS 5.1, Intercept Flight Test)																												
SKA Experimentation - 1Q2020-4Q2020																												
SKA Experimentation - 1Q2021-4Q2021																												
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 1Q2015	1	2015	1	2015
FTX-20 (AEGIS 5.0, Target Only Flight Test)	1	2015	1	2015
STSS Demonstration Satellites Operations - 1Q2015-4Q2015	1	2015	4	2015
Mission Planning, Tasking and Analysis - 1Q2015-4Q2015	1	2015	4	2015
MIS Operations - 1Q2015-4Q2015	1	2015	4	2015
MDSC TIL Operations - 1Q2015-4Q2015	1	2015	4	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 2Q2015	2	2015	2	2015
Spacebased Kill Assessment (SKA) Critical Design Review	2	2015	2	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 3Q2015	3	2015	3	2015
SKA Flight Model Manufacturing Review	3	2015	3	2015
SKA Mission Operations Review	3	2015	3	2015
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity - 4Q2015	4	2015	4	2015
SKA Mission Simulation 1	4	2015	4	2015
SKA Program Status Review	1	2016	1	2016
SKA Mission Simulation 2	1	2016	1	2016
SKA Flight Unit Development	1	2016	3	2016
SKA Flight Model Assembly and Testing	1	2016	3	2016
SKA Integration and Test - 1Q2016-4Q2016	1	2016	4	2016
SKA Flight Model Assembly Deliveries to Host Integrator	1	2016	4	2016
SKA Algorithm Development	1	2016	4	2016
SKA Mission Simulation 3	4	2016	4	2016
SKA Mission Simulation 4	4	2016	4	2016

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD33 / <i>MD Space Exp Center (MDSEC)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
SKA Integration and Test - 1Q2017-4Q2017	1	2017	4	2017
SKA Launch #1	3	2017	3	2017
SKA On-Orbit Check-Out - 3Q2017-1Q2018	3	2017	1	2018
SKA Launch #2	4	2017	4	2017
Spacebased Kill Assessment Launch #3	4	2017	4	2017
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
SKA Experimentation - 1Q2018-4Q2018	1	2018	4	2018
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)	4	2019	4	2019
SKA Experimentation - 1Q2019-4Q2019	1	2019	4	2019
FTT-19 (TH, Intercept Flight Test)	4	2019	4	2019
FTM-35 (AEGIS 5.1, Intercept Flight Test)	4	2019	4	2019
SKA Experimentation - 1Q2020-4Q2020	1	2020	4	2020
SKA Experimentation - 1Q2021-4Q2021	1	2021	4	2021
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)	3	2021	3	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> 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>	0.587	0.369	1.024	0.935	-	0.935	0.759	0.592	0.606	0.632	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of increases in Ballistic Missile Defense System Space Programs and in FY 2017, PWS reflects a proportional change as a result of decreases to the Ballistic Missile Defense System Space Programs. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts and Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians, and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Program Wide Support	0.369	1.024	0.935
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	0.369	1.024	0.935

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, CO, CA, VA, AK	0.000	0.343		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	C/CPAF	Various : Multi: AL, CA, CO, VA	0.496	0.026		0.000		0.019	Jul 2017	-		0.019	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	0.091	0.000		1.024	Nov 2015	0.916	Aug 2017	-		0.916	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.587	0.369		1.024		0.935		-		0.935	-	-	-

**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
<b>Project Cost Totals</b>	0.587	0.369	1.024	0.935	-	0.935	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603895C / <i>Ballistic Missile Defense System Space Programs</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</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	1,369.761	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>	1,028.662	254.080	260.100	249.662	-	249.662	232.379	240.621	255.093	255.258	Continuing	Continuing
MC01: <i>Cyber Operations</i>	0.655	0.819	0.543	0.905	-	0.905	0.942	0.979	1.018	1.058	Continuing	Continuing
MT01: <i>C2BMC Test</i>	76.296	51.890	56.318	52.727	-	52.727	55.665	53.188	55.129	56.207	Continuing	Continuing
MX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>	215.379	89.235	93.097	116.552	-	116.552	104.221	115.994	120.027	125.174	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	48.769	24.492	19.795	19.771	-	19.771	19.991	21.981	23.334	24.368	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

MD01 - The decrease in funding from FY 2016 to FY 2017 is attributed to realigning funds from the Development project (MD01) to Sustainment project (MX01) to better align scope for all Integrated Logistics Support (ILS) to the Parallel Staging Network (PSN) Sustainment.

MX01 - The increase in funding from FY 2016 to FY 2017 is attributed to realigning funds from the Development project (MD01) to Sustainment project (MX01) to better align resources with scope of work. Additionally, funding increased to meet requirement to support both Spiral 6.4 and Spiral 8.2-1 operations

MT01 - The increase in funding from FY 2015 to FY 2016, along with the decrease in FY 2017 is attributed to moving forward the build-out of the Spiral 8.2 Labs located at the MDIOC to meet delivery schedule.

**A. Mission Description and Budget Item Justification**

The Ballistic Missile Defense Command and Control, Battle Management and Communications (C2BMC) Program provides hardware and develops software to link separate sensors and weapons into an integrated, layered missile defense system that provides greater performance and defensive coverage than is possible with stand-alone elements. The C2BMC enables the BMDS to manage complex threats, including near-simultaneous enemy missiles aimed at theater, regional, or homeland assets. The systems linked through C2BMC include Patriot, Terminal High Altitude Area Defense (THAAD), Aegis Ballistic Missile Defense (BMD), Aegis Ashore, Ground Based Midcourse Defense (GMD), and Army Integrated Air and Missile Defense Battle Command System (IBCS); and sensors such as the Army Navy/ Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar, Sea-Based X-Band Radar (SBX), Space-Based Infrared System (SBIRS), and BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA). In FY 2015, the C2BMC Program successfully tested and activated a C2BMC Deployable Interface Node (CDIN) in

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603896C <i>I Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>
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support of a second forward based AN/TPY-2 in the Pacific Command (PACOM). This capability improves homeland defense against emerging threats from North Korea and provides the Combatant Commander (CCMD) greater flexibility for regional defense in the PACOM Area of Responsibility (AOR). C2BMC delivered long haul communication upgrades to EUCOM, CENTCOM and PACOM AN/TPY-2 sites and to the Aegis Ashore site in Romania. The C2BMC Program also delivered the capability to integrate BMDS Middle East and European missile defense capabilities allowing both CCMD to leverage each other's assets.

Based on defined BMDS architectures and system specifications, C2BMC provides the warfighter the capability to plan the BMD fight while concurrently tracking all potential ballistic missile threats, and pairing any sensor with any shooter to defeat ballistic missile threats at any range, in all theaters. The C2BMC program will deliver full AN/TPY-2 X-Band radar sensor control and capabilities for improved threat object correlation to develop a common threat track from multiple sensors, with sufficient data accuracy and timeliness to enable successful engagements. The C2BMC program also works to increase coalition partners' capabilities.

The C2BMC program provides continuous incremental capability upgrades to the Warfighter via software Spirals; therefore, there are necessary overlaps in the fielded and in-development Spirals' activities. C2BMC structures software Spiral development and support cycles to meet defined fielding dates within the established Ground Test campaign schedules while allowing sufficient time for development and verification and validation test activities. The fieldings of Spirals are phased to accommodate fiscal and performance priorities, in coordination with Combatant Commanders' intent. Currently, Spiral 6.4 provides continuous global operations across five Combatant Commands (CCMDs) and supports EPAA Phases 1 and 2. The next Spiral (Spiral 8.2-1) has completed development and is currently in verification testing in preparation for scheduled fielding in FY 2017. Spiral 8.2-1 will support Enhanced Homeland Defense capability by providing increased GMD battlespace, Link 16 track reporting of additional sensors, enhanced sensor tasking to meet track quality and discrimination timeliness requirements to support GMD engagements, and space situational awareness tasking support. Spiral 8.2-1 will also provide access to the BMDS OPIR assets and upgraded SBIRS sensor data to enable much earlier cueing for radars and shooters. Spiral 8.2-3 is currently in development and is scheduled for FY 2019 delivery. Spiral 8.2-3 will enable Aegis BMD to provide a five-fold increase in defended area by providing critical sensor management and track reporting improvements for Aegis BMD Engage-on-Remote (EOR) functionality in support of EPAA Phase 3, improve OPIR-based cueing of radars and shooters in all phases of threat engagements, and provide integration with the new Army Integrated Air and Missile Defense Battle Command System (IBCS). C2BMC is conducting requirements analysis for the future Spiral 8.2-5 which will integrate and control the Long Range Discrimination Radar (LRDR) into the BMDS in the 2020 time frame. C2BMC will perform sensor management of the LRDR and fusion of LRDR sensor data into the C2BMC system tracking capability. C2BMC will update interfaces to provide appropriate LRDR-based information to the GMD Fire Control (GFC) and other BMDS elements.

C2BMC also provides the Ballistic Missile Defense (BMD) Communications Network (BCN), which connects an expanding set of sensors and weapons systems, to enable the National Command Authority and the strategic, theater, and tactical level commanders to optimally engage ballistic missile threats including near simultaneous theater, regional and homeland attacks. The BCN provides a robust, end-to-end, high availability, operational communications network infrastructure with diverse paths to rapidly share information across the global Ballistic Missile Defense System (BMDS). The C2BMC system and networks are protected from cyber-attacks by layered defenses that start with circuits comprising the BCN that are isolated from the known networks. Where the BCN and the known networks meet, layers of firewalls, encryption devices, routers and switches each with specific access control lists (ACLs), further protect the internal systems and allow only identified and approved users and systems access to the C2BMC data. Effective network management will coordinate and integrate across diverse equipment platforms, interface with other DoD communications systems, evolve information standards and capabilities, and adhere to the DoD Risk Management Framework (RMF). Defense Information Systems Agency (DISA) services are highly leveraged in providing worldwide communications.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>
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This Program Element includes support for discrimination improvement efforts, which aim to develop and field an integrated set of Element capabilities to improve BMDS effectiveness and resilience against the evolving threat. The end result will be a BMDS architecture more capable of discriminating and destroying a re-entry vehicle with a high degree of confidence, improving Warfighter shot doctrine and preserving inventory. This effort encompasses Near -term, Mid-term, and Far-term discrimination improvements capability fielding. The discrimination improvements require a coordinated effort between Systems Engineering (PE 0603890C), Ground-based Midcourse Defense (PE 0603882C), BMD Sensors (PE 0603884C), C2BMC, Aegis BMD (PE 0603892C) and Advanced C4ISR (PE 0603179C).

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	428.277	450.085	461.759	-	461.759
Current President's Budget	420.516	429.853	439.617	-	439.617
Total Adjustments	-7.761	-20.232	-22.142	-	-22.142
• Congressional General Reductions	0.000	-0.378			
• Congressional Directed Reductions	0.000	-19.854			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.634	0.000			
• SBIR/STTR Transfer	-7.127	0.000			
• Other Adjustment	0.000	0.000	-22.142	-	-22.142

**Change Summary Explanation**

In FY2015, C2BMC received a \$15M mark for Spiral 8.2-3 unjustified growth without baseline. Subsequent to baselining Spiral 8.2-3 in January 2015, program of \$7.239M was restored from within the agency in support of Spiral 8.2-3 Early Development Tasks and sensor-to-host interface, cybersecurity strategy and crypto redesign and hardware redesign in support of hit assessment experimentation.

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>	1,028.662	254.080	260.100	249.662	-	249.662	232.379	240.621	255.093	255.258	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	1	-	1	-	1	-	1			

**Note**

RDT&E Articles are defined as major Command and Control, Battle Management and Communications (C2BMC) capability increments (identified as a specific Spiral) which are fielded at multiple locations including Combatant Commands and other operational sites.

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

**A. Mission Description and Budget Item Justification**

Budget Project MD01 includes a phased progression of RDT&E articles. Spiral 6.4, was successfully fielded in FY 2011/FY 2012 in NORTHCOM, PACOM, EUCOM, and CENTCOM to support multi-TPY-2 sensor management, BMDS situational awareness and battle management, and European Phased Adaptive Approach (EPAA) Phase 1 capability declaration. Spiral 6.4 is also the basis of support to EPAA Phase 2 and near-term discrimination improvements. The next spiral (Spiral 8.2-1) has completed development and is currently in verification testing. This capability is scheduled for FY 2017 fielding. Spiral 8.2-1 supports Enhanced Homeland Defense capability by providing increased Ground-based Midcourse Defense (GMD) battlespace, Link 16 track reporting of additional sensors, enhanced sensor tasking to meet track quality and discrimination timeliness requirements to support GMD engagements, and space situational awareness tasking support. Spiral 8.2-1 also provides access to the BMDS Overhead Persistent Infra-Red (OPIR) assets and upgraded Space Based Infra-Red System (SBIRS) sensor data to enable much earlier cueing for radars and shooters. Spiral 8.2-3 is currently in development and is scheduled for an FY 2019 delivery. This capability will enable Aegis BMD to provide a five-fold increase in defended area by providing critical sensor management and track reporting improvements for Aegis BMD Engage-on-Remote (EOR) functionality in support of EPAA Phase 3, improve OPIR-based cueing of radars and shooters in all phases of threat engagements, and provide integration with the new Army IBCS. Spiral 8.2-3 supports Presidential mandate EPAA Phase 3 capability declaration by providing critical sensor management and track reporting improvements to Aegis BMD Engage-on-Remote functionality, improves OPIR-based cueing of sensors and shooters in all phases of threat engagements, as well as integration with the new Army IAMD Battle Command System (IBCS). Spiral 8.2-5 is in requirements analysis and is scheduled to be fielded in the 2020 timeframe. Spiral 8.2-5 will integrate and control the Long Range Discrimination Radar (LRDR) into the BMDS. C2BMC will perform sensor management of the LRDR and fusion of LRDR sensor data into the C2BMC system tracking capability. C2BMC will update interfaces to provide appropriate LRDR-based information to Ground Based Missile Defense (GMD) Fire Control (GFC) and other BMDS elements.

The discrimination improvements effort will develop and field integrated Element capabilities to improve BMD System ability to identify lethal and non-lethal objects. Command and Control, Battle Management and Communications will complete initial SCOUT development and begin final development and operational integration/

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>
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interoperability. SE&I will perform BMDS performance analysis and requirements engineering activities to specify the BMDS requirements and interfaces to achieve the improved capability. SE&I will allocate Near-term performance requirements across BMDS elements. For Mid-term and Far-term, SE&I will establish performance goals for the technology development phase, and develop functional, performance, and interface requirements to address the Mid-term and Far-term threat sets. SE&I will establish ground and flight test requirements for the Near-term, Mid-term, and Far-term phases, and generate threat data to support analysis and testing activities.

Development of C2BMC capabilities in the functional areas of BMDS planning, situational awareness, sensor management, and engagement coordination are fully traceable to baselined BMDS specifications and associated Element specifications. Performance outcomes within these functional areas include:

- Improved formulation of a common threat track from multiple sensors with sufficient data accuracy and timeliness for BMDS weapon Elements to enable successful engagements via Link-16
- Improved Interface with AN/TPY-2 Forward Based Mode (FBM) to provide greater flexibility in meeting C2BMC and Weapons System needs for Engagement Quality Data supporting Remote Engagements (EOR) with Aegis Ballistic Missile Defense (BMD)
- Incorporation of BMDS Overhead Persistent Infra-Red (OPIR) Architecture and upgraded Space Based Infra-Red System (SBIRS) sensor data to enable much earlier cueing of sensor and shooter, improve threat tracking, and provide source information for discrimination
- Integration of the Long Range Discrimination Radar (LRDR) into the BMDS to provide robust homeland and regional defense
- Improved BMDS discrimination logic using multiple sensors' discrimination data to identify lethal objects and reduce the number of interceptors required to achieve successful threat engagement
- Engagement coordination tools to make more efficient use of limited sensor and shooter inventory
- Enhanced BMD planning and situational awareness to improve placement of BMDS assets and maintain warfighter cognizance of the battle space
- Delivery of a Distributed Training System to enable Combatant Commands (CCMD) to support large scale exercises and training events without scheduling downtime of BMDS operations
- Delivery of the Training Support System to provide a flexible scenario, small footprint training system for small scale CCMD training events and schoolhouses

Development activities culminate in three key test events: Simulation-based Verification, Site Activation Testing, and Ballistic Missile Defense System (BMDS)-wide Ground Testing. Simulation-based verification focuses on integration testing with other Ballistic Missile Defense System (BMDS) Elements. Site Activation Testing and successful participation in BMDS Ground Test campaigns verify delivery of fully functioning operational software, which is then made available for deployment.

C2BMC also provides the Ballistic Missile Defense (BMD) Communications Network (BCN), which connects an expanding set of sensors and weapons systems, to enable the National Command Authority and the strategic, theater, and tactical level commanders to optimally engage ballistic missile threats including near simultaneous theater, regional and homeland attacks. The BCN provides a robust, end-to-end, high availability, operational communications network infrastructure with diverse paths to rapidly share information across the global Ballistic Missile Defense System (BMDS). The C2BMC system and networks are protected from cyber-attacks by layered defenses that start with circuits comprising the BCN that are isolated from the known networks. Where the BCN and the known networks meet, layers of firewalls, encryption devices, routers and switches each with specific access control lists (ACLs), further protect the internal systems and allow only identified and approved users and systems access to the C2BMC data. Effective network management will coordinate and integrate across diverse equipment platforms, interface

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

with other DoD communications systems, evolve information standards and capabilities, and adhere to the DoD Risk Management Framework (RMF). Defense Information Systems Agency (DISA) services are highly leveraged in providing worldwide communications.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> C2BMC Development and Deployment	195.787	217.293	200.984
<b>Articles:</b>	-	-	1
<p><b>Description:</b> This activity provides funding for development and deployment of C2BMC capability Spirals that will link sensors and shooters to enable integrated BMDS capabilities. Spiral 8.2-1 supports Enhanced Homeland Defense by providing increased Ground-based Midcourse Defense (GMD) battlespace, Link 16 track reporting of additional sensors, enhanced sensor tasking to meet track quality and discrimination requirements to support GMD engagements. Spiral 8.2-1 also provides access to the BMDS Overhead Persistent Infra-Red (OPIR) assets and upgraded Space Based Infra-Red System (SBIRS) sensor data. Spiral 8.2-1 has completed development and is currently in verification testing to support FY 2017 fielding. Spiral 8.2-3 supports EPAA Phase 3 by providing critical sensor management and track reporting improvements supporting Aegis BMD Engage-on-Remote (EOR) functionality, improvements to OPIR-based cueing of sensors and shooters, and integration with the new Army IAMD Battle Command System (IBCS). Spiral 8.2-3 is currently in development and is scheduled for an FY 2019 delivery. Spiral 8.2-5 will integrate the Long Range Discrimination Radar (LRDR) into the BMDS. Spiral 8.2-5 is in requirements analysis and is scheduled to be fielded in the 2020 time frame. Funding for Spirals includes Prime contractor development, C2BMC Communications, C2BMC Experimentation Lab (X-Lab), and Enterprise Sensors Lab (ESL).</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Funding for Spirals included Prime contractor development, C2BMC Communications, C2BMC Experimentation Lab (X-Lab), and Enterprise Sensors Lab (ESL).</li> <li>- Continued Spiral 8.2 engineering and design and BMD Planner, Situational Awareness, Global Engagement Manager (GEM), and BMD Communications Network software development, coding, and integration</li> <li>- Continued maintenance updates for BMDS C2BMC Model (BCM) 6.4, validated by Critical Engagement Conditions (CECs), for Predictive Analysis. CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations</li> <li>- Continued development of Spiral 8.2 software, network capability, and hardware procurement in support of Enhanced Homeland Defense and an overall hardware and architecture refresh, new OPIR-based sensor cueing capability to provide increased Ground-based Midcourse Defense (GMD) battlespace. Spiral 8.2-1 infrastructure is required to host the Spiral 8.2-3 Engage on Remote (EOR) software, which supports EPAA Phase 3.</li> <li>- Designed, procured, and integrated Spiral 8.2 test infrastructure and tools at Missile Defense Integration and Operations Center (MDIOC) to support Spiral 8.2 verification testing and distributed testing support which provides significant enhancements in Information Assurance and communications robustness and Link 16 track reporting of additional sensors, enhanced sensor</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>tasking to meet track quality and discrimination timeliness requirements to support GMD weapon system engagements, and space situational awareness tasking.</p> <ul style="list-style-type: none"> <li>- Continued maintenance of the Federated Model (FM) for use in Spiral 8.2-1 verification testing; updated FM components for 2015 Leap Second event; replaced DESIM 4.3 with OSM; and integrated into C2BMC development and verification laboratories.</li> <li>- Participated in and analyzed results of ground and flight tests, wargames, and exercises in accordance with the Ballistic Missile Defense System (BMDS) Integrated Master Test Plan (IMTP).</li> <li>- Continued development and testing of new BMDS Overhead Persistent Infrared Architecture (BOA) baseline release to support Spiral 8.2 integration and testing.</li> <li>-- Continued to upgrade the BMD Communications Network capability (development, integration and test) to support European Phase Adaptive Approach (EPAA)</li> <li>- Upgraded DoD teleports to enhance satellite communications (SATCOM) connectivity</li> <li>- Acquired and installed Enterprise Work Stations (EWS), web browsers, and BMD Planners</li> <li>- Continued Cyber Net Defense (CND) requirements for EPAA Phases 1 and 2</li> <li>- Continued development of the BMDS C2BMC Model (BCM) for Spiral 8.2 modeling and simulation</li> <li>- Continued development of Spiral 8.2 software, hardware, and network capability</li> <li>- Completed development and fielding of new Spiral 6.4 maintenance release to support warfighter improvements</li> <li>- Spiral 8.2 developed the Two-Factor Authentication (Smart-card) and Role Based Access capability on a classified weapon system. Additional improvements to remote administration of the systems, remote monitoring and event response improved the security configuration management of this growing architecture. Automated anti-virus and patch management allows for faster deployment of critical patches and anti-virus signatures keeping the systems secured in a timely manner.</li> <li>- Continued to document international interfaces and traceability to BMDS requirements</li> <li>- Continued EPAA Phase 2 situational awareness displays project IAW bi-lateral agreements</li> <li>- Initiated C2BMC and NATO planning demonstrations</li> <li>- Continued to support NATO live fire events</li> <li>- Continued development of capabilities addressing EPAA Phase 3 requirements resulting in an upgraded Spiral with plan load during operations, record and playback, integration of emerging OPIR assets, and Engage on Remote support with Aegis 5.1. : Baselined Spiral 8.2-3 via Developmental Baseline Review (Jan 2015), issued Request for Proposal, began evaluation of Proposal and postured for contract award in 1QFY16.</li> <li>- Continued requirements allocation and specification for advanced C2BMC technologies to exploit space-based data: updated BOA 6.1 Element Specification to increase feasibility of effective engagements in certain threat conditions; successfully participated in a Joint OPIR Ground (JOG) real-time cueing demonstration yielding a reference implementation of interfaces, messages, and metrics to support requirements development for BMDS interface with the Persistent GEOINT Mission Management Macro Framework.</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Continued site planning, scheduling and hardware acquisition to support planned FY 2017 deployment of C2BMC Spiral 8.2-1 capability.</li> <li>- Completed Discrimination Improvements for Near-term capability development and Element-level testing of BMDS sensor management improvements in the Command, Controls, Battle Management, and Communications.</li> <li>- Continued integration phase for Near-term discrimination improvements ground testing via GTI-06.</li> <li>- Conducted planning, assessment, and specification work to keep pace with emerging threat.</li> <li>- Continued development of software upgrades to C2BMC to report information from multiple sensors to improve identification of lethal targets to fire control.</li> <li>- Continued development of AN/TPY-2 sensor and interface upgrades required to pass sensor generated features to C2BMC needed for improving identification of lethal targets.</li> <li>- Conducted data collection and analysis for final assessment of discrimination technologies candidates planned for Mid-term delivery.</li> <li>- Down selected development ready technologies for the Far-term phase content.</li> <li>- Completed preliminary BMDS functional and performance requirements for Mid-term discrimination improvements capability.</li> <li>- Submitted solicitation to industry for a Broad Agency Announcement (BAA) dealing with Integrated Threat Characterization in support of Aggregated Discrimination and Handover (Far-Term Discrimination Improvements). Evaluated white papers and recommended FY2016 execution plan.</li> <li>- Completed sensor-to-host interface, cybersecurity strategy and crypto redesign and hardware redesign in support of hit assessment experimentation.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Funding for Spirals includes Prime contractor development, C2BMC Communications, C2BMC Experimentation Lab (X-Lab), and Enterprise Sensors Lab (ESL).</li> </ul> <p>The increase from FY 2015 to FY 2016 is attributed to increased discrimination improvement efforts to include maturing advanced discrimination and battle management techniques in support of the Mid-term and Far-term capabilities and Spiral 8.2-1 hardware/software development integration.</p> <p>C2BMC International Partner System Engineering</p> <ul style="list-style-type: none"> <li>- Continue to document international interfaces and traceability to BMDS requirements</li> <li>- Continue to conduct C2BMC and North Atlantic Treaty Organization (NATO) planning demonstrations</li> <li>- Continue to support NATO live fire events</li> <li>- Continue EPAA Phase 2 situational awareness displays project in accordance with bi-lateral agreements</li> </ul>			



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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>C2BMC Spiral 6.4 Maintenance</p> <ul style="list-style-type: none"> <li>- Complete development and fielding of new Spiral 6.4 maintenance release to support warfighter improvements and required security updates and vulnerability corrective actions</li> </ul> <p>C2BMC Spiral 8.2 Development, Verification Testing, and Deployment</p> <ul style="list-style-type: none"> <li>- Spiral 8.2-1 was baselined at a Developmental Baseline Review (DBR) in August 2012</li> <li>- Continue Spiral 8.2-1 product development to include BMD Planner, Situational Awareness, Global Engagement Manager (GEM), Boost Phase Cue and BMD Communications Network software.</li> <li>- Continue development of Spiral 8.2 software, hardware, and network capability</li> <li>- Enhance Spiral 8.2-1 through prototyping and delivery of critical RMF requirements to include Two-Factor Authentication (Smart-card) capability on a classified weapon system, remote administration of the systems, remote scanning, monitoring and event response, and automated anti-virus and patch management</li> <li>- Continue the design, procurement, and integration of Spiral 8.2-1 test infrastructure and tools at Missile Defense Integration and Operations Center (MDIOC) to support Spiral 8.2-1 verification testing and distributed testing support</li> <li>- Provide pre-test engineering and analyze results of ground and flight tests, wargames, and cyber range / other exercises in accordance with the Ballistic Missile Defense System (BMDS) Integrated Master Test Plan (IMTP)</li> <li>- Continue site planning, scheduling and hardware acquisition to support planned FY 2017 Northern Command (NORTHCOM)/ Pacific Command (PACOM) deployment of the C2BMC Spiral 8.2-1 capability</li> </ul> <p>- Initiate Spiral 8.2-3 engineering and design for the development of capabilities addressing European Phased Adaptive Approach (EPAA) Phase 3 requirements for Engage-on-Remote (EOR), integration of BOA 6.1 wideband extended tracking, integration of the Army IBCS program, and two Warfighter Improvement Process upgrades functionality and record and playback functionality). Capability improvements will include modifications to C2BMC track processing, Link-16 track reporting, sensor resource management, and mission planning. Engineering efforts will include planning for initial Spiral 8.2 infrastructure deployment to CENTCOM and EUCOM areas of responsibility (AOR).</p> <p>C2BMC Modeling and Simulation</p> <ul style="list-style-type: none"> <li>- Continue development of the BMDS C2BMC Model for Spiral 8.2 modeling and simulation</li> <li>- Update C2BMC model, validated by Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs), for system-level performance assessments. CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations</li> <li>- Complete development of S8.2-1 C2BMC Model (BCM 8.2-1)</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Perform initial Verification and Validation of S8.2-1 C2BMC Model with BC-generated referent data</li> <li>- Begin the initial development of S8.2-3 C2BMC Model (BCM 8.2-3)</li> </ul> <p>BMDS Overhead Persistent Infrared Architecture (BOA)</p> <ul style="list-style-type: none"> <li>- Continue testing of new BMDS Overhead Persistent Infrared Architecture (BOA) 5.1 baseline release to support Spiral 8.2-1 integration and testing</li> <li>- Demonstrate BOA 5.1 capabilities with BMDS elements in the GTX-07 ground test as a pre-condition for operational fielding in FY 2019</li> <li>- Complete BOA 6.1 development to extend Overhead Persistent Infrared Radar (OPIR) tracks and complete the requirements verification test and analysis</li> <li>- Install BOA 6.1 in an operationally relevant environment to conduct soak testing with live OPIR feeds</li> <li>- Conduct BOA 6.1 requirements verification and performance characterization to support readiness for operational installation in FY 2019.</li> <li>- - Evaluate Enterprise Sensors Lab (ESL) prototypes that extract dimmer targets from sensor data for inclusion in future BOA spirals</li> <li>- Continue requirements allocation and specification for advanced C2BMC technologies to exploit space-based data</li> </ul> <p>Discrimination Improvements</p> <ul style="list-style-type: none"> <li>- Complete Near-term discrimination improvements capability development and Element-level testing of Ballistic Missile Defense System (BMDS) sensor management improvements in the Command and Control, Battle Management and Communications</li> <li>- Complete integration phase of Near-term discrimination improvements testing via the GTI-06 ground test campaign</li> <li>- Conduct data collection and analysis for final assessment of discrimination technology candidates planned for Mid-term discrimination improvements</li> <li>- Continue system maturation and performance characterization of the Simultaneous Correlation of Unambiguous Tracks (SCOUT) Algorithm and the Advanced SCOUT Prototype (ASP) node, a selected component of the MDA initiative for Mid-Term discrimination improvements</li> <li>- Participate in Far-term discrimination improvement threat models specification.</li> <li>- Develop model/prototype of Far-term Discrimination Improvements System Level Discrimination in support of the Far-term discrimination improvements capabilities.</li> <li>- Participate in planning and conduct technology trades and analysis to refine capabilities to mitigate the Far-term discrimination improvements threats.</li> <li>- Conduct System Requirements Review for Far-term discrimination improvements C2BMC capabilities.</li> </ul>			

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Long Range Discrimination Radar (LRDR)</p> <ul style="list-style-type: none"> <li>- Integrate the Long Range Discrimination Radar (LRDR) into the BMDS by performing sensor management of the LRDR and fusion of LRDR sensor data into the C2BMC system tracking capability</li> <li>- Provision Military Satellite Communications (MILSATCOM) and redundant terrestrial communication services from C2BMC to the LRDR</li> <li>- Update interfaces to provide appropriate LRDR-based information to Ground Based Missile Defense (GMD) Fire Control (GFC) and other BMDS elements</li> </ul> <p><b>FY 2017 Plans:</b> The decrease in funding from FY 2016 to FY 2017 is attributed to realigning funds from the Development project (MD01) to Sustainment project (MX01) to better align scope for all Integrated Logistics Support (ILS) to the Parallel Staging Network (PSN) Sustainment.</p> <p>Funding for Spirals includes Prime contractor development, C2BMC Communications, C2BMC Experimentation Lab (X-Lab), and Enterprise Sensors Lab (ESL).</p> <p>C2BMC Spiral 8.2 Development, Verification Testing, and Deployment</p> <ul style="list-style-type: none"> <li>- Spiral 8.2-1 was initially baselined at a Developmental Baseline Review (DBR) in August 2012; Spiral 8.2-1 was re-baselined in January 2015 to add deployment hardware and fielding</li> <li>- Complete verification and deployment of Spiral 8.2-1, supporting Enhanced Homeland Defense</li> <li>-- Complete procurement and delivery of Spiral 8.2-1 hardware for all sites to support deployment</li> <li>--- Develop and field software Cybersecurity patches and any emerging troubleshooting procedures to Spiral 8.2-1 to support required security updates and vulnerability corrective actions</li> <li>-- Complete validation testing at NORTHCOM and PACOM sites to enter system level ground testing for capability declaration</li> <li>--- Initiate fielding of EUCOM and CENTCOM hardware to support EPAA Phase 3</li> <li>- Continue development, integration, and testing of Spiral 8.2-3 in support of EPAA Phase 3</li> <li>-- Complete Spiral 8.2-3 critical design review and test readiness review</li> <li>--- Initiate Spiral 8.2-3 software verification testing</li> <li>--- Integrate and test improved OPIR-based cueing of radars and shooters to add the ability to track threats in all phases of flight</li> <li>--- Integrate red/blue force updates into planner to stay current with the latest threat and BMDS element updates</li> <li>- Conduct initial design and development of Spiral 8.2-5, incorporating LRDR functionality (funded in PE 0604873C).</li> </ul> <p>C2BMC International Partner System Engineering</p>			

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	FY 2015	FY 2016	FY 2017
<p>C2BMC international system engineering is vital to ensuring our friends and allies are integrated with the U.S. BMDS capabilities to the fullest extent possible through collaborative system engineering, testing and fielding - Facilitate future interoperability with NATO and partner nations such as Israel and Japan by working with these nations to define and document international interfaces that are compatible with international standards and traceable to U.S. BMDS requirements</p> <ul style="list-style-type: none"> <li>- Manage and execute Agency participation in test events and live fire exercises hosted by international partners to ensure U.S. missile defense weapons, sensors and C2 systems interoperate with international systems</li> <li>- Provide EPAA Phase 3 missile defense situational awareness displays to Poland while maintaining existing situational awareness displays in Romania and Turkey in accordance with bi-lateral agreements with these nations.</li> <li>- Work cooperatively with NATO systems engineers to ensure the technical approach for the new NATO mission to defense European territories and populations from missile defense threats of all ranges remains compatible with the U.S. BMDS</li> <li>- Maintain and upgrade as necessary the U.S. NATO secure data sharing gateways located at Ramstein Air Base, Germany, for missile defense operations and training.</li> <li>- Provide support for Japan BMD requirements to ensure interoperability of Japanese and U.S. BMD systems(sensors, shooters, command and control (C2)) resulting in an integrated regional, operational, and strategic defense of Japan</li> </ul> <p>C2BMC Spiral 6.4 Maintenance</p> <ul style="list-style-type: none"> <li>- Develop and field software Cybersecurity patches and any critical software modifications to Spiral 6.4 to support required security updates and vulnerability corrective actions</li> </ul> <p>C2BMC Modeling and Simulation</p> <p>To provide confidence in C2BMC performance through the following activities:</p> <ul style="list-style-type: none"> <li>- Maintain BMDS Sim/Stim tool and Federated Model, and C2BMC Model (BCM) to support Spiral 6.4 and Spiral 8.2-1 Operations and Sustainment</li> <li>- Complete Federated Model development and begin BCM development for C2BMC Spiral 8.2-3 development and verification</li> <li>- Develop requirements for Modeling &amp; Simulation support to C2BMC Spiral 8.2-5 development and verification</li> <li>- Develop and maintain C2BMC verification scenarios for all C2BMC Spirals deployed and under development</li> <li>- Provide OPIR modeling simulation for system level ground tests</li> </ul> <p>Discrimination Improvements:</p> <ul style="list-style-type: none"> <li>Complete assessment for Near-Term discrimination improvements capability readiness for fielding</li> <li>Complete Mid-Term discrimination improvements systems engineering work and integrate element level design solutions</li> <li>- Complete analysis to support test planning and assessment of the integrated capability</li> <li>Complete SCOUT discrimination capability initial design and begin final design and development</li> <li>Initiate SCOUT operational integration/interoperability</li> </ul>			

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Continue Far-term discrimination improvements and countermeasures mitigation capability development - Define decision logic improvement solutions which are mature enough to begin initial preliminary design			
<b>Title:</b> C2BMC Experimentation Lab (X-Lab)	5.287	5.051	4.270
<b>Articles:</b>	-	-	-
<p><b>Description:</b> The C2BMC Experimentation Lab (X-Lab) explores, prototypes, and demonstrates future C2BMC technologies within C2BMC and as an integrated component with other BMDS elements. Through the collection and analysis of metrics that demonstrate C2BMC performance utilizing representative Suite hardware and software, the lab assesses prospective technologies' impact on the BMDS and characterizes C2BMC Spiral performance in advance of formal deliveries as a risk reduction activity. The lab hosts fielded, in-development, and prototype spiral capabilities and enables flight and ground test participation for C2BMC, ESL, and OPIR products with robust connectivity to stimulation frameworks, weapon systems, sensors, and operational assets.</p> <p><b>FY 2015 Accomplishments:</b> The C2BMC Experimentation Lab (X-Lab) prototypes and demonstrates new C2BMC capabilities. -Demonstrated algorithms and data distribution architectures for transmitting system tracks that included features. This enabled weapon systems to form Target Object Maps that allowed an engagement beyond line of sight of the organic radar to utilize the full extent of the physical range of the interceptor (Engage-on-Remote) - Developed and evaluated interfaces and data distribution architectures that implemented a common cueing protocol with the Joint Overhead Persistent Infra-Red (OPIR) Ground (JOG), Space Based Infra-Red System (SBIRS), and MDA system architectures to yield improved efficiency in cueing, increase battlespace for Homeland Defense, and decrease C2BMC sustainment costs . - Characterized the performance of engineering releases of C2BMC Spiral 8.2 to mitigate risks early in the development and integration processes through pairwise and hardware-in-the-loop developmental testing activities.</p> <p><b>FY 2016 Plans:</b> The decrease in funding from FY 2015 to FY 2016 is attributed to transition of SBIRS Increment 2 from development to operations.  The C2BMC Experimentation Lab (X-Lab) prototypes and demonstrates new C2BMC capabilities. The FY 2016 focus will be:  - Evaluate the efficacy of virtualization when applied to the C2BMC mission node, in terms of mission performance and the potential for reduction of Operations and Sustainment (O&amp;S) costs - Evaluate Engage-on Remote performance in a series of flight and ground tests</p>			

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Evaluate prototype advanced sensor and hit assessment technologies</li> <li>- Evaluate multi-sensor source track fusion to improve efficiency in cueing, increase battlespace for Homeland Defense, and decrease C2BMC performance risks</li> <li>- Evaluate interfaces and data distribution architectures that implement a common cueing protocol with the Joint Overhead Persistent Infra-Red (OPIR) Ground (JOG), Space Based Infra-Red System (SBIRS), and MDA system architectures to improve efficiency in cueing, increase battlespace for Homeland Defense, and decrease C2BMC sustainment costs</li> <li>- Assess Link-16 engagement coordination capabilities for planning and managing the execution of Link-16 remote engagements, to include Engage-on Remote</li> <li>- Assess alternative approaches for coordinating strategic sensor task planning, execution and coordination with missile defense regional COCOM tasking priorities</li> <li>- Characterize the performance of engineering releases of C2BMC Spiral 8.2-1 to mitigate risks early in the development and integration processes</li> <li>- Implement systems and network connection security requirements to mitigate connectivity risks early in the development process</li> </ul> <p><b>FY 2017 Plans:</b> The decrease in funding from FY2016 to FY2017 is attributed to the decision to change the functional allocation of interface requirements from X-Lab to the Enterprise Sensor Lab (ESL).</p> <p>The X-Lab will provide the following:</p> <ul style="list-style-type: none"> <li>- Characterize the performance of engineering releases of C2BMC Spiral 8.2-3 and Spiral 8.2-5 to mitigate risks early in the development and integration processes</li> <li>- Assess Link-16 engagement coordination capabilities for planning and managing the execution of Link-16 remote engagements, to include Engage-on-Remote (EOR), and evaluate in a series of flight and ground tests</li> <li>- Assess alternative approaches for coordinating strategic sensor task planning, execution and coordination with missile defense regional CCMD tasking priorities</li> <li>- Evaluate prototype advanced sensors and post intercept assessment/hit assessment technologies</li> <li>- Evaluate interfaces and data distribution architectures that implement multi-sensor source track fusion and a common cueing protocol with the Joint Overhead Persistent Infra-Red (OPIR) Ground (JOG), Space Based Infra-Red System (SBIRS), and BMDS system architectures to improve cueing efficiency, increase Homeland Defense battlespace, and decrease C2BMC sustainment costs.</li> <li>- Characterize prototype system virtualization technology for impacts to mission performance and the potential for reduction of Operations and Sustainment (O&amp;S) costs</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Implement systems and network connection security requirements to mitigate connectivity risks early in the development process			
<b>Title:</b> Enterprise Sensors Lab (ESL)	13.190	13.799	16.306
<b>Articles:</b>	-	-	-
<b>Description:</b> In support of EPAA Phase 3 and the improved utilization of OPIR data, the Enterprise Sensors Lab (ESL) and supporting activities prototype and demonstrate algorithms that fuse space, airborne, and terrestrial-based sensor data to provide three-dimensional (3-D) tracks of threat missiles to enable sensor cueing and Launch/Engage-on-Remote (LOR/EOR) using all sensors. Additionally, in support of Homeland Defense, ESL extracts features in support of post intercept assessment with a goal of enabling a shoot-look-shoot capability and discrimination assessment feedback.			
<b>FY 2015 Accomplishments:</b> The Enterprise Sensors Lab (ESL) prototypes and demonstrates algorithms that fuse space, airborne, and terrestrial-based sensor data to provide three-dimensional (3-D) tracks of threat missiles to enable sensor cueing and Launch/Engage-on-Remote (LOR/EOR) using all sensors. Additionally, ESL extracts features in support of hit assessment with a goal of enabling a shoot-assess-shoot capability. - Executed deferred FY 2014 efforts including critical independent analysis, algorithm development, and source data product tasks. provided independent analysis of ESL algorithms to support BOA 6.1 CDR entrance criteria; continued maturation of algorithms to improve missile typing, post-boost tracking, and OPIR sensor cueing; provided consistent data feeds from multiple sources enabling experimentation and test activities to remain on schedule and achieve objectives; developed prototype algorithms to exploit the Discrimination Sensor Technology (DST) airborne sensor infrared data and provide track reporting in support of the Aegis Weapon System Critical Experiment - Incorporated the Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit Scanner Wideband Data into ESL Baseline Release (EBR) 6.1.2 to form a more accurate 3-D track; initiated soak testing in the developmental environment to provide performance characterization feedback prior to transition into the end-state operational product, the BMDS OPIR Architecture (BOA) 6.1 software build; incorporated the SBIRS GEO Starer Wideband Data into EBR 6.1.3 to yield improved 3-D tracks and initiated developmental testing - Enhanced prototype algorithms to extract dimmer targets from sensor data to improve tracking and enable additional sensor cueing opportunities: demonstrated utility of algorithms using multiple Targets of Opportunity data collection events.			
<b>FY 2016 Plans:</b> The Enterprise Sensors Lab (ESL) and supporting activities prototype and demonstrate algorithms that fuse space, airborne, and terrestrial-based sensor data to provide three-dimensional (3-D) tracks of threat missiles to enable sensor cueing and Launch/Engage-on-Remote (LOR/EOR) using all sensors. Additionally, ESL extracts features in support of hit assessment with a goal of enabling a shoot-look-shoot capability			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Continue to incorporate the Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit (GEO) Scanner Wideband and other new Overhead Persistent Infra-Red (OPIR) sensors data feeds to form a more accurate 3-D track</li> <li>- Initiate integration of SBIRS GEO Starer Wideband sensor data to form a more accurate 3-D track</li> <li>- Prototype hit assessment algorithms based on a fusion of enterprise sensor data to enable a shoot-look-shoot capability</li> <li>- Prototype algorithms for fusing joint Infrared/Radio Frequency systems measurement data real-time to enhance 3-D tracking of threat missiles</li> <li>- Continue to enhance prototype algorithms to extract dimmer targets from sensor data to extend the length of the track and enable additional sensor cueing opportunities</li> </ul> <p><b>FY 2017 Plans:</b> The increase in funding from FY2016 to FY2017 is attributed to the decision to change the functional allocation of interface requirements from X-Lab to the Enterprise Sensor Lab (ESL) and to accommodate increased Targets of Opportunity and flight test analysis for wideband data exploitation and aggregated discrimination capability experimentation.</p> <p>ESL provides the following:</p> <ul style="list-style-type: none"> <li>- Continue integration of SBIRS GEO Starer Wideband and Future sensor data to form a more accurate 3-D track in both boost and early mid-course phases of threat flyout to improve cueing of other BMDS sensors</li> <li>- Continue prototyping post-intercept assessment algorithms based on a fusion of enterprise sensor data to enable shoot-assess-shoot capability</li> <li>- Continue prototyping algorithms for fusing joint Infrared/Radio Frequency systems measurement data real-time to enhance 3-D tracking of threat missiles</li> <li>- Continue to enhance prototype algorithms to extract dimmer targets from sensor data to extend the length of the track and enable additional sensor cueing opportunities</li> <li>- Continue to develop and mature OPIR Enterprise tasking and cueing capability to most effectively exploit available OPIR data to support full spectrum of missile kill chain</li> </ul>			
<p><b>Title:</b> C2BMC Communications</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Ballistic Missile Defense (BMD) Communications Network (BCN) ties together an expanding set of sensors and weapons systems enabling the National Command Authority and the commanders at the strategic, theater and tactical levels to optimally engage ballistic missile threats including near simultaneous theater, regional and homeland attacks. The BCN provides a robust, end-to-end, high availability, operational communications network (COMNET) infrastructure with diverse paths that quickly and unambiguously share information across the global Ballistic Missile Defense System (BMDS).</p>	39.816	23.957	28.102
	-	-	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>- Provided Ground-Based Midcourse Defense (GMD) Communications Network (GCN) Long Haul Communications Transport (LHCT) Services</li> <li>Completed engineering support to AN/GSC-52B SATCOM terminal, Modernization Enterprise Terminal (MET), at Ramstein AFB for connectivity via Indian Ocean Defense Satellite Communication System (DSCS). Completed installation, checkout, testing, and turnover of terminal to the Air Force.</li> <li>- Continued network and communications support for C2BMC 6.4 in the European Command (EUCOM), Strategic Command (STRATCOM), Northern Command (NORTHCOM), Pacific Command (PACOM), and Central Command (CENTCOM)</li> <li>- Continued engineering and deployment support of C2BMC Deployable Interface Nodes (CDINs) (C2BMC Element funded software capability and project management)</li> <li>- Participated in and analyze results of ground and flight tests, wargames, and exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</li> <li>- Resolved real-time operational issues through the C2BMC Control Center (CCC) (includes BMDS Network Operations and Security Center (BNOSC))</li> <li>- Provided global BMDS communications via leased Defense Information Systems Agency (DISA) circuit</li> <li>- Provided SME support to fielded C2BMC locations to ensure continued performance and operations</li> <li>- Provided sustaining engineering support for fielded network equipment</li> <li>- Provided support of AN/TPY-2 radar communications nodes to ensure continued performance and operations including installation of new AN/TPY-2 radar communications node at a site in Japan and installation and support of AN/GSC-52B SATCOM terminals, Modernization of Enterprise Terminal-Transportable (MET-T), at a site in Japan</li> <li>- Continued acquisition of network circuits to support planned FY 2017 S8.2 capability deployment</li> <li>- Developed fielding plans for protected Anti-Jam (AJ) /Anti-Scintillation (AS) Wideband Network System (PAAWNS) to missile defense locations worldwide</li> <li>- Installed improved LHCT at AN/TPY-2 radar locations in CENTCOM, EUCOM, and PACOM,</li> <li>-Installed LHCT for AEGIS Ashore Romania in support of EPAA Phase II</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <p>The decrease between FY 2015 and FY 2016 funding was due to the planned FY 2015 completion of the following: Site K SATCOM installation and checkout, Site KCS deployment and activation, Aegis Ashore (Romania) terrestrial fiber communication trunks, Japanese Host Nation Interface (HNI) changes to add a connection to Commander, Naval Forces Japan (CNFJ), Shariki transition from ATM to optical network interface, and the Shariki circuit leases transfer to the Army.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provide Ground-Based Midcourse Defense (GMD) Communications Network (GCN) Long Haul Communications Transport (LHCT) Services</li> <li>- Continue engineering support to AN/GSC-52B SATCOM terminal, Modernization Enterprise Terminal (MET), at Ramstein Air Force Base (AFB) for connectivity via Indian Ocean Defense Satellite Communication System (DSCS)</li> <li>- Continue network, communications and risk management support for C2BMC Spiral 6.4 in the European Command (EUCOM), Strategic Command (STRATCOM), Northern Command (NORTHCOM), Pacific Command (PACOM), and Central Command (CENTCOM)</li> <li>- Continue engineering and deployment support of C2BMC Deployable Interface Nodes (CDINs) (C2BMC Element funded software capability and project management)</li> <li>- Participate in and analyze results of ground and flight tests, wargames, cyber range /other exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</li> <li>- Resolve real-time operational issues through the C2BMC Control Center (CCC) (includes BMDS Network Operations and Security Center (BNOSC))</li> <li>- Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuit</li> <li>- Provide Subject Matter Expert (SME) support to fielded C2BMC locations to ensure continued performance and operations</li> <li>- Provide sustaining engineering support for fielded network equipment to include required security maintenance</li> <li>- Provide support of Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar communications nodes to ensure continued performance and operations including installation of new AN/TPY-2 radar communications node at a site in Japan and installation and support of AN/GSC-52B SATCOM terminals, Modernization of Enterprise Terminal-Transportable (MET-T), at a site in Japan</li> <li>- Acquire network circuits to support planned FY 2017 Spiral 8.2 capability deployment</li> <li>- Continue fielding of Protected Anti-Jam (AJ) / Anti-Scintillation (AS) Wideband Network System (PAAWNS) to missile defense locations worldwide</li> <li>- Continue to upgrade the BMD Communications Network capability (development, integration and test) to support European Phase Adaptive Approach (EPAA)</li> <li>- Continue to upgrade DoD teleports to enhance satellite communications (SATCOM) connectivity</li> <li>- Continue Cyber Net Defense (CND) requirements for Homeland Defense EPAA Phases 1 and 2</li> </ul> <p><b>FY 2017 Plans:</b> Ballistic Missile Defense Communications Network (BCN) provides the following:</p> <ul style="list-style-type: none"> <li>- Provide Ground-Based Midcourse Defense (GMD) Communications Network (GCN) Long Haul Communications Transport (LHCT) Services</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Continue engineering support to AN/GSC-52B SATCOM terminal, Modernization Enterprise Terminal (MET), at Ramstein Air Base via the Indian Ocean Defense Satellite Communication System (DSCS)</li> <li>- Continue network, communications, and Cybersecurity support for C2BMC Spiral 6.4 in the European Command (EUCOM), Strategic Command (STRATCOM), Northern Command (NORTHCOM), Pacific Command (PACOM), and Central Command (CENTCOM)</li> <li>- Continue engineering and deployment support of C2BMC Deployable Interface Nodes (CDINs) (C2BMC Element funded software capability and project management)</li> <li>- Participate in and analyze results of ground and flight tests, wargames, cyber range, and other exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</li> <li>- Resolve real-time operational issues through the C2BMC Control Center, including the BMDS Network Operations and Security Center (BNOSC)</li> <li>- Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuits</li> <li>- Provide Subject Matter Expert (SME) support to fielded C2BMC locations to ensure continued performance and operations</li> <li>- Provide sustaining engineering support for fielded network equipment to include required security</li> <li>- Acquire network circuits to support planned Spiral 8.2-1 capability deployment</li> <li>- Continue fielding of Protected Anti-Jam / Anti-Scintillation Wideband Network System (PAAWNS) to missile defense locations worldwide</li> <li>- Continue to upgrade the BCN capability supporting all EPAA phases- Continue to upgrade DoD teleports to enhance satellite communications (SATCOM) connectivity</li> <li>- Continue Cyber Net Defense (CND) requirements for Homeland Defense EPAA Phases 1 and 2</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	254.080	260.100	249.662

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The Command and Control, Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems was the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ended 1st quarter FY 2012. A sole source C2BMC follow-on contract to Lockheed Martin for Spiral Development, Operation and Sustainment, and Testing was awarded 1st quarter FY 2012 for an ordering period of five years through 1st quarter FY 2017. Spiral 8.2 will be fielded in three separate increments. Spiral 8.2-1 will be fielded in FY 2017, fielding of Spiral 8.2-3 in FY 2019, and completion of system deployment with Spiral 8.2-5 in FY 2021. This incremental fielding required a modification to the base contract increasing the ceiling by \$870 million and adding an additional five-year ordering period to extend the contract through first quarter FY 2022. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>
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<b>Product Development (\$ in Millions)</b>				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
C2BMC Development and Deployment - Aggregated Discrim	Various	Various : Various	0.000	0.000		0.000		10.490	Oct 2016	-		10.490	Continuing	Continuing	Continuing
C2BMC Development and Deployment - BOA Development	SS/CPAF	Northrop Grumman Space and Mission Systems : Colorado Springs, CO	0.000	6.573		6.221		10.315	Oct 2016	-		10.315	Continuing	Continuing	Continuing
C2BMC Development and Deployment - C2BMC Hardware/Software Development, Integration & Test (I&T)	SS/IDIQ	Lockheed Martin Team : Arlington, VA	326.090	104.035		123.492		106.213	Dec 2016	-		106.213	Continuing	Continuing	Continuing
C2BMC Development and Deployment - C2BMC Integration	Various	Services DISA Agency : -	147.549	6.549		0.000		0.000		-		0.000	0	154.098	0
C2BMC Development and Deployment - C2BMC Mid-Term Discrim-SCOUT	SS/CPFF	Northrop Grumman Space and Mission Systems : Colorado Springs, CO	0.000	9.751		19.377		4.900	Oct 2016	-		4.900	Continuing	Continuing	Continuing
C2BMC Development and Deployment - C2BMC Mid-Term Discrim-SCOUT OGA	MIPR	Aviation and Missile Research Development and Engineering Center : Huntsville, AL	0.000	1.200		1.200		0.000		-		0.000	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Contract Support Services	SS/FFP	Cobham Analytic Solutions, Paradigm, CACI, CSC : Arlington, VA/ Huntsville, AL	180.801	22.561		24.505		25.026	Oct 2016	-		25.026	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Federally Funded Research & Development Centers /	MIPR	MITRE, IDA, ORNL, Aerospace, JHU/APL, GTRI : Arlington, VA/ Huntsville, AL/	108.849	16.470		14.891		15.405	Oct 2016	-		15.405	Continuing	Continuing	Continuing

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date:</b> February 2016				
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>						

<b>Product Development (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
University Affiliated Research Center		Colorado Springs, CO													
C2BMC Development and Deployment - IT User Services	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.000		4.898	Oct 2015	0.000		-		0.000	Continuing	Continuing	Continuing
C2BMC Development and Deployment - MDA Civilian, Travel & PCS	Various	- : Arlington, VA/ Huntsville, AL/ Colorado Springs, CO	82.787	22.548		22.709		21.635	Oct 2016	-		21.635	Continuing	Continuing	Continuing
C2BMC Development and Deployment - OPIR Integration	SS/CPAF	Lockheed Martin : Arlington, VA	0.000	0.000		0.000		1.000	Oct 2016	-		1.000	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Sensor to Host Interface	C/CPFF	JHU/APL : Laurel, MD	0.000	6.100		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
C2BMC Development and Deployment - Spiral Development	Various	Sandia, MDA Other : Various	0.000	0.000		0.000		6.000	Oct 2016	-		6.000	Continuing	Continuing	Continuing
C2BMC Experimentation Lab (X-Lab) - X-Lab	SS/CPAF	Various / Northrop Grumman Mission Systems : Colorado Springs, CO	36.141	5.287		5.051		4.270	Oct 2016	-		4.270	Continuing	Continuing	Continuing
Enterprise Sensors Lab (ESL) - ESL	SS/CPAF	Sandia, Perdue, SciTech, DISA, Army, Navy, AMRDEC : Various	0.000	0.000		0.000		8.875	Oct 2016	-		8.875	Continuing	Continuing	Continuing
Enterprise Sensors Lab (ESL) - Enterprise Sensor Lab	SS/CPAF	Northrop Grumman Space and Mission Systems : Colorado Springs, CO	17.461	13.190		13.799		7.431	Oct 2016	-		7.431	Continuing	Continuing	Continuing
C2BMC Communications - Communication Equipment and Fielding	SS/CR	DISA, PMDCATS, SPAWAR : Various	81.281	25.945		13.192		12.884	Oct 2016	-		12.884	Continuing	Continuing	Continuing

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date:</b> February 2016				
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>						

<b>Product Development (\$ in Millions)</b>				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			
C2BMC Communications - BNOSC	SS/CPAF	Lockheed Martin Team / JRDC : Colorado Springs, CO	16.391	3.353		3.071		4.062	Oct 2016	-		4.062	Continuing	Continuing	Continuing
C2BMC Communications - C2BMC Integration	Various	Services : DISA Agency	0.000	0.000		0.000		3.450	Oct 2016	-		3.450	Continuing	Continuing	Continuing
C2BMC Communications - Communication Leases	SS/CR	DISA : Arlington, VA	21.292	7.993		7.194		7.706	Oct 2016	-		7.706	Continuing	Continuing	Continuing
C2BMC Communications - EUCOM Communications	MIPR	USAFE : Ramstein, DE	10.020	2.525		0.500		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,028.662	254.080		260.100		249.662		-		249.662	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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			

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	1,028.662	254.080	260.100	249.662	-	249.662	-	-	-

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

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</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
MD01 Command & Control, Battle Management, Communications (C2BMC)					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				
Spiral 8.2-1 NORTHCOM/PACOM Capability Declaration												△																
Spiral 8.2-1/Spiral 8.2-3 CENTCOM Capability Declaration																△												
Spiral 8.2-1/Spiral 8.2-3 EUCOM Capability Declaration																△												
Spiral 8.2-3 NORTHCOM/PACOM Capability Declaration																				△								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD01 Command & Control, Battle Management, Communications (C2BMC)	1	2016	4	2020
Spiral 8.2-1 NORTHCOM/PACOM Capability Declaration	4	2017	4	2017
Spiral 8.2-1/Spiral 8.2-3 CENTCOM Capability Declaration	1	2019	1	2019
Spiral 8.2-1/Spiral 8.2-3 EUCOM Capability Declaration	1	2019	1	2019
Spiral 8.2-3 NORTHCOM/PACOM Capability Declaration	3	2019	3	2019

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>				<b>Project (Number/Name)</b> MC01 / <i>Cyber Operations</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MC01: <i>Cyber Operations</i>	0.655	0.819	0.543	0.905	-	0.905	0.942	0.979	1.018	1.058	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The funds in this project sustain Missile Defense Agency (MDA) Risk Management Framework (RMF) and Security Controls Assessments (SCA)/Controls Validation Testing (CVT) activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information System Security Manager (PM/ISSM) Plans of Action and Milestones (POA&Ms) for MDA Command and Control, Battle Management and Communications (C2BMC) mission systems. It maintains the Assessment and Authorization (A&A)/Certification and Accreditation (C&A) data repository, capturing the RMF 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 A&A /C&A documentation and certification recommendations to the MDA Senior Information Assurance Officer (SIAO)/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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Network/System Certification and Accreditation (C&A)	0.819	0.543	0.905
<b>Articles:</b>	-	-	-
<b>Description:</b> This activity sustains the Risk Management Framework (RMF) and Controls Validation Testing (CVT) 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 Command and Control, Battle Management and Communications (C2BMC) mission systems. It maintains the Certification and Accreditation (C&A) data repository, capturing the RMF 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 (SIAO)/Certification Authority (CA) and DAA. Independent Verification and Validation (IV&V)			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MC01 / <i>Cyber Operations</i>

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

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).

***FY 2015 Accomplishments:***

- Conducted cybersecurity / information assurance engineering and architecture planning for C2BMC information technology systems.
- Planned and tested the IA controls for Ballistic Missile Defense System (BMDS) C2BMC systems.
- Developed C2BMC DIACAP / RMF certification and accreditation packages.
- Conducted Controls Validation Testing (CVT) of C2BMC mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.
- Conducted annual information assurance/cybersecurity reviews on the C2BMC enclaves to assess compliance in implementing and maintaining IA controls.

***FY 2016 Plans:***

- Conduct cyber security / information assurance (IA) engineering and architecture planning for C2BMC information technology systems.
- Plan and test the information assurance (IA) controls for Ballistic Missile Defense System (BMDS) C2BMC systems.
- Develop C2BMC Risk Management Framework (RMF) certification and accreditation packages.
- Conduct Controls Validation Testing (CVT) of C2BMC mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies.
- Conduct annual information assurance reviews on the C2BMC enclaves to assess compliance in implementing and maintaining IA controls.

***FY 2017 Plans:***

- Conduct cybersecurity design, engineering, and architecture planning for C2BMC information technology systems
- Plan and test the cybersecurity controls for Ballistic Missile Defense System (BMDS) C2BMC systems
- Develop C2BMC Risk Management Framework (RMF) assessment and authorization packages
- Conduct Security Controls Assessment (SCA) Testing Continuous Monitoring of C2BMC mission systems and provide Plan of Action and Milestones to mitigate cybersecurity vulnerabilities
- Conduct annual cybersecurity reviews on the C2BMC enclaves to assess risk and compliance in implementing and maintaining RMF controls

FY 2015	FY 2016	FY 2017

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MC01 / <i>Cyber Operations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
- Conduct cybersecurity network defense management to assess risk of site systems connected to C2BMC systems			
<b>Accomplishments/Planned Programs Subtotals</b>	0.819	0.543	0.905

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The Command and Control, Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems was the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ended 1st quarter FY 2012. A sole source C2BMC follow-on contract to Lockheed Martin for Spiral Development, Operation and Sustainment, and Testing was awarded 1st quarter FY 2012 for an ordering period of five years through 1st quarter FY 2017. Spiral 8.2 will be fielded in three separate increments. Spiral 8.2-1 will be fielded in FY 2017, fielding of Spiral 8.2-3 in FY 2019, and completion of system deployment with Spiral 8.2-5 in FY 2021. This incremental fielding required a modification to the base contract increasing the ceiling by \$870 million and adding an additional five-year ordering period to extend the contract through first quarter FY 2022. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MC01 / <i>Cyber Operations</i>
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<b>Product Development (\$ in Millions)</b>				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) - Civ Cyber Labor	Various	MDA Other : Various	0.000	0.211		0.000		0.348		-		0.348	Continuing	Continuing	Continuing
Network/System Certification and Accreditation (C&A) - IA/ CND Network/System C&A	C/CPFF	Torch Technologies : Various	0.655	0.608		0.543		0.557	Jul 2017	-		0.557	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.655	0.819		0.543		0.905		-		0.905	-	-	-

**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
<b>Project Cost Totals</b>	0.655	0.819	0.543	0.905	-	0.905	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MC01 / <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
MC01 Cyber Operations					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MC01 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC01 Cyber Operations	1	2016	4	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>		
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT01: <i>C2BMC Test</i>	76.296	51.890	56.318	52.727	-	52.727	55.665	53.188	55.129	56.207	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

**TESTING**

Command and Control, Battle Management and Communications (C2BMC) supports system flight and ground testing, wargames, and exercises as detailed in the MDA Integrated Master Test Plan (IMTP) to ensure C2BMC capabilities delivered are consistent with the Prioritized Capabilities List and are interoperable with other Ballistic Missile Defense System (BMDS) components.

**LAB INFRASTRUCTURE**

C2BMC gains efficiencies and minimizes laboratory resource requirements (footprint, personnel, and hardware) by utilizing the C2BMC test bed infrastructure as the laboratory environment supporting System Test, Development, and Sustainment. For System Ground and Flight Test, the labs are used for pre-test analysis, test execution and post-test analysis. For Development, the labs are utilized for software verification and validation testing and system integration testing. For Sustainment, the labs are used to assist with root cause determination for issues discovered on the fielded system and validation of any required software patches.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Integrated Master Test Plan	51.890	56.318	52.727
<b>Articles:</b>	-	-	-
<b>Description:</b> This activity funds C2BMC participation in BMDS flight and ground testing in accordance with the BMDS Integrated Master Test Plan (IMTP).			
<b>FY 2015 Accomplishments:</b>			
Participated in and analyze results of ground and flight tests, wargames, and exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)			
- Continued to plan, collect data, assess, examine, and report on C2BMC spiral integration testing			
- Supported interoperability and integration of the BMDS program elements			
- Supported the field testing of the European and Central Command Deployments			
- Supported European Phased Adaptive Approach (EPAA) Phase 2-3 Situational Awareness (SA) Node deployments			
- Continued to provide infrastructure, network, and troubleshooting support to:			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>-- C2BMC Command Center (CCC) (Includes BMDS Network Operations and Security Center (BNOSC))</p> <p>-- System Test and Operations Center (STOC)</p> <p>-- Ballistic Missile Defense System (BMDS) Communications Network (BCN)</p> <p>-- Distributed Multi-Echelon Distributed Training system (DMETS) Infrastructure</p> <p>-- Distributed Training system (DTS)</p> <p>- Continued build-out of Spiral 8.2 Testbed for IMTP scheduled events</p> <p>- Continued C2BMC and NATO planning demonstrations</p> <p>- Continued to support NATO live fire events</p> <p>- Continued development and upgrades for Cyber Testing in the C2BMC Testbed (CTB)</p> <p>- FTO-02 : Conducted pre-mission requirements &amp; planning, test readiness and execution activities</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, FTT-18 was delayed for execution in FY 2016.</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>Enterprise Sensors Laboratory (ESL):</p> <p>-Demonstrated prototype algorithms for track and measurement level sensor data fusion and feature extraction through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds. Project MT01 funds test operations for the capabilities established in the Enterprise Sensors Laboratory and described in Project MD01.</p> <p>-Planned, coordinated, and provided test operations utilizing ESL prototypes to produce data to enable assessments of track accuracy improvements resulting from incorporation of Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit Scanner Wideband and other new Overhead Persistent Infra-Red (OPIR) sensor data feeds</p> <p>-Planned, coordinated, and provided test operations utilizing ESL prototypes to produce data to enable characterization of the capability to extract information from observations of dim upper stages of threat systems.. ESL provided post-test analysis of prototype algorithm performance for select events and targets of opportunity.</p> <p>-Compiled and provided test and demonstration results back to the algorithms development activity in Project MD01 to enable algorithm refinement.</p> <p>Specific FY15 testing accomplishments:</p> <p>-Flight Test Other-20 (FTX-20): ESL demonstrated first time live data fusion, cueing, and formation of Launch on Remote (LoR) quality tracks and with live Discrimination Sensor Technology (DST) Reaper-borne sensors and exercised OPIR cueing.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>-Flight Test Maritime (FTM-25): ESL and C2BMC X-Lab demonstrated an Aegis simulated LoR engagement with live DST Reaper-borne sensors and exercised OPIR cueing.</p> <p>-FTX-19: ESL demonstrated reverse cueing capability and OPIR wideband data utility</p> <p>Glory Trip 214 (GT-214) and GT-215: ESL demonstrated improved track fusion and cueing capability</p> <p>-Ground Test Integrated 06b part 1 (GTI-06b pt. 1): ESL utilized the Ground Test environment to soak (continually run software in a relevant environment to yield data for performance analysis) ESL Baseline Release 5.1 as a risk reduction task in support of C2BMC software development activities.</p> <p>C2BMC Experimentation Lab (X-Lab):</p> <ul style="list-style-type: none"> <li>- Demonstrated maturing C2BMC technologies and software builds through flight tests (FTM-25, FTM-26, FTO-02 E1 &amp; E2, and FTX-20), ground tests (GTI-06 pt. 1), and real-world targets of opportunities before incorporation into formal C2BMC spiral builds. Project MT01 funded the test operations for the capabilities established in the X-Lab facility and described in Project MD01.</li> <li>-Planned, coordinated, and provided test operations utilizing maturing C2BMC technologies to produce data to enable evaluation of architecture schemas for system track data distribution and common cueing protocols across the Joint OPIR Ground (JOG), Space Based Infra-Red System (SBIRS), and MDA system architectures. (FTM-25, FTM-26, FTO-02 E1 &amp; E2, FTX-20, GTI-06 pt. 1).</li> <li>-Compiled and provided test and demonstration results back to the development activity in Project MD01 for architecture refinement activities for future Spiral builds.</li> <li>-Hosted and tested Spiral 8.2-1 engineering releases in an operationally relevant environment to provide developmental test feedback in Project MD01 for continued refinement and performance evaluation of the Spiral 8.2-1 software.</li> </ul> <p>Wargames</p> <p>C2BMC participated in 6 major wargame exercises supporting all five combatant commands, NATO partners, and Host Nations allowing warfighters to validate Ballistic Missile Defense Techniques, Tactics, and Procedures specific to individual Areas of Operations.</p> <p>Program, Planning &amp; Operations</p> <p>M&amp;S participation in System Test and Exercise Events</p> <ul style="list-style-type: none"> <li>- Provided Predictive Analysis support to three Flight Tests and one Ground Test.</li> <li>- Used the BMDS C2BMC Model (BCM) to enable exercise integration testing activities</li> <li>- Integrated Master Assessment Plan (IMAP):</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Continue development of Spiral 8.2 assessment requirements (Assessment Objectives, Assessment Sub-Objectives, and Critical Assessment Conditions) to capture engineering, test, and analysis data to support S8.2 Technical Capability Declaration, and drive BMDS system test objectives and test resourcing in the BMDS Integrated Master Test Plan (IMTP).</p> <p><b>FY 2016 Plans:</b>                      Flight Test Execution:                      Participate in and analyze results of flight tests in accordance with the BMDS Integrated Master Test Plan (IMTP)</p> <p>Enterprise Sensors Laboratory (ESL) and supporting activities:                      -Demonstrate prototype algorithms for track and measurement level sensor data fusion and feature extraction through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds.                      -Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable assessments of track accuracy improvements resulting from incorporation of Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit (GEO) Scanner Wideband, SBIRS GEO Starer Wideband, and other new Overhead Persistent Infra-Red (OPIR) sensor data feeds                      -Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable effectiveness evaluations of sensor data fusion enabled through the incorporation of radio frequency data into the existing ESL Infrared three-dimension (3-D) track formulation processes.                      -Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable characterization of the capability to extract information from observations of dim upper stages of threat systems and the ability to exploit features extracted from available sensor resource data.                      -Compile and provide test and demonstration results back to the algorithms development activity in Project MD01 to enable algorithm refinement</p> <p>C2BMC Experimentation Lab (X-Lab):                      - Demonstrate maturing C2BMC technologies and software builds through flight tests, ground tests and real-world targets of opportunity before incorporation into formal C2BMC spiral builds.                      -Plan, coordinate, and provide test operations utilizing maturing C2BMC technologies to produce data to enable evaluation of architecture schemas for system track data distribution and common cueing protocols across the Joint OPIR Ground (JOG), Space Based Infra-Red System (SBIRS), and Missile Defense Agency (MDA) system architectures.                      -Host and test Spiral 8.2 engineering releases                      -Compile and provide test and demonstration results back to the development activity in Project MD01 for architecture refinement activities and Spiral 8.2 performance evaluation</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Ground Test Execution: Participate in and analyze results of ground tests in accordance with the BMDS Integrated Master Test Plan (IMTP)</p> <p>Enterprise Sensors Laboratory (ESL):</p> <ul style="list-style-type: none"> <li>-Demonstrate prototype algorithms for track and measurement level sensor data fusion and feature extraction through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds.</li> <li>-Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable assessments of track accuracy improvements resulting from incorporation of Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit (GEO) Scanner Wideband and other new Overhead Persistent Infra-Red (OPIR) sensor data feeds</li> <li>-Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable effectiveness evaluations of sensor data fusion enabled through the incorporation of radio frequency data into the existing ESL Infrared three-dimension track formulation processes.</li> <li>-Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable characterization of the capability to extract information from observations of dim upper stages of threat systems and the ability to exploit features extracted from available sensor resource data.</li> <li>-Compile and provide test and demonstration results back to the algorithms development activity in Project MD01 to enable algorithm refinement</li> </ul> <p>C2BMC Experimentation Lab (X-Lab):</p> <ul style="list-style-type: none"> <li>- Demonstrate maturing Command and Control, Battle Management and Communications (C2BMC) technologies and software builds through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds.</li> <li>-Plan, coordinate, and provide test operations utilizing maturing C2BMC technologies to produce data to enable evaluation of architecture schemas for system track data distribution and common cueing protocols across the Joint OPIR Ground (JOG), Space Based Infra-Red System (SBIRS), and Missile Defense Agency (MDA) system architectures.</li> <li>-Host and test Spiral 8.2 engineering releases</li> <li>-Compile and provide test and demonstration results back to the development activity in Project MD01 for architecture refinement activities and Spiral 8.2 performance evaluation</li> </ul> <p>Resources: Participate in and analyze results of ground and flight tests, wargames, and exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Plan, collect data, assess, examine, and report on Command and Control, Battle Management and Communications (C2BMC) spiral integration testing</li> <li>- Support interoperability and integration of the BMDS program elements</li> <li>- Support European Phased Adaptive Approach (EPAA) Phase 2 Situational Awareness (SA) Node deployments</li> <li>- Provide infrastructure, network, and troubleshooting support to:                             <ul style="list-style-type: none"> <li>-- C2BMC Command Center (CCC) (Includes BMDS Network Operations and Security Center (BNOSC))</li> <li>-- System Test and Operations Center (STOC)</li> <li>-- C2BMC System Support Center (CSSC)</li> <li>-- Ballistic Missile Defense System (BMDS) Communications Network (BCN)</li> <li>-- Distributed Multi-Echelon Distributed Training system (DMETS) Infrastructure</li> <li>-- Distributed Training system (DTS)</li> </ul> </li> <li>- Continue C2BMC and North Atlantic Treaty Organization (NATO) planning demonstrations</li> <li>- Continue to support NATO live fire events</li> <li>- Continue development and upgrades for Cyber Testing in the C2BMC Testbed (CTB)</li> </ul> <p>Wargames &amp; Exercises: Participate in and analyze results of wargames and exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</p> <p>Program, Planning &amp; Operations:</p> <ul style="list-style-type: none"> <li>- Complete definition of Key Test Points for C2BMC Model (BCM 8.2-1) Verification and Validation</li> <li>- Allocate C2BMC Modeling and Simulation (M&amp;S) data collection requirements of Critical Engagement Conditions (CEC) and Key Test Points (KTP) to Flight and Ground Test events</li> <li>- Perform initial development of S8.2-3 CEC and KTP for inclusion in IMTP</li> </ul> <p><b>FY 2017 Plans:</b> The decrease in funding from FY 2016 to FY 2017 is attributed to an adjustment from the IMTP Test Program.</p> <p>Flight Test Execution:</p> <ul style="list-style-type: none"> <li>- Provide support for the design, pre-event count down, execution, and pre- and post- analysis for BMDS level flight tests.</li> <li>- Participate in and analyze results of flight tests in accordance with the BMDS Integrated Master Test Plan (IMTP).</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>- Support the four phases of MDA's Flight Test Concept of Operations (CONOPS): 1) Requirements Planning; 2) Readiness; 3) Execution; 4) Test Analysis and Reporting.</p> <p>-Integrate and test the BMDS Overhead Persistent Infra-Red (OPIR) Architecture to enable earlier sensor and weapon cueing of sensor and shooter, improve threat tracking, and provide source information for discrimination processing.</p> <p>Enterprise Sensors Laboratory (ESL) and supporting activities:</p> <ul style="list-style-type: none"> <li>- Demonstrate prototype algorithms for track and measurement level sensor data fusion and feature extraction through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable assessments of track accuracy improvements resulting from incorporation of Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit (GEO) Scanner Wideband, SBIRS GEO Starer Wideband, and other new Overhead Persistent Infra-Red (OPIR) sensor data feeds</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable effectiveness evaluations of sensor data fusion enabled through the incorporation of radio frequency data into the existing ESL Infrared three-dimension (3-D) track formulation processes</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable characterization of the capability to extract information from observations of dim upper stages of threat systems and the ability to exploit features extracted from available sensor resource data</li> <li>- Compile and provide test and demonstration results back to the algorithms development activity in Project MD01 to enable algorithm refinement</li> </ul> <p>C2BMC Experimentation Lab (X-Lab):</p> <ul style="list-style-type: none"> <li>- Demonstrate maturing C2BMC technologies and software builds through flight tests, ground tests and real-world targets of opportunity before incorporation into formal C2BMC spiral builds</li> <li>- Plan, coordinate, and provide test operations utilizing maturing C2BMC technologies to produce data to enable evaluation of architecture schemas for system track data distribution and common cueing protocols across the Joint OPIR Ground (JOG), Space Based Infra-Red System (SBIRS), and BMDS system architectures</li> <li>- Plan, coordinate, and support test operations utilizing maturing C2BMC technologies to develop a BMD Post Intercept Assessment capability</li> <li>- Host and test Spiral 8.2 engineering releases</li> <li>- Compile and provide test and demonstration results back to the development activity in Project MD01 for architecture refinement activities and Spiral 8.2 performance evaluation</li> </ul> <p>Ground Test Execution:</p>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Assess BMDS interoperability, integration, and functionality in lab and distributed environments, leveraging a complex set of scenarios to test the limits of the C2BMC system.</li> <li>- Participate in and analyze results of ground tests in accordance with the BMDS Integrated Master Test Plan (IMTP).</li> <li>-Support the four phases of the MDA Ground Test CONOPS: 1) Requirements and Scenarios, 2) Planning and Integration; 3) Execution; 4) Test and Analysis.</li> <li>-Integrate and test of the BMDS Overhead Persistent Infra-Red (OPIR) Architecture to enable earlier cueing of sensor and shooter, improve threat tracking, and provide source information for discrimination processing.</li> <li>- Support Phased Adaptive Approach (PAA) Phase 3: deployment of Near-Term Discrimination Improvements Inc 3 and Enhanced Homeland Defense Inc 4</li> </ul> <p>Enterprise Sensors Laboratory (ESL):</p> <ul style="list-style-type: none"> <li>- Demonstrate prototype algorithms for track and measurement level sensor data fusion and feature extraction through flight tests, ground tests and real-world targets of opportunities before incorporation into formal C2BMC spiral builds.</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable assessments of track accuracy improvements resulting from incorporation of Space Based Infra-Red System (SBIRS) Geosynchronous Earth Orbit (GEO) Scanner Wideband and other new Overhead Persistent Infra-Red (OPIR) sensor data feeds</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable effectiveness evaluations of sensor data fusion enabled through the incorporation of radio frequency data into the existing ESL Infrared three-dimension track formulation processes.</li> <li>- Plan, coordinate, and provide test operations utilizing ESL prototypes to produce data to enable characterization of the capability to extract information from observations of dim upper stages of threat systems and the ability to exploit features extracted from available sensor resource data.</li> <li>- Compile and provide test and demonstration results back to the algorithms development activity in Project MD01 to enable algorithm refinement</li> </ul> <p>C2BMC Experimentation Lab (X-Lab): - Demonstrate maturing Command and Control, Battle Management and Communications (C2BMC technologies and software builds through flight tests, ground tests and real-world targets of opportunity before incorporation into formal C2BMC spiral builds.</p> <ul style="list-style-type: none"> <li>- Plan, coordinate, and provide test operations utilizing maturing C2BMC technologies to produce data to enable evaluation of architecture schemas for system track data distribution and common cueing protocols across the Joint OPIR Ground (JOG), Space Based Infra-Red System (SBIRS), and BMDS system architectures.</li> <li>- Plan, coordinate, and provide test operations utilizing maturing C2BMC technologies to develop a BMD Post Intercept Assessment capability.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<p>- Host and test Spiral 8.2 engineering releases.</p> <p>- Compile and provide test and demonstration results back to the development activity in Project MD01 for architecture refinement activities and Spiral 8.2 performance evaluation.</p> <p>Resources:</p> <ul style="list-style-type: none"> <li>- Plan, collect data, assess, examine, and report on Command and Control, Battle Management and Communications (C2BMC) spiral integration testing.</li> <li>- Support interoperability and integration of the BMDS program elements.</li> <li>- Support European Phased Adaptive Approach (EPAA Phase 2 Situational Awareness (SA) Node deployments</li> <li>- Provide infrastructure, network, and troubleshooting support to:             <ul style="list-style-type: none"> <li>-- C2BMC Command Center (CCC) (including the BMDS Network Operations and Security Center (BNOSC)</li> <li>-- System Test and Operations Center (STOC)</li> <li>-- C2BMC System Support Center (CSSC)</li> <li>-- Ballistic Missile Defense System (BMDS) Communications Network (BCN)</li> <li>-- Distributed Multi-Echelon Distributed Training system (DMETS) Infrastructure</li> <li>-- Distributed Training system (DTS)</li> <li>-- Continue C2BMC and North Atlantic Treaty Organization (NATO) planning demonstrations</li> <li>--- Continue to support NATO live fire events</li> </ul> </li> <li>- Continue development and upgrades for Cyber Testing in the C2BMC Testbed (CTB)</li> </ul> <p>Wargames &amp; Exercises:</p> <ul style="list-style-type: none"> <li>- Participate in and analyze results of wargames and exercises in accordance with the BMDS Integrated Master Test Plan (IMTP)</li> </ul> <p>Program, Planning &amp; Operations:</p> <ul style="list-style-type: none"> <li>- Develop Critical Engagement Conditions (CEC) and Key Test Points (KTP) for BMDS C2BMC Model (BCM) C2BMC Spiral 8.2-3 for inclusion in the IMTP</li> <li>- Allocate C2BMC Modeling and Simulation (M&amp;S) data collection requirements of Critical Engagement Conditions (CEC) and Key Test Points (KTP) to Flight and Ground Test events.</li> <li>- Provide Flight Test Predictive Analysis support.</li> <li>- Generate, test, and distribute Federated Model compatible scenarios for Ground Test and Flight Test Experimentation test support.</li> </ul>			
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Use BCM to support exercise integration testing activities including test case and scenario checkout.			
<b>Accomplishments/Planned Programs Subtotals</b>	51.890	56.318	52.727

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>

**D. Acquisition Strategy**

The Command and Control, Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems was the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ended 1st quarter FY 2012. A sole source C2BMC follow-on contract to Lockheed Martin for Spiral Development, Operation and Sustainment, and Testing was awarded 1st quarter FY 2012 for an ordering period of five years through 1st quarter FY 2017. Spiral 8.2 will be fielded in three separate increments. Spiral 8.2-1 will be fielded in FY 2017, fielding of Spiral 8.2-3 in FY 2019, and completion of system deployment with Spiral 8.2-5 in FY 2021. This incremental fielding required a modification to the base contract increasing the ceiling by \$870 million and adding an additional five-year ordering period to extend the contract through first quarter FY 2022. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

**E. Performance Metrics**

N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date:</b> February 2016				
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>						

<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
Integrated Master Test Plan - BMDS Level Testing GOV	TBD	Army/Air Force : Various	0.000	0.000		0.000		2.517	Oct 2016	-		2.517	Continuing	Continuing	Continuing
Integrated Master Test Plan - Enterprise Sensors Lab Infrastructure	SS/CPAF	Northrop-Grumman Corporation : Colorado Springs, CO	1.100	5.435		6.687		22.275	Oct 2016	-		22.275	Continuing	Continuing	Continuing
Integrated Master Test Plan - Enterprise Sensors Lab Infrastructure Support	MIPR	Various : VA; OH; AL;NM; CA	4.570	1.591		2.085		3.534	Oct 2016	-		3.534	Continuing	Continuing	Continuing
Integrated Master Test Plan - Integrated Master Test Plan BMDS Level Testing	SS/IDIQ	Lockheed Martin Team : Arlington, VA; Huntsville,	32.808	18.910		21.404		23.614	Jul 2017	-		23.614	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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				
		AL; Colorado Springs, CO														
Integrated Master Test Plan - Integrated Master Test Plan BMDS level Testing (Element/System Test Lab Facilities)	SS/CPAF	Northrop-Grumman Corporation : Colorado Springs, CO	37.818	25.954		26.142		0.787	Oct 2016	-		0.787	Continuing	Continuing	Continuing	
<b>Subtotal</b>			76.296	51.890		56.318		52.727		-		52.727	-	-	-	

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	76.296	51.890	56.318	52.727	-	52.727	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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)	✦																											
Warfighter TP 04e (BMDS Ground Test)			✦																									
GTI-06 Part 1 (BMDS Ground Test)			✦																									
(EX) European Air & Missile Defense Exercise Alliance 15			▲																									
GTI-06 Part 3 (BMDS Ground Test)				✦																								
(EX) EPOCH PLANEX 17			▲																									
(WG) Huntsville Wargames 15			▲																									
(EX) Arabian Gulf Shield (AGS) Event 3 15			▲																									
(WG) Space & Missile Defense Symposium 15			▲																									
FTT-18 (TH, Intercept Flight Test)												△																
GM CTV-02 Plus (GM, Intercept Flight Test)							△																					
(EX) Fleet Synthetic Training-Joint 16							△																					
(EX) Key Resolve 16							△																					
GTI-ISR ( 16) (BMDS Ground Test)								✦																				
(EX) European Air & Missile Defense Exercise Alliance 16							△																					
SFTM-01 (AEGIS 5.1, Intercept Flight Test)									△																			
GTD-06 Part 2 (BMDS Ground Test)									✦																			
(EX) Joint Air Defense Exercise Series 16									△																			
(WG) BMDS Wargames 17									✦	✦	✦	✦																
(WG) Nimble Titan Year 1 18									✦	✦	✦	✦																
(EX) EPOCH PLANEX 18										△																		
(EX) Arabian Gulf Shield (AGS) Event 1 17										△																		
(EX) Global Response Exercise (GREx) 16										△																		
FTG-15 (GM, Intercept Flight Test)										△																		
FTM-27 (AEGIS SBT, Intercept Flight Test)										△																		
Israeli Cooperative Intercept Flight Test - FY 2017										✦	✦	✦	✦															
(EX) Fleet Synthetic Training-Joint 17											△																	
(EX) Arabian Gulf Shield (AGS) Event 2 17											△																	

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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
(EX) Key Resolve 17										△																		
FTT-15 (TH, Intercept Flight Test)											△																	
SFTM-02 (AEGIS 5.1, Intercept Flight Test)											△																	
Warfighter TP 06 (BMDS Ground Test)											✦																	
(EX) Austere Challenge 17											✦	✦	✦	✦	✦	✦												
(EX) Steadfast Alliance 17											✦	✦																
(EX) European Air & Missile Defense Exercise Alliance 17												△																
GTI-07a (BMDS Ground Test)												✦																
(WG) Demonstration, Table-top Exercises & Experiments 17												✦	✦	✦														
(EX) KEEN Edge 18												✦	✦	✦	✦													
(EX) Joint Air Defense Exercise Series 17													✦															
(WG) Huntsville Wargames 17													△															
(EX) Arabian Gulf Shield (AGS) Event 3 17													△															
(WG) Space & Missile Defense Symposium 17													△															
FTM-24 (AEGIS 5.0, Intercept Flight Test)													△															
GTD-07a (BMDS Ground Test)													✦															
(EX) Air and Missile Defense Exercise Series 18														△														
(EX) EPOCH PLANEX 19														△														
(EX) Arabian Gulf Shield (AGS) Event 1 18														△														
(EX) Vigilant Shield/Global Thunder 17														△														
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)														✦														
(EX) Global Lightning 18														✦	✦													
(EX) Arabian Gulf Shield (AGS) Event 2 18															△													
(EX) Key Resolve 18															△													
(EX) Host Nation 18															✦	✦												
(EX) Global Response Exercise (GREx) 18															✦	✦												
(EX) Steadfast Alliance 18															✦	✦												
(EX) European Air & Missile Defense Exercise Alliance 18																△												



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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 0603896C / *Ballistic Missile Defense Command and Control, Battle Management & Communication*

**Project (Number/Name)**  
MT01 / *C2BMC Test*

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 E1 (OTA, Intercept Flight Test)																												
GTI-07b (BMDS Ground Test)													△															
(WG) Demonstration, Table-top Exercises & Experiments 18													✦	✦	✦													
(EX) Joint Air Defense Exercise Series 18													△															
(WG) Huntsville Wargames 18													△															
(EX) Arabian Gulf Shield (AGS) Event 3 18													△															
(EX) Ulchi Freedom Guardian 18													△															
(WG) Space & Missile Defense Symposium 18													△															
(WG) BMDS Wargames 19													✦	✦	✦	✦												
(WG) Nimble Titan Year 1 20													✦	✦	✦	✦												
(EX) Air and Missile Defense Exercise Series 19																△												
(EX) EPOCH PLANEX 20																△												
(EX) Arabian Gulf Shield (AGS) Event 1 19																△												
(EX) Vigilant Shield/Global Thunder 18																△												
FTM-31 (AEGIS SBT, Intercept Flight Test)																△												
FTM-33 (AEGIS SBT, Intercept Flight Test)																△												
FTO-03 E2 (OTA, Intercept Flight Test)																△												
GTD-07b Part 1 (BMDS Ground Test)																✦												
GTI-ISR (18) (BMDS Ground Test)																△												
(EX) Global Lightning 19																✦	✦											
(EX) EPOCH PLANEX 21																✦	✦	✦	✦	✦								
(EX) Fleet Synthetic Training-Joint 18																△												
(EX) Fleet Synthetic Training-Joint 19																△												
(EX) Arabian Gulf Shield (AGS) Event 2 19																△												
(EX) Key Resolve 19																△												
GTD-07b Part 2 (BMDS Ground Test)																✦												
(EX) Austere Challenge 19																✦	✦	✦	✦	✦	✦							
(EX) Steadfast Alliance 19																✦	✦											
(EX) European Air & Missile Defense Exercise Alliance 19																	△											
FTG-17 (DT/OT) (GM, Intercept Flight Test)																	△											
FTM-32 (AEGIS SBT, Intercept Flight Test)																	△											

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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
Warfighter TP 07b (BMDS Ground Test)																		▲										
GTX-08 Part 1 (BMDS Ground Test)																		▲										
(WG) Demonstration, Table-top Exercises & Experiments 19																		▲	▲	▲								
(EX) KEEN Edge 20																		▲	▲	▲	▲							
(EX) Joint Air Defense Exercise Series 19																		▲										
(WG) Huntsville Wargames 19																		▲										
(EX) Arabian Gulf Shield (AGS) Event 3 19																		▲										
(EX) Ulchi Freedom Guardian 19																		▲										
(WG) Space & Missile Defense Symposium 19																		▲										
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)																		▲										
(EX) Air and Missile Defense Exercise Series 20																			▲									
(EX) Arabian Gulf Shield (AGS) Event 1 20																			▲									
(EX) Global Lightning 20																			▲	▲								
(EX) Arabian Gulf Shield (AGS) Event 2 20																			▲									
(EX) Global Response Exercise (GREx) 20																			▲									
(EX) Key Resolve 20																			▲									
FTG-18 (GM, Intercept Flight Test)																			▲									
(EX) Steadfast Alliance 20																				▲								
(EX) Host Nation 20																				▲	▲							
(EX) European Air & Missile Defense Exercise Alliance 20																				▲								
FTT-16 (TH, Intercept Flight Test)																				▲								
FTX-25 (SN, Target Only Flight Test)																				▲								
GTI-08 (BMDS Ground Test)																				▲	▲							
(WG) Demonstration, Table-top Exercises & Experiments 20																				▲	▲	▲						
(WG) Huntsville Wargames 20																				▲								
(EX) Arabian Gulf Shield (AGS) Event 3 20																				▲								
(EX) Ulchi Freedom Guardian 20																				▲								

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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
(WG) Space & Missile Defense Symposium 20																												
FTM-30 (AEGIS 5. 1, Intercept Flight Test)																												
GTD-08 Part 1 (BMDs Ground Test)																												
(WG) BMDs Wargames 21																												
(WG) Nimble Titan Year 2 22																												
(EX) EPOCH PLANEX 22																												
(EX) Joint Air Defense Exercise Series 20																												
(EX) Air and Missile Defense Exercise Series 21																												
(EX) Arabian Gulf Shield (AGS) Event 1 21																												
(EX) Vigilant Shield/GlobalThunder 20																												
GTD-08 Part 2 (BMDs Ground Test)																												
(EX) Global Lightning 21																												
(EX) Arabian Gulf Shield (AGS) Event 2 21																												
(EX) Fleet Synthetic Training-Joint 21																												
(EX) Key Resolve 21																												
(EX) Austere Challenge 21 (Continues into FY 2022)																												
(EX) Steadfast Alliance 21																												
Warfighter TP 08 (BMDs Ground Test)																												
(EX) European Air & Missile Defense Exercise Alliance 21																												
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)																												
(WG) Demonstration, Table-top Exercises & Experiments 21																												
(EX) KEEN Edge 22																												
(WG) Huntsville Wargames 21																												
(EX) Arabian Gulf Shield (AGS) Event 3 21																												
(EX) Ulchi Freedom Guardian 21																												
(WG) Space & Missile Defense Symposium 21																												
FTT-21 (TH, Intercept Flight Test)																												

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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				
GTX-09 (BMDS Ground Test)																																✦

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</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
Warfighter TP 04e (BMDS Ground Test)	3	2015	3	2015
GTI-06 Part 1 (BMDS Ground Test)	3	2015	3	2015
(EX) European Air & Missile Defense Exercise Alliance 15	3	2015	3	2015
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
(EX) EPOCH PLANEX 17	4	2015	4	2015
(WG) Huntsville Wargames 15	4	2015	4	2015
(EX) Arabian Gulf Shield (AGS) Event 3 15	4	2015	4	2015
(WG) Space & Missile Defense Symposium 15	4	2015	4	2015
FTT-18 (TH, Intercept Flight Test)	3	2017	3	2017
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
(EX) Fleet Synthetic Training-Joint 16	2	2016	2	2016
(EX) Key Resolve 16	2	2016	2	2016
GTI-ISR ( 16) (BMDS Ground Test)	3	2016	3	2016
(EX) European Air & Missile Defense Exercise Alliance 16	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
(EX) Joint Air Defense Exercise Series 16	4	2016	4	2016
(WG) BMDS Wargames 17	4	2016	3	2017
(WG) Nimble Titan Year 1 18	4	2016	3	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) EPOCH PLANEX 18	1	2017	1	2017
(EX) Arabian Gulf Shield (AGS) Event 1 17	1	2017	1	2017
(EX) Global Response Exercise (GREx) 16	1	2017	1	2017
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
FTM-27 (AEGIS SBT, Intercept Flight Test)	1	2017	1	2017
Israeli Cooperative Intercept Flight Test - FY 2017	1	2017	4	2017
(EX) Fleet Synthetic Training-Joint 17	2	2017	2	2017
(EX) Arabian Gulf Shield (AGS) Event 2 17	2	2017	2	2017
(EX) Key Resolve 17	2	2017	2	2017
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	2	2017	2	2017
Warfighter TP 06 (BMDS Ground Test)	2	2017	2	2017
(EX) Austere Challenge 17	2	2017	3	2018
(EX) Steadfast Alliance 17	2	2017	3	2017
(EX) European Air & Missile Defense Exercise Alliance 17	3	2017	3	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
(WG) Demonstration, Table-top Exercises & Experiments 17	3	2017	1	2018
(EX) KEEN Edge 18	3	2017	2	2018
(EX) Joint Air Defense Exercise Series 17	4	2017	4	2017
(WG) Huntsville Wargames 17	4	2017	4	2017
(EX) Arabian Gulf Shield (AGS) Event 3 17	4	2017	4	2017
(WG) Space & Missile Defense Symposium 17	4	2017	4	2017
FTM-24 (AEGIS 5.0, Intercept Flight Test)	4	2017	4	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
(EX) Air and Missile Defense Exercise Series 18	1	2018	1	2018

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) EPOCH PLANEX 19	1	2018	1	2018
(EX) Arabian Gulf Shield (AGS) Event 1 18	1	2018	1	2018
(EX) Vigilant Shield/Global Thunder 17	1	2018	1	2018
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
(EX) Global Lightning 18	1	2018	2	2018
(EX) Arabian Gulf Shield (AGS) Event 2 18	2	2018	2	2018
(EX) Key Resolve 18	2	2018	2	2018
(EX) Host Nation 18	2	2018	3	2018
(EX) Global Response Exercise (GREx) 18	2	2018	3	2018
(EX) Steadfast Alliance 18	2	2018	3	2018
(EX) European Air & Missile Defense Exercise Alliance 18	3	2018	3	2018
FT0-03 E1 (OTA, Intercept Flight Test)	3	2018	3	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
(WG) Demonstration, Table-top Exercises & Experiments 18	3	2018	1	2019
(EX) Joint Air Defense Exercise Series 18	4	2018	4	2018
(WG) Huntsville Wargames 18	4	2018	4	2018
(EX) Arabian Gulf Shield (AGS) Event 3 18	4	2018	4	2018
(EX) Ulchi Freedom Guardian 18	4	2018	4	2018
(WG) Space & Missile Defense Symposium 18	4	2018	4	2018
(WG) BMDS Wargames 19	4	2018	3	2019
(WG) Nimble Titan Year 1 20	4	2018	3	2019
(EX) Air and Missile Defense Exercise Series 19	1	2019	1	2019

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) EPOCH PLANEX 20	1	2019	1	2019
(EX) Arabian Gulf Shield (AGS) Event 1 19	1	2019	1	2019
(EX) Vigilant Shield/Global Thunder 18	1	2019	1	2019
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
(EX) Global Lightning 19	1	2019	2	2019
(EX) EPOCH PLANEX 21	1	2019	1	2020
(EX) Fleet Synthetic Training-Joint 18	2	2019	2	2019
(EX) Fleet Synthetic Training-Joint 19	2	2019	2	2019
(EX) Arabian Gulf Shield (AGS) Event 2 19	2	2019	2	2019
(EX) Key Resolve 19	2	2019	2	2019
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
(EX) Austere Challenge 19	2	2019	3	2020
(EX) Steadfast Alliance 19	2	2019	3	2019
(EX) European Air & Missile Defense Exercise Alliance 19	3	2019	3	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
(WG) Demonstration, Table-top Exercises & Experiments 19	3	2019	1	2020
(EX) KEEN Edge 20	3	2019	2	2020
(EX) Joint Air Defense Exercise Series 19	4	2019	4	2019



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Huntsville Wargames 19	4	2019	4	2019
(EX) Arabian Gulf Shield (AGS) Event 3 19	4	2019	4	2019
(EX) Ulchi Freedom Guardian 19	4	2019	4	2019
(WG) Space & Missile Defense Symposium 19	4	2019	4	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
(EX) Air and Missile Defense Exercise Series 20	1	2020	1	2020
(EX) Arabian Gulf Shield (AGS) Event 1 20	1	2020	1	2020
(EX) Global Lightning 20	1	2020	2	2020
(EX) Arabian Gulf Shield (AGS) Event 2 20	2	2020	2	2020
(EX) Global Response Exercise (GREx) 20	2	2020	2	2020
(EX) Key Resolve 20	2	2020	2	2020
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020
(EX) Steadfast Alliance 20	2	2020	3	2020
(EX) Host Nation 20	3	2020	3	2020
(EX) European Air & Missile Defense Exercise Alliance 20	3	2020	3	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
(WG) Demonstration, Table-top Exercises & Experiments 20	3	2020	1	2021
(WG) Huntsville Wargames 20	4	2020	4	2020
(EX) Arabian Gulf Shield (AGS) Event 3 20	4	2020	4	2020
(EX) Ulchi Freedom Guardian 20	4	2020	4	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Space & Missile Defense Symposium 20	4	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
(WG) BMDS Wargames 21	4	2020	3	2021
(WG) Nimble Titan Year 2 22	4	2020	3	2021
(EX) EPOCH PLANEX 22	1	2021	1	2021
(EX) Joint Air Defense Exercise Series 20	1	2021	1	2021
(EX) Air and Missile Defense Exercise Series 21	1	2021	1	2021
(EX) Arabian Gulf Shield (AGS) Event 1 21	1	2021	1	2021
(EX) Vigilant Shield/GlobalThunder 20	1	2021	1	2021
GTD-08 Part 2 (BMDS Ground Test)	1	2021	1	2021
(EX) Global Lightning 21	1	2021	2	2021
(EX) Arabian Gulf Shield (AGS) Event 2 21	2	2021	2	2021
(EX) Fleet Synthetic Training-Joint 21	2	2021	2	2021
(EX) Key Resolve 21	2	2021	2	2021
(EX) Austere Challenge 21 (Continues into FY 2022)	2	2021	3	2022
(EX) Steadfast Alliance 21	2	2021	3	2021
Warfighter TP 08 (BMDS Ground Test)	2	2021	3	2021
(EX) European Air & Missile Defense Exercise Alliance 21	3	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
(WG) Demonstration, Table-top Exercises & Experiments 21	3	2021	1	2022
(EX) KEEN Edge 22	3	2021	2	2022

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MT01 / <i>C2BMC Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Huntsville Wargames 21	4	2021	4	2021
(EX) Arabian Gulf Shield (AGS) Event 3 21	4	2021	4	2021
(EX) Ulchi Freedom Guardian 21	4	2021	4	2021
(WG) Space & Missile Defense Symposium 21	4	2021	4	2021
FTT-21 (TH, Intercept Flight Test)	4	2021	4	2021
GTX-09 (BMDS Ground Test)	4	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>				<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>	215.379	89.235	93.097	116.552	-	116.552	104.221	115.994	120.027	125.174	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

**OPERATIONS AND SUSTAINMENT**

Command and Control, Battle Management and Communications (C2BMC) Program Operations and Sustainment (O&S) consists of 1) sustaining C2BMC operational capability worldwide; 2) on-site sub-systems maintenance for all C2BMC including Combatant Commanders (CCMD) suites, Global Engagement Manager (GEM) suites, planners, remote Enterprise Work Stations (EWS), and GEM Work Stations (GWS), web browsers, and communication site(s) associated with the Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar(s); 3) the C2BMC Control Center that provides real-time resolution of operational issues; 4) vendor support which includes coordination and resolution of problems that occur with Commercial-off-the-Shelf (COTS) equipment; 5) training of operator, maintenance personnel, and testers (approximately 700 per year); 6) hardware and software maintenance and upgrade installation to ensure continuity of C2BMC operations.

On-site support provides:

- Assistance to the System Administrator of each Combatant Command (CCMD) - Prime contractor support to operational users
- Maintenance of hardware and software
- Security support for the C2BMC equipment, hardware and software and auxiliary communication capabilities 24 hours a day, 7 days a week, 365 days a year through network and equipment operations monitoring
- Support to operators and testers during test, exercises, and wargames

Off-site support provides:

- Integrated logistics support planning and management
- Hardware and software maintenance and logistics functions that are beyond the capability of on-site support personnel
- Inventory and spares management
- Sustaining engineering support from the prime contractor and government activities
- Maintenance of software licenses and vendor support agreements

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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- Hardware and software maintenance agreements
- Vendor depot support services
- C2BMC Control Center (CCC) (help desk) in Colorado Springs, CO provides:
  - Real-time resolution of operational issues
  - The schedule for maintenance, systems upgrades, tests, exercises, and wargames, coordinated across all users
  - Collection of data regarding system/sub-system failures and prioritization of corrective actions
  - Review of hardware/software problems and coordination of Commercial-Off-the-Shelf (COTS developer/vendor service calls

- Training support includes:
- Developing and maintaining operator, maintenance personnel, and testers training material for C2BMC components/capabilities
  - Training tailored to each deployment and/or test
  - Training curriculum/courses provided for Ballistic Missile Defense (BMD) Planner, Situational Awareness, Global Engagement Manager (GEM), and the C2BMC Executive Course
  - Warfighter sustainment training and skill proficiency
  - Assistance to warfighter in development and execution of the Radar Management Course
  - New equipment training to end-users and training organizations

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<b>Title:</b> Operations and Support	68.226	71.192	91.771
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
Maintained C2BMC training suites			
<ul style="list-style-type: none"> <li>- Sustained Global Engagement Manager (GEM) trainers</li> <li>- Developed curriculum for and train operators, maintenance personnel, and testers</li> <li>- Resolved real-time operational issues through the C2BMC Control Center (CCC) (includes Ballistic Missile Defense System (BMDS) Network Operation and Security Center (BNOSC))</li> <li>- Provided global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines</li> <li>- Provided and support communications circuits for fielded C2BMC locations</li> <li>- Provided integrated logistics support planning and management and sustaining engineering support for fielded hardware and software, including support to Navy Maritime Operations Centers where C2BMC equipment resides</li> <li>- Provided operations support of Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar communications nodes</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Provided operations and sustainment personnel to support test and special operations for AN/TPY-2 at 6 deployed operational and test sites</li> <li>- Supported Host Nation operations, demonstrations, and tests</li> <li>- Provided sustainment training/skills proficiency to C2BMC operators</li> <li>- Upgraded and maintain computer network defense and network monitoring in the CCC (including the BNOSC)</li> <li>- Operated the CCC (including the BNOSC) 24 hours a day, 7 days a week, 365 days a year</li> <li>- Provided sustainment of the BCN Teleport Gateway (BTG) at the DoD teleports: Lago Patria, IT; Ramstein, GE; Fort Buckner, JP; Camp Roberts, CA; Wahiawa, HI; Northwest, VA</li> <li>- Supported the installation and integration of the second Modernization of Enterprise Terminal (MET) in EUCOM</li> <li>- Continued round-the-clock sustainment for Communications capabilities with Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2)</li> <li>- Continued on-site C2BMC support of fielded sites for hardware and software</li> <li>- Continued C2BMC operator training for fielded capabilities</li> <li>- Continued sustaining engineering support and integrated logistics support for fielded hardware and software</li> <li>- Provided engineering support to the SBIRS Increment 2 interface to ensure continued communications between the BMDS and GMD</li> <li>- Deployed Campus Communications, Transportable Radar Communications Center, and Hardened Transportable Terminal to Site KCS</li> <li>- Provided operations and sustainment personnel to Site KCS for the TRCC/HTT</li> <li>- Performed required monthly cybersecurity scans and mitigation requirements</li> <li>- Transitioned DMETs and the C2BMC Ticketing System from Defense Information Assurance Certification and Accreditation Process (DIACAP) to Risk Management Framework (RMF) to meet the DoDI 8510.01 mandate.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Maintain C2BMC training suites</li> <li>- Sustain Global Engagement Manager (GEM) trainers</li> <li>- Develop curriculum for and train operators, maintenance personnel, and testers</li> <li>- Resolve real-time operational issues through the C2BMC Control Center (CCC) (includes Ballistic Missile Defense System (BMDS) Network Operation and Security Center (BNOSC))</li> <li>- Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines</li> <li>- Provide and support communications circuits for fielded C2BMC locations</li> <li>- Provide integrated logistics support planning and management and sustaining engineering support for fielded hardware and software, including support to Navy Maritime Operations Centers where C2BMC equipment resides</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Provide operations support of Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar communications nodes</li> <li>- Provide operations and sustainment personnel to support test and special operations for AN/TPY-2 at deployed operational and test sites</li> <li>- Support Host Nation operations, demonstrations, and tests</li> <li>- Provide sustainment training/skills proficiency to C2BMC operators</li> <li>- Upgrade and maintain computer network defense and network monitoring in the CCC (including the BNOSC)</li> <li>- Operate the CCC (including the BNOSC) 24 hours a day, 7 days a week, 365 days a year</li> <li>- Provide sustainment of the BCN Teleport Gateway (BTG) at the DoD teleports: Lago Patria, IT; Ramstein, GE; Fort Buckner, JP; Camp Roberts, CA; Wahiawa, HI; Northwest, VA</li> <li>- Support the installation and integration of the second Modernization of Enterprise Terminal (MET) in European Command (EUCOM)</li> <li>- Continue round-the-clock sustainment for Communications capabilities with Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2)</li> <li>- Continue on-site C2BMC support of fielded sites for hardware and software</li> <li>- Continue C2BMC operator training for fielded capabilities</li> <li>- Continue sustaining engineering support and integrated logistics support for fielded hardware and software</li> <li>- Provide engineering support to the SBIRS Increment 2 interface to ensure continued communications between the Ballistic Missile Defense System (BMDS) and Ground Based Midcourse Defense (GMD)</li> <li>- Sustain required monthly cyber security scans and mitigation requirements</li> </ul> <p><b>FY 2017 Plans:</b> The increase in funding from FY 2016 to FY 2017 is attributed to realigning funds from the Development project (MD01) to Sustainment project (MX01) to better align resources with scope of work. Additionally, funding increased to meet requirement to support both Spiral 6.4 and Spiral 8.2-1 operations</p> <ul style="list-style-type: none"> <li>- Maintain operational Spiral 6.4 in NORTHCOM/PACOM/EUCOM/CENTCOM and fielded Spiral 8.2-1 in NORTCOM/PACOM:               <ul style="list-style-type: none"> <li>-- C2BMC training suites</li> <li>-- On-site C2BMC support for hardware and software</li> <li>-- C2BMC operator training</li> <li>-- Sustaining engineering support and integrated logistics support</li> <li>-- Required monthly cybersecurity scans and mitigation requirements</li> </ul> </li> <li>- Sustain Global Engagement Manager (GEM) trainers</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Update curriculum for and train operators, maintenance personnel, and testers</li> <li>- Operate the CCC (including the BNOSC) 24 hours a day, 7 days a week, 365 days a year</li> <li>- Resolve real-time operational issues through the C2BMC Control Center (CCC) includes (includes Ballistic Missile Defense System (BMDS) Network Operation and Security Center (BNOSC)- Upgrade and maintain computer network defense and network monitoring in the CCC (including the BNOSC)</li> <li>- Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines</li> <li>- Provide and support communications circuits for fielded C2BMC locations</li> <li>- Provide integrated logistics support planning and management and sustaining engineering support for fielded hardware and software, including support to Navy Maritime Operations Centers where C2BMC equipment resides</li> <li>- Provide operations support of Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2) radar communications nodes</li> <li>- Provide operations and sustainment personnel to support test and special operations for AN/TPY-2 at deployed operational and test sites</li> <li>- Support Host Nation operations, demonstrations, and tests - Provide sustainment of the BCN Teleport Gateway (BTG) at the DoD teleports: Lago Patria, IT; Ramstein, GE; Fort Buckner, JP; Camp Roberts, CA; Wahiawa, HI; Northwest, VA</li> <li>- Continue round-the-clock sustainment for Communications capabilities with Army Navy/Ground Transportable Radar Surveillance model 2 (AN/TPY-2)</li> <li>- Provide engineering support to the SBIRS Increment 2 interface to ensure continued communications between the Ballistic Missile Defense System (BMDS) and Ground Based Midcourse Defense (GMD)</li> <li>- Transition BTG and Spiral 6.4 Distributed Training System (DTS) from DIACAP to RMF to meet the DoDI 8510.01 mandate.</li> </ul>			
<p><b>Title:</b> Concurrent, Test, Training, and Operations (CTTO)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Sustain deployed C2BMC Spiral 6.4 Training Support System (TSS).</li> <li>- Operate and Sustain C2BMC Spiral 6.4 Tri-Node (Tri-Node includes PACOM, NORTHCOM, and STRATCOM) Distributed Training System (DTS) system. Distributed Training System Tri-Node was formerly known as the Distributed Multi-Echelon Training System (DMETS).</li> <li>- Operate and Sustain C2BMC Spiral 6.4 EUCOM and CENTCOM Distributed Training System (DTS).</li> <li>- Continue providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture.</li> </ul>	21.009 -	21.905 -	24.781 -



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Monitor and coordinate the execution of Agency Modeling and Simulation development efforts: key dependencies for the successful execution of CTTO.</li> <li>- Development of C2BMC Spiral 8.2 Training Systems.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Sustain deployed C2BMC Spiral 6.4 Training Support System (TSS)</li> <li>- Operate and Sustain C2BMC Spiral 6.4 Tri-Node (Tri-Node includes PACOM, NORTHCOM, and STRATCOM) Distributed Training System (DTS) system. Distributed Training System Tri-Node was formerly known as the Distributed Multi-Echelon Training System (DMETS).</li> <li>- Operate and Sustain C2BMC Spiral 6.4 European Command (EUCOM) and Central Command (CENTCOM) Distributed Training System (DTS)</li> <li>- Continue providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture</li> <li>- Development of C2BMC Spiral 8.2 Training Systems</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>The increase in funding from FY 2016 to FY 2017 is attributed to refined cost estimates.</p> <ul style="list-style-type: none"> <li>- Sustain deployed C2BMC Spiral 6.4 Training Support System (TSS) - Operate and Sustain C2BMC Spiral 6.4 Tri-Node (Tri-Node includes PACOM, NORTHCOM, and STRATCOM) Distributed Training System (DTS) system. Distributed Training System Tri-Node was formerly known as the Distributed Multi-Echelon Training System (DMETS).</li> <li>- Operate and Sustain C2BMC Spiral 6.4 European Command (EUCOM) and Central Command (CENTCOM) Distributed Training System (DTS)</li> <li>- Continue providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture</li> <li>- Deploy and sustain C2BMC Spiral 8.2-1 TSS</li> <li>- Deploy C2BMC Spiral 8.2-1 DTS</li> <li>- Train warfighters for Spiral 8.2-1 system ground tests</li> <li>- Develop/design Spiral 8.2-3 and Spiral 8.2-5 DTS and TSS</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	89.235	93.097	116.552

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The Command and Control, Battle Management and Communications (C2BMC) acquisition strategy is consistent with the Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems was the C2BMC prime

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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contractor via an Other Transaction Agreement contract vehicle, which ended 1st quarter FY 2012. A sole source C2BMC follow-on contract to Lockheed Martin for Spiral Development, Operation and Sustainment, and Testing was awarded 1st quarter FY 2012 for an ordering period of five years through 1st quarter FY 2017. Spiral 8.2 will be fielded in three separate increments. Spiral 8.2-1 will be fielded in FY 2017, fielding of Spiral 8.2-3 in FY 2019, and completion of system deployment with Spiral 8.2-5 in FY 2021. This incremental fielding required a modification to the base contract increasing the ceiling by \$870 million and adding an additional five-year ordering period to extend the contract through first quarter FY 2022. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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<b>Product Development (\$ in Millions)</b>				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
Operations and Support - Indirect Support	MIPR	DISA DECC/DISA TECC : Various	21.411	6.803		7.959		6.890	Oct 2016	-		6.890	Continuing	Continuing	Continuing
Operations and Support - O&S - Unit Personnel, Control System Improvement Sustaining Support	Various	Army, Navy, Air Force : Various	0.000	0.000		0.000		0.912	Oct 2016	-		0.912	Continuing	Continuing	Continuing
Operations and Support - O&S Sustainment Training Support	SS/CPAF	Northrup Grumman : Boeing	0.000	0.000		0.000		1.747	Nov 2016	-		1.747	Continuing	Continuing	Continuing
Operations and Support - Teleport Sustainment	MIPR	SPAWAR : San Diego, CA	4.844	0.000		0.000		0.000		-		0.000	0	4.844	0
Operations and Support - Unit Personnel, Control System Improvement Sustaining Support	SS/IDIQ	Lockheed Martin Team : Arlington, VA	146.570	61.423		63.233		82.222	Dec 2016	-		82.222	Continuing	Continuing	Continuing
Operations and Support - Warfighter Training	IA	Lockheed Martin Team : Arlington, VA	2.661	0.000		0.000		0.000		-		0.000	2.661	5.322	2.661
Concurrent, Test, Training, and Operations (CTTO) - CTTO/Training Enhancements	Various	Army : Various	0.000	0.000		0.000		8.238	Dec 2016	-		8.238	Continuing	Continuing	Continuing
Concurrent, Test, Training, and Operations (CTTO) - Concurrent Test, Training And Operations	SS/CPAF	Northrop Grumman : Boeing	3.175	0.700		0.735		0.000		-		0.000	Continuing	Continuing	Continuing
Concurrent, Test, Training, and Operations (CTTO) - Concurrent Test, Training And Operations/Training Enhancements	SS/IDIQ	Lockheed Martin Team Arlington, VA : Huntsville, Al, Colorado Springs, CO	36.718	16.659		17.337		16.543	Dec 2016	-		16.543	Continuing	Continuing	Continuing
Concurrent, Test, Training, and Operations (CTTO) -	SS/FPAF	COLSA ARC : Huntsville, AL	0.000	3.650		3.833		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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<b>Product Development (\$ in Millions)</b>				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			
Concurrent Test, Training, Test and Operations															
<b>Subtotal</b>			215.379	89.235		93.097		116.552		-		116.552	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>
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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			

**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
<b>Project Cost Totals</b>	215.379	89.235	93.097	116.552	-	116.552	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development 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
MX01 Command & Control, Battle Management, Communications (C2BMC) Development Support					✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧	✧				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MX01 / <i>Command &amp; Control, Battle Management, Communications (C2BMC) Development Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MX01 Command & Control, Battle Management, Communications (C2BMC) Development Support	1	2016	4	2020



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>					<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>		
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	48.769	24.492	19.795	19.771	-	19.771	19.991	21.981	23.334	24.368	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes as a result of budget changes to the Ballistic Missile Defense Command and Control, Battle Management & Communication program. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and / or civilian salaries 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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	24.492	19.795	19.771
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	24.492	19.795	19.771

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	1.955	0.000		0.000		0.395	Jul 2017	-		0.395	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi: AK/AL/CA/CO/HI/MD/VA/NJ/NY/OCONUS	0.013	3.098		0.000		0.000		-		0.000	0.015	3.126	0
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AK, AL, CA, CO, HI, VA	2.088	0.000		0.000		1.571	Nov 2016	-		1.571	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various : Multi: AK, AL, CA, CO, HI, VA	22.388	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi: AK, AL, CA, CO, VA	19.525	21.394		6.218	Nov 2015	0.819	Oct 2016	-		0.819	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services Civilian Salaries, Travel, Training	Allot	Various : Multi: AL, CA, CO, VA	2.800	0.000		13.577	Nov 2015	16.477	Nov 2016	-		16.477	2.800	35.654	0
Program Wide Support - Agency Operations, Sustainment and GPC	Allot	Various : Multi: AL, CO, VA etc.	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Facilities Maintenance SRM	MIPR	Various : Multi: AK, CA, CO, AL, MD, NJ, VA	0.000	0.000		0.000		0.509	Jan 2017	-		0.509	Continuing	Continuing	Continuing
<b>Subtotal</b>			48.769	24.492		19.795		19.771		-		19.771	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	48.769	24.492	19.795	19.771	-	19.771	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603896C / <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter 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
Total Program Element	54.819	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
MD03: <i>Joint Warfighter Support</i>	48.237	40.638	14.569	15.417	-	15.417	15.832	16.071	16.885	17.146	Continuing	Continuing
MT03: <i>Joint Warfighter Support Test</i>	-	1.051	31.149	30.423	-	30.423	31.369	31.904	33.517	34.027	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	6.582	2.531	2.180	1.936	-	1.936	2.420	2.589	2.749	2.869	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

In FY 2016, \$31.149 million of the Joint Warfighter Support cost will transfer from budget project MD03 to budget project MT03, Joint Warfighter Support Test, for Warfighter Operational support and wargames and exercises.

The FY 2016 to FY 2017 increase is a result of greater focus on strategic-level interface to amplify Warfighter involvement in the transition and deployment of future BMD capabilities, BMDS training and certification to the warfighter, and BMDS system validation events.

**A. Mission Description and Budget Item Justification**

The Joint Warfighter Support Program (JWSP) is Missile Defense Agency's primary means for providing direct technical support to Combatant Commands (CCMDs), the Military Services and the Joint Staff on Ballistic Missile Defense System (BMDS) development, testing, and operational support. It enables delivery of BMDS capabilities to Warfighters and ensures their participation in the identification and development of new Ballistic Missile Defense (BMD) capabilities via the Warfighter Involvement Process (WIP). The JWSP allows the Warfighter and Missile Defense Agency to work together to identify gaps, seams, and needs in war fighting capability and enhance BMDS attributes by submitting modification and fielding requests. It also provides 24/7 BMD operational support to Warfighters worldwide. The program enables rapid response to Warfighter Requests for Information (RFIs) and Requests for Analyses (RFAs), which are especially critical to mission success in protecting U.S. forces and other defended assets during "Real World" threat events. The program supports improving products delivered to Warfighters through technical reviews and technical analyses supporting development of shot doctrine. The JWSP also enables the inclusion of both CCMD and MDA BMD objectives in CCMD/Joint Staff-sponsored wargames and exercises, which are used to sharpen and enhance joint BMD warfighting skills.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	46.387	49.570	50.533	-	50.533
Current President's Budget	44.220	47.898	47.776	-	47.776
Total Adjustments	-2.167	-1.672	-2.757	-	-2.757
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.672			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.393	0.000			
• SBIR/STTR Transfer	-0.774	0.000			
• Other Adjustment	0.000	0.000	-2.757	-	-2.757

**Change Summary Explanation**

FY 2017 adjustment of \$2.7 million from PB 2016 reflects Agency-wide budget adjustments due to higher priority initiatives.



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter 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
MD03: <i>Joint Warfighter Support</i>	48.237	40.638	14.569	15.417	-	15.417	15.832	16.071	16.885	17.146	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, \$31.149 million for Joint Warfighter Support Test transfers from Budget Project MD03 to Budget Project MT03. Increase from FY 2016 to FY 2017 is a result of greater focus on strategic-level interface to amplify Warfighter involvement in the transition and deployment of future BMD capabilities.

**A. Mission Description and Budget Item Justification**

There are five primary functions in Joint Warfighter Support (MD03): (1) CCMD support, including United States Strategic Command (USSTRATCOM) and United States Northern Command (USNORTHCOM); (2) Joint Staff engagement; (3) Military Services engagement; (4) current operations support; and (5) Warfighter training support.

CCMD engagement entails: supporting the WIP; assisting Warfighters with the annual BMDS Prioritized Capabilities List (PCL) and Modification and Fielding Request List (MFRL); sharing information and knowledge with CCMDs to help develop common BMDS operational procedures; coordinating with USSTRATCOM regarding the Operations Forces Standing Committee (OFSC) and Departmental Corporate Boards (e.g., the Missile Defense Executive Board); supporting Assistants to the Director (ATDs) and Liaison Officers (LNOs) in communication with CCMD staffs on BMDS capabilities and deployments; supporting Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD) integration efforts; and coordinating the CCMD inquiries into RFA/RFIs. Beginning in FY 2016, CCMD engagement activities supporting Warfighter operational support; Geographic Combatant Command (GCC) engagement, integration, and synchronization; MDA senior leadership engagement with GCCs; and wargames and exercise support will transfer from budget project MD03 to budget project MT03.

Joint Staff engagement support entails: facilitating and coordinating Joint Staff interactions with the MDA; responding to BMDS capability delivery process inquiries and transition and transfer actions from the Military Services; maintaining daily, strategic-level interfaces with the Joint Staff; providing critical information required to plan for fielding and operation of BMDS capabilities; and coordinating Joint Staff inquiries into RFA/RFIs.

Military Services engagement entails: facilitating and coordinating the Service Boards of Directors (BODs); supporting the BMDS capability delivery process and transition and transfer to the Military Services; establishing and updating annexes for transitioned and transitioning BMDS capabilities; maintaining daily, strategic-level interfaces with the Military Services to provide critical information required to plan for the delivery, fielding, and operation of Lead Service BMDS capabilities; and coordinating Military Service inquiries into RFA/RFIs.

The current operations support function entails: operating the MDA Operations Support Center (OSC) on a 24/7 basis; staffing and operating two MDA Operations Centers (MOCs) in VA and in AL five days per week; serving as the office of primary responsibility for MDA participation in the BMDS asset management (BAM) scheduling and execution process; collecting and reporting BMDS operational availability and readiness data; leading the MDA operations support task force to support real-world contingencies, crisis events, and exercises; and leading the staffing and processing of Warfighter RFA/RFIs.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

Warfighter training support entails: providing technical and programmatic updates on BMD systems; providing Missile Defense Space Warning tool (MDST) support; coordinating Command and Control, Battle Management, and Communications (C2BMC) training; coordinating Distributed Multi-Echelon Training System (DMETS) and other BMD training; and developing the BMDS Handbook.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Warfighter Operational Support/Wargames and Exercises	26.210	0.000	0.000
<b>Articles:</b>	-	-	-
<p><b>Description:</b> Beginning in FY 2016, \$31.149 million Joint Warfighter Support Test transfers from Budget Project MD03 to Budget Project MT03.</p> <p><b>FY 2015 Accomplishments:</b>                      MDA enhanced Warfighter operational support through internal support activities and proactive execution of Combatant Command (CCMD) interface activities:                      -Supported Warfighters, DoD Agencies, and Military Services in identifying desired missile defense capabilities and characteristics.                      -Obtained Warfighter participation and advice on desired operational features and approaches to system fielding throughout development.                      -Tracked analysis and responses for CCMD Requests for Analysis/Requests for Information (RFA/RFIs).                      -Served as the immediate link between MDA and the GCCs on all Warfighter activities and requirements.                      -Coordinated MDA and GCC participation in BMDS capability definition, design, development, and integration.                      -Provided resource management and administration of MT03 personnel and dollars.                      -Managed travel, including travel to support the wargames and exercises and the ATDs and LNOs as MDA representatives at the GCC HQs.                      -Supported BMD test, training, wargames, and exercises.                      -Worked with each CCMD on the inclusion of Allies and regional partners into MDA Ground and Flight tests, as well as wargame &amp; exercise simulations.                      -Provided warfighter training simulations in direct support of flight test; FTO-02 E2a Warfighter Sim.                      -Served as liaison between internal MDA organizations and JFCC-IMD across all functional areas (e.g. operations, plans and resources) to facilitate Geographic Combatant Command (GCC) participation in the BMDS capability definition, design, development, integration and delivery processes.                      -Supported the Joint Functional Component Commander for Integrated Missile Defense (JFCC IMD) and EUCOM in the European Phased Adaptive Approach (EPAA) implementation process through the planning, testing, integration and execution of BMDS wargames and exercises.</p>			

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

	FY 2015	FY 2016	FY 2017
<p>-Supported Joint Staff integration of MDA models into Tier I events through the JOINT, LIVE VIRTUAL CONSTRUCTIVE (JLVC 2020) campaign.</p> <p>-Worked with Program Offices and the Warfighter to establish a Concept of Operations that will support future MDA Models and Simulation (M&amp;S) support to BMD wargames and exercises.</p> <p>-Coordinated and integrated CCMD requirements into the BMDS Integrated Master Test Plan.</p> <p>-Supported the GCC Assistants to the Director (ATDs) and Liaison Officers (LNOs).</p> <p>-Provided support to the development and update of Ballistic Missile Defense (BMD) portions of CCMD Operation Plans (OPLANS) and Contingency Plans (CONPLANS).</p> <p>-Engaged in MDA/GCC interface and synchronization of information regarding capabilities and security cooperation strategies.</p> <p>- Developed and provided Table Top Exercises (TTX) in support of CCMD-specific scenarios to include:</p> <p>- TTX: Multi-National Conference, AIRCOM TTX, STRATCOM ALT TTX #2, STRIKFORNATO TTX, NATO Defense Policy &amp; Planning Committee TTX, NATO Military Committee TTX</p> <p>-Supported BMDS development through the planning, testing and execution of developer, policy and familiarization wargames to include:</p> <p>- Wargames: BMDS Wargame 15, NIMBLE TITAN 16 Planning Events, NIMBLE FIRE 15A, SMD Symposium, Huntsville Wargame 2015, NIMBLE FIRE 15B</p> <p>-Conducted planning, testing, integration and execution of CCMD supported globally-executed BMDS exercises to include the following (by GCC):</p> <p>- EUCOM: RAMSTEIN ALLIANCE 2015, AUSTERE CHALLENGE 15, EAMDEX ALLIANCE 15</p> <p>- PACOM: KEEN SWORD 15, FLEET SYNTHETIC TRAINING-JOINT 15-71, KEY RESOLVE 15, ULCHI FREEDOM GUARDIAN 15, PACIFIC SENTRY 15</p> <p>- CENTCOM: JADDEX 15-1, JADDEX 15-2, EAGLE RESOLVE 15, AMDEX 15-2, ARABIAN GULF SHIELD 7, JADDEX 15-3, JADDEX 15-3</p> <p>- NORTHCOM/JFCC-IMD/STRATCOM: VIGILANT SHIELD/GLOBAL THUNDER 15, GLOBAL RESPONSE EXERCISE 06</p> <p>Additional GCC interface activities by region included:</p> <p>USEUCOM Engagement:</p> <p>-Coordinated with USEUCOM, continued planning activities for the European Phased Adaptive Approach to provide a full range of capabilities to address all threats.</p> <p>-Shared operational information and knowledge in order to increase allied interoperability.</p> <p>-Supported BMD training, wargames, and exercises with NATO partners.</p> <p>-Coordinated with MDA program elements, assisted in planning and execution activities supporting USEUCOM's non-NATO partners.</p>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Provided reach-back support to the USEUCOM ATD and LNO in USEUCOM activities requiring visibility by the MDA Director and Director for Test.</p> <p>-Coordinated with MDA Global Deployment Program Office, planned and executed activities required for deployment of BMDS assets and components in the USEUCOM AOR.</p> <p>-Managed MDA and USEUCOM interface activities.</p> <p>-Synchronized MDA integrated fielding plans with Warfighter Operational Readiness and Acceptance (OR&amp;A) efforts in support of the European Phased Adaptive Approach.</p> <p>-Prepared MDA Senior Leadership for engagements with the USEUCOM. Supported MDA Senior Leadership Engagements including the USEUCOM Senior Leader Forum, 2015 Multinational Conference, and multiple engagements in conjunction with wargames, exercises, and ground tests</p> <p>-Worked USEUCOM request for AN/TPY-2 participation in future Arrow System Test events.</p> <p>-Supported multiple Flag Officer/General Officer (FOGO) and O-6 level planning and execution engagements in support of AN/TPY-2 deployments in the European Command (EUCOM).</p> <p>-Worked with USEUCOM on the inclusion of Allies and regional partners into MDA Ground and Flight tests, as well as Wargame &amp; Exercise simulations. Collaborated with USEUCOM to interface with Allies for integration and HWIL issues.</p> <p>USCENTCOM Engagement:</p> <p>-Assisted CCMD leadership to develop a regional partner data sharing system supporting USCENTCOM regional IAMD architecture development.</p> <p>-Coordinated with MDA program elements, assisted in planning and execution activities supporting USCENTCOM's regional partners.</p> <p>-Provided reach-back support to the USCENTCOM ATD and LNO in USCENTCOM activities requiring visibility by the MDA Director and Director for Test.</p> <p>-Supported all cross-AOR planning and execution activities.</p> <p>USPACOM Engagement:</p> <p>-Assisted USPACOM leadership to broaden Phased Adaptive Approach planning to address a full range of threats and integration of allies into the BMDS.</p> <p>-Provided reach-back support to the USPACOM ATD and LNO in USPACOM activities requiring visibility by the MDA Director and Director for Test.</p> <p>-Worked with USPACOM J3 in the formulation and creation of the CCMDs BMD Priority list. This memorandum communicates the primary USPACOM BMD issues for MDA and the CCMD to jointly work to resolve for the AOR</p> <p>-Assisted USPACOM J3 in efforts to promote purchase of an Aegis Ashore system.</p>			

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Shared operational information and knowledge and help allies develop common operational procedures.  <b>FY 2016 Plans:</b> N/A  <b>FY 2017 Plans:</b> N/A				
<b>Title:</b> Strategic Warfighter Integration  <b>Description:</b> The FY 2016 to FY 2017 increase is a result of greater focus on strategic-level interface to amplify Warfighter involvement in the transition and deployment of future BMD capabilities, BMDS training and certification to the warfighter, and BMDS system validation events.  <b>FY 2015 Accomplishments:</b> The MDA will continue to make significant strides in Warfighter support by focusing on providing a strategic-level interface to USSTRATCOM, USNORTHCOM, the Joint Staff, OSD, and Military Services to increase Warfighter involvement in the transition and deployment of future BMD capabilities. Several of the key Warfighter interface activities include:  USSTRATCOM Engagement: -Supported the Warfighter Involvement Process (WIP) and other MDA Warfighter engagement efforts by assisting Warfighters to update the annual BMDS Prioritized Capabilities List (PCL) and Modification and Fielding Request List (MFRL) reflecting changes in Combatant Command and Military Service priorities for needed BMDS enhancements. -Shared BMDS operational information / educate CCMD's in development of common BMDS operational procedures. -Planned and execute a quarterly tag-up between the MDA Deputy Director and the USSTRATCOM Deputy Commander regarding the Operations Forces Standing Committee (OSFC) and Departmental Corporate Boards (such as the Missile Defense Executive Board). Coordinate the MDA process for responding to USSTRATCOM Requests for Analysis and Requests for Information (RFA/RFI)s. -Provided reach-back support to the USSTRATCOM Assistant to the Director (ATD) in all USSTRATCOM BMDS-related activities requiring visibility by the MDA Director. -Supported Joint Functional Component Command Integrated Missile Defense (JFCC IMD) Integration efforts.  USNORTHCOM Engagement: -Assisted USNORTHCOM leadership in their efforts to broaden homeland defense planning to address the full range of USNORTHCOM threats and integration of allies into BMD.		14.428 -	14.569 -	15.417 -
		<b>Articles:</b>		

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Assisted in planning to incorporate additional BMDS homeland defense capabilities.</p> <p>-Leveraged developmental and fielding expertise to support allied development of common operational procedures.</p> <p>-Coordinated the MDA process for responding to USNORTHCOM RFA/RFIs.</p> <p>-Expanded Military Service cooperation and influence in acquisition and BMDS capability transfer decisions.</p> <p>-Supported BMD senior leader forums, asset management, and training, and exercises.</p> <p>Joint Staff Engagement:</p> <p>-Facilitated/coordinated Joint Staff interactions with the MDA.</p> <p>-Provided answers on the BMDS capability delivery process and transition and transfer actions to the Military Services.</p> <p>-Provided the MDA's planner-level coordination for Joint Staff and interagency staff actions.</p> <p>-Maintained daily, strategic-level interfaces with the Joint Staff and provide critical information required to plan for the fielding, and operation of BMDS capabilities.</p> <p>-Coordinated the MDA process for responding to Joint Staff RFA/RFIs.</p> <p>Military Services Engagement:</p> <p>-Facilitated/coordinated Service Boards of Directors (BoDs)</p> <p>-Supported the BMDS capability delivery process and transition and transfer to the Military Services via program offices to establish transition annexes for BMDS capabilities.</p> <p>-Maintained daily, strategic-level interfaces with the Military Services and provide critical information required to plan for the delivery, fielding, and operation of respective Lead Service BMDS capabilities.</p> <p>-Coordinated the MDA process for responding to Military Service RFA/RFIs.</p> <p>Current Operations Support</p> <p>-Staffed/operated the MDA Operations Support Center (OSC) 24/7 to control the configuration of the operational BMDS, coordinate the execution of daily scheduled BMDS activities through the Asset Management System; capture scheduled and unscheduled outage start and stop times through the BMDS Operational Readiness Reporting System; monitor the "Health and Status" of BMDS assets deployed worldwide; support MDA senior leadership with prompt and accurate critical information reporting.</p> <p>-Took rapid corrective action to remedy system and support equipment faults, maximizing system availability and effectiveness against threat missiles.</p> <p>-Gathered, developed, fused, documented, and communicated BMDS operational data to all BMDS stakeholders.</p> <p>-Provided certification training to BWOs, ABWOs, BSOs, and other Operations Support Center staff.</p> <p>-Supported MDA continuity of operations program planning and execution activities.</p>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<p>-Staffed and operated MDA Operations Centers (MOC) in VA and in AL, (HMOC), one each location, five days per week to provide MDA Senior Leadership with Agency command, control, and communications capability for activities worldwide.</p> <p>-Served as the fusion center for MDA's Warfighter Strategic Integration efforts supporting OSD, Joint Staff, CCMDs, and Military Services.</p> <p>-Served as the office of primary responsibility for MDA participation in the BMDS Asset Management (BAM) Process defined by USSTRATCOM.</p> <p>-Developed and maintained the Integrated Scheduling Tool, information technology infrastructure, and tailored applications which facilitate BMDS planning, scheduling, and execution management supporting homeland and theater/regional BMDS.</p> <p>-Coordinated with CCMDs to develop the BMDS Annual Plan, BMDS operating schedules, and synchronized BMDS execution schedules.</p> <p>-Published asset management user and system administrator guides and develop and conduct asset management training courses.</p> <p>-Coordinated and aligned BMDS scheduled maintenance to maximize operational and developmental availability.</p> <p>-Collected and reported BMDS operational availability and readiness data through the network-based BMDS Operational Readiness Reporting System (BORRS)</p> <p>-Led the MDA Operations Support Planning Team (OSPT), an MDA-wide task force supporting real-world contingencies, crisis events, and exercises.</p> <p>-Led the staffing and processing of Warfighter RFA/RFIs.</p> <p><b>Warfighter Training Support</b></p> <p>-Provided technical and programmatic updates on BMD systems supporting Warfighter training. Provided Missile Defense Space Warning tool (MDST) support for exercises and training for CCMDs and Military Services (up to 24/7).</p> <p>-Coordinated C2BMC, Distributed Multi-Echelon Training System (DMETS), and other BMD training with the Warfighter through the USSTRATCOM, Joint Staff (J-7), and MDA co-chaired BMD Training and Education Working Group.</p> <p>-Developed and published the BMDS Handbook to aid Warfighter understanding of the capabilities and limitations of the fielded BMDS</p> <p><b>FY 2016 Plans:</b></p> <p>The FY 2016 to FY 2017 increase is a result of greater focus on strategic-level interface to amplify Warfighter involvement in the transition and deployment of future BMD capabilities, BMDS training and certification to the warfighter, and BMDS system validation events to USSTRATCOM, USNORTHCOM, the Joint Staff, OSD, and Military Services. Several of the key Warfighter interface activities include:</p> <p>USSTRATCOM Engagement:</p>			
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Support the Warfighter Involvement Process (WIP) and other MDA Warfighter engagement efforts by assisting Warfighters in their update to the annual BMDS Prioritized Capabilities List (PCL) and Modification and Fielding Request List (MFRL) reflecting changes in Combatant Command and Service priorities for needed BMDS enhancements to address full range of CCMD needs.</p> <p>-Share BMDS operational information / educate CCMD's in development of common BMDS operational procedures.</p> <p>-Plan and execute quarterly tag-ups between MDA Deputy Director and USSTRATCOM Deputy Commander regarding the Operations Forces Standing Committee (OSFC) and Departmental Corporate Boards (such as the Missile Defense Executive Board).</p> <p>-Coordinate MDA acquisition process for responding to USSTRATCOM RFA/RFIs.</p> <p>-Provide reach-back support to the USSTRATCOM ATD in all USSTRATCOM BMDS related activities requiring visibility by the MDA Director. Support Joint Functional Component Command Integrated Missile Defense (JFCC IMD) Integration efforts.</p> <p>USNORTHCOM Engagement:</p> <p>-Assist USNORTHCOM leadership in their efforts to broaden homeland defense planning to address the full range of USNORTHCOM threats and integration of allies into BMD.</p> <p>-Assist in planning to incorporate additional BMDS homeland defense capabilities.</p> <p>-Leverage developmental and fielding expertise to support allied development of common operational procedures.</p> <p>-Coordinate the MDA process for responding to USNORTHCOM RFA/RFIs.</p> <p>-Expand Military Service cooperation and influence in acquisition and BMDS capability transfer decisions.</p> <p>-Support BMD senior leader forums as well as asset management, test, training, and exercises.</p> <p>Joint Staff Engagement:</p> <p>-Facilitate/coordinate Joint Staff interactions with the MDA.</p> <p>-Provide answers to the BMDS capability delivery process and transition and transfer actions to the Military Services.</p> <p>-Provide the MDA's planner-level coordination for Joint Staff and interagency staff actions.</p> <p>-Maintain daily, strategic-level interfaces with the Joint Staff and provide critical information required to plan for the fielding, and operation of the BMDS.</p> <p>-Coordinate the MDA process for responding to Joint Staff RFA/RFIs.</p> <p>Military Services Engagement:</p> <p>-Facilitate/coordinate Service Boards of Directors (BoDs)</p> <p>-Support the BMDS capability delivery process and transition and transfer to the Military Services via program offices to establish transition annexes for BMDS capabilities.</p> <p>-Maintain daily, strategic-level interfaces with the Military Services and provide critical information required to plan for the delivery, fielding, and operation of respective Lead Service BMDS capabilities.</p>			



**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

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

	FY 2015	FY 2016	FY 2017
<p>-Coordinate MDA process for responding to Military Service RFA/RFIs.</p> <p>Current Operations Support:</p> <ul style="list-style-type: none"> <li>-Operate the MDA Operations Support Center (OSC) 24/7 to control configuration of the operational BMDS, coordinate execution of daily scheduled BMDS activities through the Asset Management System; capture scheduled and unscheduled outage start and stop times through the BMDS Operational Readiness Reporting System; monitor the "Health and Status" of BMDS assets deployed worldwide; support MDA Senior Leadership with prompt and accurate Critical Information Reporting.</li> <li>-Take rapid corrective action to remedy system and support equipment faults, maximizing system availability and effectiveness against threat missiles.</li> <li>-Gather, develop, fuse, document, and communicate BMDS operational data to all BMDS stakeholders.</li> <li>-Provide certification training to BMDS watch officers (BWO), assistant BWOs, BMDS Safety Officers (BSO), and other Operations Support Center staff.</li> <li>-Support MDA continuity of operations program planning and execution activities.</li> <li>-Staff and operate the two MDA Operations Centers (MOC) in VA and in AL, (HMOC), one each location, five days per week to provide MDA senior leadership with command, control, and communications for activities worldwide.</li> <li>-Serve as the fusion center for MDA's Warfighter Strategic Integration efforts in support of OSD, Joint Staff, CCMDs, and Military Services.</li> <li>-Serve as the office of primary responsibility for MDA participation in the BMDS Asset Management (BAM) Process defined by USSTRATCOM.</li> <li>-Maintain and improve the Integrated Scheduling Tool, information technology infrastructure, and tailored applications which facilitate BMDS planning, scheduling, and execution management supporting Homeland and Theater/regional BMDS.</li> <li>-Coordinate with CCMDs to develop the BMDS Annual Plan, coordinate BMDS operating schedules, and synchronize BMDS execution schedules.</li> <li>-Publish Asset Management user and system administrator guides and develop and conduct Asset Management training courses.</li> <li>-Coordinate and align BMDS scheduled maintenance to maximize operational and developmental availability.</li> <li>-Collect and report BMDS operational availability and readiness data through the network-based BMDS Operational Readiness Reporting System (BORRS).</li> <li>-Lead MDA Operations Support Planning Team (OSPT), an MDA-wide task force supporting real-world contingencies, crisis events, and exercises.</li> <li>-Lead staffing and processing of Warfighter RFA/RFIs.</li> </ul> <p>Warfighter Training Support:</p> <ul style="list-style-type: none"> <li>-Provide technical and programmatic updates on BMD systems supporting Warfighter training.</li> <li>-Provide MDST support for exercises and training for CCMDs and Military Services (up to 24/7).</li> </ul>			

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Coordinate C2BMC, DMETS with the Warfighter.</p> <p>-Coordinate BMD training issues with USSTRATCOM, Joint Staff (J-7), and MDA co-chaired BMD Training and Education Working Group.</p> <p>-Develop and publish the BMDS Handbook to aid Warfighter understanding of the capabilities and limitations of the fielded BMDS.</p> <p><b>FY 2017 Plans:</b></p> <p>The increase in funding from FY 2016 to FY 2017 will support more than 20 major software and hardware additions to the Operations Capacity Baseline. In addition, MDA will provide even greater focus on strategic-level interface to USSTRATCOM, USNORTHCOM, the Joint Staff, OSD, and Military Services to increase Warfighter involvement in the transition and deployment of future BMD capabilities. Several of the key Warfighter interface activities include:</p> <p><b>USSTRATCOM Engagement:</b></p> <p>-Support the Warfighter Involvement Process (WIP) and other MDA Warfighter engagement efforts by assisting Warfighters in their update to the annual BMDS Prioritized Capabilities List (PCL) and Modification and Fielding Request List (MFRL) reflecting changes in Combatant Command and Service priorities for needed BMDS enhancements to address full range of CCMD needs.</p> <p>-Share BMDS operational information / educate CCMD's in development of common BMDS operational procedures.</p> <p>-Provide reach-back support to the USSTRATCOM ATD in all USSTRATCOM BMDS related activities requiring visibility by the MDA Director.</p> <p>-Support Joint Functional Component Command Integrated Missile Defense (JFCC IMD) Integration efforts by coordinating for and participating in the Warfighter Forum (WWF). The WWF is a multi-lateral information and decision event that provides an O6 level venue to address COCOM, Service and DOD BMDS equities.</p> <p><b>USNORTHCOM Engagement:</b></p> <p>-Assist USNORTHCOM leadership in their efforts to broaden homeland defense planning to address the full range of USNORTHCOM threats and integration of allies into BMD by conducting the Homeland Defense Architecture Working Group (HDAWG) and Shot Management Analysis Cell (SMAC).</p> <p>-Support BMD senior leader forums as well as asset management, test, training, and exercises.</p> <p><b>Joint Staff Engagement:</b></p> <p>-Facilitate/coordinate Joint Staff interactions through working groups, O6 forums, and other liaison activities within Joint Staff directorates to enable warfighter access to critical MDA analysis capabilities, as well as assisting in assessments, estimates &amp; proposals to affect successful development &amp; operational deployment of BMDS.</p> <p>-Maintain daily, strategic-level interfaces with the Joint Staff and provide critical information required to plan for the fielding, and operation of the BMDS. Provide answers to the BMDS capability delivery process and transition and transfer actions to the Military</p>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Services through participation with working groups and O6 forums, facilitating General Officer forums, and other liaison activities within Joint Staff directorates to enable access to MDA analysis, assessments, estimates &amp; proposals to ensure successful transfer of MDA developed BMDS solutions to the warfighter.</p> <ul style="list-style-type: none"> <li>-Provide the MDA's planner-level coordination for Joint Staff and interagency staff actions through management of Agency-wide processes to ensure the staffing of Joint Staff Action Packages for Director, 2-Letter, O-6, and action officer review of warfighter plans, orders, and doctrine to synchronize Agency and Joint positions.</li> <li>-Coordinate the MDA process for responding to Joint Staff RFA/RFIs through AO and O6 level working groups and General Officer forums. Interface in detailed work with respective Joint Staff counterparts regarding their respective BMDS element dealing with plans, programs, resources, logistic concerns and training needs.</li> </ul> <p>Military Services Engagement:</p> <ul style="list-style-type: none"> <li>-Facilitate/coordinate Service Boards of Directors (BoDs), a bilateral Service/Agency decision forum dealing with the Lead Service BMDS related equities, POM development and execution as well as element fielding, operations and maintenance.</li> <li>-Support the BMDS capability delivery process and transition and transfer to the Military Services via program offices to establish transition annexes for BMDS capabilities via Overarching Service/Agency MOAs and related BMDS element annexes. Consistently coordinate and respond to Lead Service element related resource and training equity fact of life POM development changes and assignment of resource responsibilities in BMDS element fielding, operations and maintenance.</li> <li>-Maintain daily, strategic-level interfaces with the Military Services and provide critical information required to plan for the delivery, fielding, and operation of respective Lead Service BMDS capabilities via O6-level working groups, General Officer Air and Missile Defense and Space forums and close coordination with respective lead Service counterparts regarding BMDS resource, logistic and training element annexes.</li> <li>-Coordinate MDA process for responding to Military Service RFA/RFIs through O6-level working groups and internal Program tasking to coordinate timely internal Agency responses to Service request for analysis and information allowing Senior leaders the ability to make informed decisions related to BMDS operational, logistic and maintenance concerns.</li> </ul> <p>Current Operations Support:</p> <ul style="list-style-type: none"> <li>-Operate the MDA Operations Support Center (OSC) 24/7 to control configuration of the operational BMDS, This includes: coordinating an average of 3,000 annual configuration changes; coordinating daily execution of more than 32,000 scheduled BMDS activities annually through the Asset Management System; Capturing scheduled and unscheduled outage start and stop times; transmitting over 500 Logistic Reports (LOGREPs) detailing asset outages and corrective actions through the BMDS Operational Readiness Reporting System; monitoring the "Health and Status" of BMDS assets deployed worldwide; and supporting MDA Senior Leadership with prompt and accurate Critical Information Reporting. These activities ensure the BMDS functions as designed maximizing asset availability and directly supporting Warfighters and Homeland and Regional defenses.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-In addition to the OSC in Colorado Springs, staff and operate two MDA Operations Centers in VA and AL (5/16 with capability to surge to 24/7) to ensure command, control, and communications for activities worldwide.</p> <p>-Lead MDA Operations Support Planning Team (OSPT), an MDA-wide task force supporting Warfighters, Services and the Joint Staff to address real-world contingencies, crisis events, and exercises.</p> <p>-Plan and execute MDA continuity of operations activities ensuring continuation of mission essential functions and continuous support to the Warfighter.</p> <p>-Lead troubleshooting actions for unscheduled outages (over 200 hours annually) to remedy system and support equipment faults to maximize system availability and effectiveness against threat missiles.</p> <p>-Lead MDA participation in the USSTRATCOM SI 538-1 defined BMDS Asset Management (BAM) Process by publishing a daily schedule encompassing sustainment, testing, upgrade and training activities for missile warning, space situational awareness, and homeland and regional defense assets to support nearly 900 initial Event Objective Worksheets and 1,190 revisions annually for over 250 assets while processing more than 4,700 Schedule Change Requests to support changing Warfighter requirements.</p> <p>-Coordinate with CCMDs to develop the BMDS Annual Plan and BMDS Operating Schedule facilitating key stakeholder coordination and maximizing operational availability of the BMDS.</p> <p>-Develop and maintain the Integrated Scheduling Tool and tailored applications to facilitate BMDS planning, scheduling, and execution management supporting Homeland and Theater/regional BMDS.</p> <p>- Support over 20 major software and hardware additions to the Operations Capacity Baseline as a Voting member in the MDA Change Management Process to support homeland and regional defenses including Kyoga-Misaki Communications Site and EPAA Phase 2.</p> <p>-Develop and maintain the BMDS Operational Readiness Reporting System (BORRS) application, which collects and reports BMDS operational availability and readiness data through the network-based tool to distribute data to OSD, Combatant Commands, Joint Staff, Military Services, and BMDS Operators.</p> <p>-Lead staffing and processing of Warfighter, Combatant Command, Joint Staff and Service queries through the RFA/RFI process (average 29 RFIs and 19 RFAs).</p> <p>-Provide certification training to BMDS watch officers (BWO), assistant BWOs, BMDS Safety Officers (BSO), and other Operations Support Center staff (includes over 1,300 sustainment and initial qualification training hours annually).</p> <p>-Develop and conduct Asset Management/Integrated Scheduling Tool training courses.</p> <p>-Develop and publish the BMDS Handbook to aid Warfighter understanding of the capabilities and limitations of the fielded BMDS.</p> <p>Warfighter Training Support:</p> <p>-Provide technical and programmatic updates on BMD systems supporting Warfighter training (7 courses, 4,300 training slides and over 1,200 updates).</p> <p>-Coordinate DMETS scheduling with the Warfighter (120 annual training/certification events and 10 annual exercises).</p> <p>- Participate in BMD training and Education Working Group to coordinate BMD training issues with USSTRATCOM and Joint Staff.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Provide 25,000 hours (up to 24/7) of MDST support for over 170 exercises and training events annually to CCMDs, Military Services and Coalition partners comprised of more than 90,000 simulated exercise missile launches. MDST is the only simulation that provides Missile Early Warning data over the Operational Broadcast and is used to train the warfighter on the operational system and validate operational systems. -Test capabilities for development of Processing Display Subsystem - Migration (PDS-M), Global Command and Control System (GCCS) to ensure operational readiness of new releases. -Support Aegis On-Demand, Aegis program releases, Shipboard installation and Aegis Operator Training with system validation to ensure operational readiness of Aegis as the first step in the kill chain for Ballistic Missile Defense (2690 hours of support annually). Without this operational system validation, the warfighter may not be able to detect a real-world launch of a ballistic threat. -Support Crew Operational Readiness Inspection (ORI) / Inspector General Certifications (800 hours of support annually). -Support testing of the operational Integrated Broadcast System (IBS), Common Integrated Broadcast (CIB) and Shared Early Warning System with system validation to ensure operational readiness of both US and Coalition partners with the first step in the kill chain for BMD(3,480 hours of support annually). Without this operational system validation, the warfighter may not be able to detect a real-world launch of a ballistic threat.			
<b>Accomplishments/Planned Programs Subtotals</b>	40.638	14.569	15.417

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0901598C: <i>Management HQ - MDA</i>	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

Missile Defense Agency will continue to enable effective delivery of Ballistic Missile Defense System capabilities to the Warfighter by ensuring their participation in the identification and development of new capabilities via the Warfighter Involvement Process.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
Warfighter Operational Support/Wargames and Exercises - Civilian Salaries/Operations Sustainment	Allot	MDA : Colorado Springs, Huntsville, NCR	0.000	2.495		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfighter Operational Support/Wargames and Exercises - Combatant Commanders (COCOM) Support	C/CPAF	JRDC/MIPR : Colorado Springs, Huntsville, NCR	0.000	14.527		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfighter Operational Support/Wargames and Exercises - Combatant Commanders (COCOM) Support A&AS	C/CPFF	MiDAESS : Colorado Springs, Huntsville, NCR	0.000	0.942		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfighter Operational Support/Wargames and Exercises - Government Travel & Training	Allot	MDA : Colorado Springs, Huntsville, NCR	0.000	0.750		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfighter Operational Support/Wargames and Exercises - Support to MDA Leadership A&AS	C/CPFF	MiDAESS : Colorado Springs, Huntsville, NCR	0.000	1.381		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Warfighter Operational Support/Wargames and	C/CPAF	JRDC/MIPR : Colorado Springs	0.000	6.115		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>
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<b>Support (\$ in Millions)</b>				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			
Exercises - Wargame Support															
Strategic Warfighter Integration - Strategic Warfighter Integration - HR A&AS	C/CPFF	MiDAESS : Colorado Springs	0.000	0.140		0.145		0.143	Aug 2017	-		0.143	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - IC A&AS	C/CPFF	MiDAESS : Huntsville	0.000	0.218		0.225		0.232	Feb 2017	-		0.232	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Administrative A&AS	C/CPFF	MiDAESS : Colorado Springs	0.917	0.115		0.120	Oct 2015	0.116	Jun 2017	-		0.116	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Asset Management Server Maintenance	C/CPAF	JRDC : Colorado Springs, Huntsville	1.639	0.525		0.550	Nov 2015	0.582	Nov 2016	-		0.582	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Civilian Salaries/ Operations Sustainment	Allot	MDA : Colorado Springs/Huntsville, NCR	18.968	3.750		3.875	Oct 2015	4.123	Oct 2016	-		4.123	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - Current Operations	C/CPAF	JRDC : Colorado Springs	8.968	3.100		3.105	Nov 2015	3.162	Oct 2016	-		3.162	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic Warfighter Integration - MDST	C/CPAF	JRDC : Colorado Springs	11.736	2.200		0.778	Nov 2015	1.963	Oct 2016	-		1.963	Continuing	Continuing	Continuing
Strategic Warfighter Integration - Strategic	Allot	MDA : Colorado Springs, Huntsville, NCR	0.551	0.168		0.225	Oct 2015	0.200	Oct 2016	-		0.200	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>
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<b>Support (\$ in Millions)</b>				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			
Warfighter Integration - Travel and Training															
Strategic Warfighter Integration - Strategic Warfighter Integration - Warfighter Support A&AS	C/CPFF	MiDAESS : Colorado Springs, Huntsville, NCR	5.458	4.212		5.546	Oct 2015	4.896	Oct 2016	-		4.896	Continuing	Continuing	Continuing
<b>Subtotal</b>			48.237	40.638		14.569		15.417		-		15.417	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	48.237	40.638	14.569	15.417	-	15.417	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>			<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

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

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</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		
(WG) Demonstration, Table-top Exercises & Experiments 15		+	+	+	+																									
(EX) European Air & Missile Defense Exercise Alliance 15			▲																											
(EX) KEEN Edge 16			+	+	+	+																								
(EX) Joint Air Defense Exercise Series 15																														
(EX) Ulchi Freedom Guardian 15				▲																										
(EX) EPOCH PLANEX 17				▲																										
(WG) Huntsville Wargames 15				▲																										
(EX) Arabian Gulf Shield (AGS) Event 3 15				▲																										
(WG) Space & Missile Defense Symposium 15				▲																										
(WG) Nimble Titan Year 2 16				✦	✦	✦	✦	✦																						
MD03-Warfighter Support									✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦		

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD03 / <i>Joint Warfighter Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Demonstration, Table-top Exercises & Experiments 15	2	2015	1	2016
(EX) European Air & Missile Defense Exercise Alliance 15	3	2015	3	2015
(EX) KEEN Edge 16	3	2015	2	2016
(EX) Joint Air Defense Exercise Series 15	4	2015	4	2015
(EX) Ulchi Freedom Guardian 15	4	2015	4	2015
(EX) EPOCH PLANEX 17	4	2015	4	2015
(WG) Huntsville Wargames 15	4	2015	4	2015
(EX) Arabian Gulf Shield (AGS) Event 3 15	4	2015	4	2015
(WG) Space & Missile Defense Symposium 15	4	2015	4	2015
(WG) Nimble Titan Year 2 16	4	2015	4	2016
MD03-Warfighter Support	1	2017	4	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>				<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT03: <i>Joint Warfighter Support Test</i>	-	1.051	31.149	30.423	-	30.423	31.369	31.904	33.517	34.027	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, \$31.149 million for Joint Warfighter Support Test transfers from budget project MD03 to budget project MT03.

**A. Mission Description and Budget Item Justification**

Joint Warfighter Support Test (MT03) is comprised of two primary responsibilities: wargames and exercises and warfighter operational support.

Wargames and exercises:

- Support the Warfighter to plan and conduct worldwide wargames and exercises supporting BMDS development and fielding.
- Enable the Warfighter to define, test, deploy, and employ new missile defense capabilities.
- Support JFCC-IMD BMDS table top exercises to facilitate the global missile defense capability and to refine the European capability concept of operations through low-fidelity demonstration Models & Simulation (M&S).
- Examine current and future BMDS operational capabilities for Geographic (i.e., USCENTCOM, USEUCOM, and USPACOM) and Strategic (i.e., USNORTHCOM and USSTRATCOM) CCMDs.
- Complete test planning for BMDS events as shown in the Exhibit R-4 schedule.

Warfighter operational support (program planning and operations):

- Prepare MDA senior leadership for engagements with the Geographic Combatant Commands by providing logistical support and developing briefings for the GCC Assistant Test Directors (ATDs) and MDA Director.
- Interface with the GCCs on BMD operational issues by providing planning and analysis support and capturing/transmitting GCC Request for Analysis/Request for Information (RFA/RFIs).
- Support GCC contingency activation planning for real-world contingencies and theater security cooperation programs by supervising the activation of MDA assets to use in the operational BMDS.
- Aid GCC participation in BMDS capability definition, design, development, integration, and delivery processes through the Warfighter Involvement Process (WIP) to synchronize capability delivery with operational readiness and acceptance.
- Provide resource management and administration of MT03 personnel and funding.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Wargames and Exercises	0.000	24.059	23.516
<b>Articles:</b>	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Description:</b> Beginning in FY 2016, Joint Warfighter Support Test transfers from Budget Project MD03 to Budget Project MT03.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> The increase of \$3.4 million from FY 2015 to FY 2016 is a result of increased Combatant Command (COCOM) wargame and exercise scheduling.</p> <p>The MDA will continue to enhance Warfighter operational support through internal support activities and proactive execution of Combatant Command (CCMD) interface activities:</p> <ul style="list-style-type: none"> <li>- Work with CCMDs on the inclusion of Allies and regional partners into MDA Ground and Flight tests, as well as wargame &amp; exercise simulations.</li> <li>- Provide warfighter training simulations in direct support of flight and ground tests.</li> <li>- Serve as liaison between internal MDA organizations and the Joint Functional Component Commander for Integrated Missile Defense (JFCC-IMD) across all functional areas (e.g. operations, plans and resources) to facilitate Geographic Combatant Command (GCC) participation in the BMDS capability definition, design, development, integration and delivery processes.</li> <li>- Support the JFCC IMD and EUCOM in the European Phased Adaptive Approach (EPAA) implementation process through the planning, testing, integration and execution of BMDS wargames and exercises.</li> <li>- Support Joint Staff integration of MDA models into Tier I events through the JOINT, LIVE VIRTUAL CONSTRUCTIVE (JLVC) campaign.</li> <li>- Continue to work with Program Offices and the Warfighter to establish a Concept of Operations that will support future MDA Models and Simulation (M&amp;S) support to BMD wargames and exercises.</li> <li>- Coordinate and integrate CCMD requirements into the BMDS Integrated Master Test Plan.</li> <li>- Support the GCC Assistants to the Director (ATDs) and Liaison Officers (LNOs).</li> <li>- Provide support to the development and update of Ballistic Missile Defense (BMD) portions of CCMD Operation Plans (OPLANS) and Contingency Plans (CONPLANS).</li> <li>- Engage in MDA/GCC interface and synchronization of information regarding capabilities and security cooperation strategies.</li> <li>- Develop and provide Table Top Exercises (TTX) in support of CCMD-specific scenarios to include:               <ul style="list-style-type: none"> <li>o TTX: PACOM MTTX, Multi-National Conference, NATO NAC TTX, STRIKFORNATO TTX, PACOM MTTX 16-2, Air and Missile Defense Seminar</li> </ul> </li> <li>-Support BMDS development through the planning, testing and execution of developer, policy and familiarization wargames to include:</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>o Wargames: BMDS Wargame 17 (planning events), NIMBLE TITAN 16, NIMBLE FIRE 16A, NIMBLE FIRE 16B                      -Conduct planning, testing, integration and execution of CCMD-supported globally-executed BMDS exercises to include the following (by GCC):</p> <p>o EUCOM: BLUE FLAG 16-1, JOINT TASK FORCE-ISRAEL COMMAND POST EXERCISE, CROSS-AOR AIR AND MISSILE DEFENSE EXERCISE 16, STEADFAST ALLIANCE 16, HOST NATION EXERCISE 16</p> <p>o PACOM: KEEN EDGE 16, FLEET SYNTHETIC TRAINING-JOINT 16-71, KEY RESOLVE 16, ULCHI FREEDOM GUARDIAN 16, PACIFIC SENTRY 16</p> <p>o CENTCOM: AIR AND MISSILE DEFENSE EXERCISE (AMDEX) 16-1, JOINT AIR DEFENSE EXERCISE (JADEX) 16-1, JADEX 16-2, AMDEX 16-2, JADEX 16-3, JADEX 16-4, ARABIAN GULF SHIELD</p> <p>o NORTHCOM/JFCC-IMD/STRATCOM: VIGILANT SHIELD/GLOBAL THUNDER 16</p> <p>Additional GCC interface activities by region will include:</p> <p>USEUCOM Engagement:</p> <ul style="list-style-type: none"> <li>- Coordinate with USEUCOM, continue planning activities for the European Phased Adaptive Approach to provide a full range of capabilities to address all threats.</li> <li>- Share operational information and knowledge in order to increase allied interoperability.</li> <li>- Support BMD training, wargames, and exercises with NATO partners.</li> <li>- Coordinate with MDA program elements; assist in planning and execution activities supporting USEUCOM's non-NATO partners.</li> <li>- Provide reach-back support to the USEUCOM ATD and LNO in USEUCOM activities requiring visibility by the MDA Director and Director of Test.</li> <li>- Coordinate with MDA Global Deployment Program Office, plan and execute activities required for deployment of BMDS assets and components in the USEUCOM AOR.</li> <li>- Synchronize MDA-integrated fielding plans with Warfighter Operational Readiness and Acceptance (OR&amp;A) efforts in support of the European Phased Adaptive Approach.</li> <li>- Prepare MDA Senior Leadership for engagements with the USEUCOM. Support MDA Senior Leadership Engagements in conjunction with wargames, exercises, and ground tests.</li> <li>- Work with USEUCOM on the inclusion of Allies and regional partners into MDA Ground and Flight tests, as well as wargame &amp; exercise simulations. Collaborate with USEUCOM to interface with Allies for integration and HWIL issues.</li> </ul> <p>USCENTCOM Engagement:</p> <ul style="list-style-type: none"> <li>- Assist CCMD leadership to develop a regional partner data sharing system supporting USCENTCOM regional IAMD architecture development.</li> <li>- Coordinate with MDA program elements; assist in planning and execution activities supporting USCENTCOM's regional partners.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>- Provide reach-back support to the USCENTCOM ATD and LNO in USCENTCOM activities requiring visibility by the MDA Director and Director of Test.</p> <p>- Support all cross-AOR planning and execution activities.</p> <p>USPACOM Engagement:</p> <ul style="list-style-type: none"> <li>- Assist USPACOM leadership to broaden Phased Adaptive Approach planning to address a full range of threats and integration of allies into the BMDS.</li> <li>- Coordinate with MDA program elements; assist in planning and execution activities supporting USPACOM's regional partners.</li> <li>- Provide reach-back support to the USPACOM ATD and LNO in USPACOM activities requiring visibility by the MDA Director and Director of Test.</li> <li>- Share operational information and knowledge and help allies develop common operational procedures.</li> <li>- Prepare MDA Senior Leadership for engagements with the USEUCOM. Support MDA Senior Leadership Engagements in conjunction with wargames, exercises, and ground tests.</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>-The increase of \$543 Thousand from FY 2016 to FY 2017 is a result of increased Combatant Command wargame and exercise scheduling.</p> <p>The MDA will continue to focus on providing operational-level interfaces to the GCCs and increasing Warfighter participation to develop future missile defense capabilities. Several of the key Warfighter interface activities include:</p> <ul style="list-style-type: none"> <li>- Provide feedback and support involvement in MDA's BMDS development process.</li> <li>- Support the Joint Functional Component Commander for Integrated Missile Defense (JFCC IMD) and EUCOM in the European Phased Adaptive Approach (EPAA) Phase III implementation process through the planning, testing, integration and execution of BMDS wargames and exercises.</li> <li>- Develop Table Top evolutions to include future concepts and BMDS assets.</li> <li>- Support BMDS development through the planning, testing and execution of developer, policy and familiarization wargames.</li> <li>- Conduct BMDS Table Top exercises with low fidelity demonstrations for our partners and allies in conjunction with other MDA program offices and Combatant Commands (CCMDs).</li> <li>- Work with Program Offices and the Warfighter to establish a Concept of Operations that will support future MDA Models and Simulation (M&amp;S) support to BMD wargames and exercises.</li> <li>- Provide support for participants to attend MDA sponsored BMD wargames and exercises.</li> <li>- Support travel requirements of the Directorate for Warfighter Interface Civilian and Military staff to attend various exercises, wargames, planning and technology conferences.</li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provide contractor technical services support for the wargames and exercises mission.</li> <li>- Integrate Operational Stimulation Framework (OSF) and other emerging models into CCMD sponsored BMDS exercises.</li> <li>- Support Joint Staff integration of MDA models into Tier I events through the Joint Live, Virtual, Constructive (JLVC) 2020 campaign.</li> <li>- Provide warfighter training simulations in direct support of flight tests.</li> <li>- Conduct the planning, testing, integration and execution of CCMD supported globally executed BMDS exercises.</li> <li>- Provide development of scenarios and subject matter experts in response to time late, CCMD generated requests for wargames and table top exercises.</li> <li>- Support BMD training, wargames, and exercises with North Atlantic Treaty Organization (NATO) partners.</li> <li>- Support all CCMD BMD exercise cross-area of responsibility (AOR) planning and execution activities.</li> <li>- Execute the following exercises/wargames by region:               <ul style="list-style-type: none"> <li>o EUCOM: JUNIPER COBRA, CAMDEX, BLUE FLAG, AUSTERE CHALLENGE, STEADFAST ALLIANCE</li> <li>o PACOM: PACIFIC SENTRY, ULCHI FREEDOM GUARDIAN, KEY RESOLVE, KEEN EDGE, FLEET SYNTHETIC TRAINING-JOINT 17-71, KEEN SWORD</li> <li>o CENTCOM: AMDEX, JADEX, ARABIAN GULF SHIELD</li> <li>o NORTHCOM/JFCC-IMD: GLOBAL RESPONSE, VIGILANT SHIELD, GLOBAL THUNDER, GLOBAL LIGHTNING</li> <li>o WARGAMES: NIMBLE TITAN SERIES, NIBLE FIRE SERIES, HUNTSVILLE WARGAME, SMD WARGAME, MULTI-NATIONAL CONFERENCE WARGAME, RONALD REAGAN MISSILE DEFENSE CONFERENCE WARGAME, MDA BMDS WARGAME, NIMBLE SHIELD</li> <li>o OTHER: JOINT, LIVE VITUAL CONSTRUCTIVE(JLVC 2020), FTO-XX WF SIM</li> </ul> </li> </ul> <p>USEUCOM Engagement:</p> <ul style="list-style-type: none"> <li>- In coordination with United States European Command (USEUCOM), continue planning activities for the European Phased Adaptive Approach (EPAA) to provide a full range of capabilities to address all threats.</li> <li>- Share operational information and knowledge and help allies develop common operational procedures.</li> <li>- In coordination with MDA program elements; assist in planning and execution activities supporting USEUCOM's non-NATO partners.</li> <li>- Provide reach-back support to the USEUCOM Assistant to the Director (ATD) and Liaison Officer (LNO) in USEUCOM activities requiring visibility by the MDA Director and Director of Test.</li> <li>- In coordination with MDA Global Deployment Program Office, plan and execute activities required for deployment of BMDS assets and components in the USEUCOM Area of Responsibility (AOR).</li> <li>- Plan and execute a yearly senior leader forum hosted by the MDA Director and USEUCOM Deputy Commander at USEUCOM Headquarters (HQ).</li> <li>- Plan and execute tag-ups between MDA and USEUCOM J-3.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Assist in warfighter coordination in support of ground and flight test planning and execution for Integrated Event Test Team (IETT) events.</li> <li>- Support MDA and Space and Missile Defense Command (SMDC) in monthly AN/TPY-2 Synchronization Integrated Product Team meetings.</li> </ul> <p>USCENTCOM Engagement:</p> <ul style="list-style-type: none"> <li>- Assist CCMD leadership to develop a regional partner data sharing system supporting United States Central Command (USCENTCOM) regional IAMD architecture development.</li> <li>- Support all potential BMDS Foreign Military Sales (FMS) activities in the USCENTCOM AOR.</li> <li>- Provide reach-back support to the USCENTCOM ATD and LNO in USCENTCOM activities requiring visibility by the MDA Director and Director of Test.</li> <li>- Support all cross-AOR planning and execution activities.</li> <li>- Plan and execute a yearly senior leader forum hosted by the MDA Director and USCENTCOM Deputy Commander at USCENTCOM HQ.</li> <li>- Plan and execute tag-ups between MDA and USCENTCOM J-3.</li> <li>- Assist in warfighter coordination in support of ground and flight test planning and execution for Integrated Event Test Team (IETT) events.</li> <li>- Support MDA and SMDC in monthly AN/TPY-2 Synchronization Integrated Product Team meetings.</li> </ul> <p>USPACOM Engagement:</p> <ul style="list-style-type: none"> <li>- Assist United States Pacific Command (USPACOM) leadership to broaden Phased Adaptive Approach planning to address a full range of threats and integration of allies into the BMDS.</li> <li>- Assist in the planning and execution of incorporating an additional AN/TPY-2 in the USPACOM AOR.</li> <li>- Assist with the development, planning, procurement, and installation of a long-range discrimination radar for the USPACOM AOR.</li> <li>- Provide staff support for Requests for Analysis (RFA) and Requests for Information (RFI) from the USPACOM staff to the Agency.</li> <li>- Facilitate bilateral and trilateral exercises, wargames, and ground/flight test events between USPACOM and regional allied defense forces.</li> <li>- Represent MDA at bilateral USPACOM BMD Operational Information Sharing Working Group forums.</li> <li>- Provide reach-back support to the USPACOM ATD and LNO in USPACOM activities requiring visibility by the MDA Director and Director of Test.</li> <li>- Share operational information and knowledge and help allies develop common operational procedures.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Assist in warfighter coordination in support of ground and flight test planning and execution for Integrated Event Test Team (IETT) events.</li> <li>- Plan and execute a yearly senior leader forum hosted by the MDA Director and USPACOM Deputy Commander at USPACOM HQ.</li> <li>- Plan and execute a regular tag-up between the MDA and the USPACOM J-3.</li> <li>- Assist in warfighter coordination in support of ground and flight test planning and execution for Integrated Event Test Team (IETT) events.</li> </ul>			
<p><b>Title:</b> Program, Planning and Operations</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Beginning in FY 2016, Joint Warfighter Support Test transfers from Budget Project MD03 to Budget Project MT03.</p> <p><b>FY 2015 Accomplishments:</b> MT03 funds will be realigned and executed from the MD03 budget project in FY 2016 to accomplish high agency priority initiatives.</p> <p><b>FY 2016 Plans:</b> The \$6.0 million increase from FY 2015 to FY 2016 is a result of continued wargame and exercises efficiencies related to scheduling.</p> <p>The MDA will continue to focus on providing operational-level interface to the GCCs and increasing Warfighter participation in the development of future missile defense capabilities. The key Warfighter interface activities include:</p> <p>MDA Operational Support:</p> <ul style="list-style-type: none"> <li>- Support OSPT activation during heightened period of interest.</li> <li>- Support Warfighters, DoD Agencies, and Military Services in identifying desired missile defense capabilities and characteristics.</li> <li>- Obtain Warfighter participation and advice on desired operational features and approaches to system fielding throughout development.</li> <li>- Track analysis and responses for CCMD RFA/RFIs.</li> <li>- Serve as the immediate link between MDA and the GCCs on all Warfighter activities and requirements.</li> <li>- Prepare MDA senior leadership for U.S. Army, Navy, and Air Force BOD meetings and AMD General Officer Steering Committee meetings.</li> <li>- Coordinate MDA and GCC participation in BMDS capability definition, design, development, and integration.</li> <li>- Provide resource management and administration of MT03 personnel and dollars.</li> <li>- Support and staff the HMOC during surge operations and sustained 24/7 hour operations.</li> </ul>	1.051 -	7.090 -	6.907 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Manage travel, including travel to support the wargames and exercises and the ATDs and LNOs as MDA representatives at the GCC HQs.</p> <p><b>FY 2017 Plans:</b> The \$183 thousand decrease from FY 2016 to FY 2017 is a result of continued wargame and exercises efficiencies related to scheduling.</p> <p>MDA will continue to focus on providing operational-level interface to the GCCs and increasing Warfighter participation in the development of future missile defense capabilities. The key Warfighter interface activities include:</p> <p>MDA Operational Support:</p> <ul style="list-style-type: none"> <li>- Support Warfighters, DoD Agencies, and Military Services in identifying desired missile defense capabilities and characteristics.</li> <li>- Obtain Warfighter participation and advice on desired operational features and approaches to system fielding throughout development.</li> <li>- Track analysis and responses for Combatant Command Request for Analysis/Request for Information (RFA/RFIs).</li> <li>- Serve as the immediate link between MDA and the Geographical Combatant Commands on all Warfighter activities and requirements.</li> <li>- Coordinate MDA and GCC participation in BMDS capability definition, design, development, and integration.</li> <li>- Provide resource management and administration of MT03 personnel and dollars.</li> <li>- Support and staff the Huntsville Mission Operation Center (HMOC) during surge operations and sustained 24/7 hour operations.</li> <li>- Manage travel, including travel to support the wargames and exercises and the Assistant to the Director (ATD) and Liaison Officer (LNO) as MDA representatives at the GCC HQs.</li> <li>- Support BMD test, training, wargames, and exercises.</li> <li>- Provide Contractor Technical Services Support in support of the Wargames and Exercises mission.</li> <li>- Support travel requirements of the Directorate for Warfighter Interface Civilian and Military staff to attend various Exercises, Wargames, planning and technology conferences.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.051	31.149	30.423

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

**D. Acquisition Strategy**

In order to optimize the performance of the Ballistic Missile Defense System, MDA leverages Defense Department executive agents as well as the MDA Joint National Integration Center Research and Development (JRDC) contract.

The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS. Products and Services will be acquired by competitive means to the extent that is possible and practical.

In 2016, the MDA JRDC contract is scheduled to be recompeted and will be called the Integrated Research and Development for Enterprise Solutions (IRES).

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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<b>Support (\$ in Millions)</b>				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			
Wargames and Exercises - Combatant Commanders (COCOM) Support	C/CPAF	JRDC/MIPR : Colorado Springs, Huntsville, NCR	0.000	0.000		18.240		16.650		-		16.650	Continuing	Continuing	Continuing
Wargames and Exercises - Wargame Support	C/CPAF	JRDC/MIPR : Colorado Springs	0.000	0.000		5.819		6.866		-		6.866	Continuing	Continuing	Continuing
Program, Planning and Operations - Civilian Salaries/Operations Sustainment	Allot	MDA : Colorado Springs, Huntsville, NCR	0.000	0.000		2.343		2.543		-		2.543	Continuing	Continuing	Continuing
Program, Planning and Operations - Combatant Commanders (COCOM) Support A&AS	C/CPFF	MiDAESS : Colorado Springs, Huntsville, NCR	0.000	0.000		1.049		0.998		-		0.998	Continuing	Continuing	Continuing
Program, Planning and Operations - Government Travel & Training	Allot	MDA : Colorado Springs, Huntsville, NCR	0.000	0.000		0.650		0.850		-		0.850	Continuing	Continuing	Continuing
Program, Planning and Operations - Support to MDA Leadership A&AS	C/CPFF	MiDAESS : Colorado Springs, Huntsville, NCR	0.000	1.051		3.048		2.516		-		2.516	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	1.051		31.149		30.423		-		30.423	-	-	-

**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
<b>Project Cost Totals</b>	0.000	1.051	31.149	30.423	-	30.423	-	-	-

**Remarks**  
Prior year funding was captured in MD03 budget project.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

Significant Event Complete ▲    Milestone Decision Complete ★    Element Test Complete ◆    System Level Test Complete ●    Complete Activity Planned Activity ✦  
 Significant Event Planned △    Milestone Decision Planned ☆    Element Test Planned ◇    System Level Test Planned ○

	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		
(WG) Demonstration, Table-top Exercises & Experiments 15		✦	✦	✦	✦																									
(EX) European Air & Missile Defense Exercise Alliance 15			▲																											
(EX) KEEN Edge 16			✦	✦	✦	✦																								
(EX) Joint Air Defense Exercise Series 15				▲																										
(EX) Ulchi Freedom Guardian 15				▲																										
(EX) EPOCH PLANEX 17				▲																										
(WG) Huntsville Wargames 15				▲																										
(EX) Arabian Gulf Shield (AGS) Event 3 15				▲																										
(WG) Space & Missile Defense Symposium 15				▲																										
(WG) Nimble Titan Year 2 16				✦	✦	✦	✦	✦																						
(EX) Air and Missile Defense Exercise Series 16				△																										
(EX) Vigilant Shield/Global Thunder 16				△																										
(EX) Arabian Gulf Shield (AGS) Event 1 16				△																										
(EX) Host Nation 16				✦	✦																									
(EX) Global Lightning 16				✦	✦																									
(EX) Fleet Synthetic Training-Joint 16				△																										
(EX) Key Resolve 16				△																										
(EX) Arabian Gulf Shield (AGS) Event 2 16				△																										
(EX) Steadfast Alliance 16				✦	✦																									
(WG) Ronald Reagan Forum 16				△																										
(EX) European Air & Missile Defense Exercise Alliance 16				△																										
(WG) Demonstration, Table-top Exercises & Experiments 16				✦	✦	✦																								
(EX) Joint Air Defense Exercise Series 16				△																										
(EX) Pacific Sentry 16				△																										
(WG) Huntsville Wargames 16				△																										
(EX) Arabian Gulf Shield (AGS) Event 3 16				△																										
(EX) Ulchi Freedom Guardian 16				△																										
(WG) Space & Missile Defense Symposium 16				△																										

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Significant Event Complete ▲      Milestone Decision Complete ★      Element Test Complete ◆      System Level Test Complete ●      Complete Activity Planned Activity ✦  
 Significant Event Planned △      Milestone Decision Planned ☆      Element Test Planned ◇      System Level Test Planned ○

	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
(WG) Multi-National Missile Defense Conference (MNC) 16								✦	✦																			
(WG) BMDS Wargames 17								✦	✦	✦	✦																	
(WG) Nimble Titan Year 1 18								✦	✦	✦	✦																	
(EX) Air and Missile Defense Exercise Series 17								△																				
(EX) EPOCH PLANEX 18								△																				
(EX) Arabian Gulf Shield (AGS) Event 1 17								△																				
(EX) Global Response Exercise (GREx) 16								△																				
(EX) Global Lightning 17								✦	✦																			
(EX) Fleet Synthetic Training-Joint 17								△																				
(EX) Arabian Gulf Shield (AGS) Event 2 17								△																				
(EX) Key Resolve 17								△																				
(EX) Steadfast Alliance 17								✦	✦																			
(EX) Austere Challenge 17								✦	✦	✦	✦	✦	✦	✦														
(EX) European Air & Missile Defense Exercise Alliance 17								△																				
(EX) KEEN Sword 17								✦	✦	✦																		
(WG) Demonstration, Table-top Exercises & Experiments 17								✦	✦	✦																		
(EX) KEEN Edge 18								✦	✦	✦	✦																	
(EX) Joint Air Defense Exercise Series 17								✦																				
(EX) Eagle Resolve 17								△																				
(WG) Huntsville Wargames 17								△																				
(EX) Arabian Gulf Shield (AGS) Event 3 17								△																				
(EX) Pacific Sentry 17								△																				
(EX) Ulchi Freedom Guardian 17								△																				
(WG) Space & Missile Defense Symposium 17								△																				
(WG) Multi-National Missile Defense Conference (MNC) 17								✦	✦																			
(WG) Nimble Titan Year 2 18								✦	✦	✦	✦																	
(EX) Air and Missile Defense Exercise Series 18								△																				
(EX) EPOCH PLANEX 19								△																				
(EX) Arabian Gulf Shield (AGS) Event 1 18								△																				
(EX) Vigilant Shield/Global Thunder 17								△																				



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</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
(EX) Global Lightning 18													✦	✦														
(EX) Arabian Gulf Shield (AGS) Event 2 18													△															
(EX) Key Resolve 18													△															
(EX) Host Nation 18													✦	✦														
(EX) Global Response Exercise (GREx) 18													✦	✦														
(EX) Steadfast Alliance 18													✦	✦														
(WG) Ronald Reagan Forum 18													△															
(EX) European Air & Missile Defense Exercise Alliance 18													△															
(WG) Demonstration, Table-top Exercises & Experiments 18													✦	✦	✦													
(EX) Joint Air Defense Exercise Series 18													△															
(WG) Huntsville Wargames 18													△															
(EX) Arabian Gulf Shield (AGS) Event 3 18													△															
(EX) Pacific Sentry 18													△															
(EX) Ulchi Freedom Guardian 18													△															
(WG) Space & Missile Defense Symposium 18													△															
(WG) Multi-National Missile Defense Conference (MNC) 18													✦	✦														
(WG) BMDS Wargames 19													✦	✦	✦	✦												
(WG) Nimble Titan Year 1 20													✦	✦	✦	✦												
(EX) Air and Missile Defense Exercise Series 19													△															
(EX) EPOCH PLANEX 20													△															
(EX) Arabian Gulf Shield (AGS) Event 1 19													△															
(EX) Vigilant Shield/Global Thunder 18													△															
(EX) Global Lightning 19													✦	✦														
(EX) EPOCH PLANEX 21													✦	✦	✦	✦	✦											
(EX) Fleet Synthetic Training-Joint 18													△															
(EX) Fleet Synthetic Training-Joint 19													△															
(EX) Arabian Gulf Shield (AGS) Event 2 19													△															
(EX) Key Resolve 19													△															
(EX) Steadfast Alliance 19													✦	✦														
(EX) Austere Challenge 19													✦	✦	✦	✦	✦	✦										

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</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
(EX) European Air & Missile Defense Exercise Alliance 19																			△									
(EX) KEEN Sword 19																			+	+	+							
(WG) Demonstration, Table-top Exercises & Experiments 19																			+	+	+							
(EX) KEEN Edge 20																			+	+	+	+						
(EX) Joint Air Defense Exercise Series 19																			△									
(WG) Huntsville Wargames 19																			△									
(EX) Eagle Resolve 19																			△									
(EX) Arabian Gulf Shield (AGS) Event 3 19																			△									
(EX) Pacific Sentry 19																			△									
(EX) Ulchi Freedom Guardian 19																			△									
(WG) Space & Missile Defense Symposium 19																			△									
(WG) Multi-National Missile Defense Conference (MNC) 19																			+	+								
(WG) Nimble Titan Year 2 20																			+	+	+	+						
(EX) Air and Missile Defense Exercise Series 20																			△									
(EX) Arabian Gulf Shield (AGS) Event 1 20																			△									
(EX) Vigilant Shield/Global Thunder 19																			△									
(EX) Global Lightning 20																			+	+								
(EX) Fleet Synthetic Training-Joint 20																			△									
(EX) Arabian Gulf Shield (AGS) Event 2 20																			△									
(EX) Global Response Exercise (GREx) 20																			△									
(EX) Key Resolve 20																			△									
(EX) Steadfast Alliance 20																			+	+								
(EX) Host Nation 20																			△									
(EX) European Air & Missile Defense Exercise Alliance 20																			△									
(WG) Ronald Reagan Forum 20																			△									
(WG) Demonstration, Table-top Exercises & Experiments 20																			+	+	+							
(EX) KEEN Sword 21																			+	+	+	+						
(WG) Huntsville Wargames 20																			△									
(EX) Arabian Gulf Shield (AGS) Event 3 20																			△									

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</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
(EX) Pacific Sentry 20																												
(EX) Ulchi Freedom Guardian 20																												
(WG) Space & Missile Defense Symposium 20																												
(WG) Multi-National Missile Defense Conference (MNC) 20																												
(WG) BMDS Wargames 21																												
(WG) Nimble Titan Year 1 22																												
(WG) Nimble Titan Year 2 22																												
(EX) EPOCH PLANEX 22																												
(EX) Joint Air Defense Exercise Series 20																												
(EX) Air and Missile Defense Exercise Series 21																												
(EX) Arabian Gulf Shield (AGS) Event 1 21																												
(EX) Vigilant Shield/GlobalThunder 20																												
(EX) Global Lightning 21																												
(EX) Arabian Gulf Shield (AGS) Event 2 21																												
(EX) Fleet Synthetic Training-Joint 21																												
(EX) Key Resolve 21																												
(EX) Steadfast Alliance 21																												
(EX) Austere Challenge 21 (Continues into FY 2022)																												
(EX) European Air & Missile Defense Exercise Alliance 21																												
(WG) Demonstration, Table-top Exercises & Experiments 21																												
(EX) KEEN Edge 22																												
(EX) Eagle Resolve 21																												
(WG) Huntsville Wargames 21																												
(EX) Pacific Sentry 21																												
(EX) Arabian Gulf Shield (AGS) Event 3 21																												
(EX) Ulchi Freedom Guardian 21																												
(WG) Space & Missile Defense Symposium 21																												
(WG) Multi-National Missile Defense Conference (MNC) 21																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Demonstration, Table-top Exercises & Experiments 15	2	2015	1	2016
(EX) European Air & Missile Defense Exercise Alliance 15	3	2015	3	2015
(EX) KEEN Edge 16	3	2015	2	2016
(EX) Joint Air Defense Exercise Series 15	4	2015	4	2015
(EX) Ulchi Freedom Guardian 15	4	2015	4	2015
(EX) EPOCH PLANEX 17	4	2015	4	2015
(WG) Huntsville Wargames 15	4	2015	4	2015
(EX) Arabian Gulf Shield (AGS) Event 3 15	4	2015	4	2015
(WG) Space & Missile Defense Symposium 15	4	2015	4	2015
(WG) Nimble Titan Year 2 16	4	2015	4	2016
(EX) Air and Missile Defense Exercise Series 16	1	2016	1	2016
(EX) Vigilant Shield/Global Thunder 16	1	2016	1	2016
(EX) Arabian Gulf Shield (AGS) Event 1 16	1	2016	1	2016
(EX) Host Nation 16	1	2016	2	2016
(EX) Global Lightning 16	1	2016	2	2016
(EX) Fleet Synthetic Training-Joint 16	2	2016	2	2016
(EX) Key Resolve 16	2	2016	2	2016
(EX) Arabian Gulf Shield (AGS) Event 2 16	2	2016	2	2016
(EX) Steadfast Alliance 16	2	2016	3	2016
(WG) Ronald Reagan Forum 16	3	2016	3	2016
(EX) European Air & Missile Defense Exercise Alliance 16	3	2016	3	2016
(WG) Demonstration, Table-top Exercises & Experiments 16	3	2016	1	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) Joint Air Defense Exercise Series 16	4	2016	4	2016
(EX) Pacific Sentry 16	4	2016	4	2016
(WG) Huntsville Wargames 16	4	2016	4	2016
(EX) Arabian Gulf Shield (AGS) Event 3 16	4	2016	4	2016
(EX) Ulchi Freedom Guardian 16	4	2016	4	2016
(WG) Space & Missile Defense Symposium 16	4	2016	4	2016
(WG) Multi-National Missile Defense Conference (MNC) 16	4	2016	1	2017
(WG) BMDS Wargames 17	4	2016	3	2017
(WG) Nimble Titan Year 1 18	4	2016	3	2017
(EX) Air and Missile Defense Exercise Series 17	1	2017	1	2017
(EX) EPOCH PLANEX 18	1	2017	1	2017
(EX) Arabian Gulf Shield (AGS) Event 1 17	1	2017	1	2017
(EX) Global Response Exercise (GREx) 16	1	2017	1	2017
(EX) Global Lightning 17	1	2017	2	2017
(EX) Fleet Synthetic Training-Joint 17	2	2017	2	2017
(EX) Arabian Gulf Shield (AGS) Event 2 17	2	2017	2	2017
(EX) Key Resolve 17	2	2017	2	2017
(EX) Steadfast Alliance 17	2	2017	3	2017
(EX) Austere Challenge 17	2	2017	3	2018
(EX) European Air & Missile Defense Exercise Alliance 17	3	2017	3	2017
(EX) KEEN Sword 17	3	2017	1	2018
(WG) Demonstration, Table-top Exercises & Experiments 17	3	2017	1	2018
(EX) KEEN Edge 18	3	2017	2	2018
(EX) Joint Air Defense Exercise Series 17	4	2017	4	2017
(EX) Eagle Resolve 17	4	2017	4	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Huntsville Wargames 17	4	2017	4	2017
(EX) Arabian Gulf Shield (AGS) Event 3 17	4	2017	4	2017
(EX) Pacific Sentry 17	4	2017	4	2017
(EX) Ulchi Freedom Guardian 17	4	2017	4	2017
(WG) Space & Missile Defense Symposium 17	4	2017	4	2017
(WG) Multi-National Missile Defense Conference (MNC) 17	4	2017	1	2018
(WG) Nimble Titan Year 2 18	4	2017	3	2018
(EX) Air and Missile Defense Exercise Series 18	1	2018	1	2018
(EX) EPOCH PLANEX 19	1	2018	1	2018
(EX) Arabian Gulf Shield (AGS) Event 1 18	1	2018	1	2018
(EX) Vigilant Shield/Global Thunder 17	1	2018	1	2018
(EX) Global Lightning 18	1	2018	2	2018
(EX) Arabian Gulf Shield (AGS) Event 2 18	2	2018	2	2018
(EX) Key Resolve 18	2	2018	2	2018
(EX) Host Nation 18	2	2018	3	2018
(EX) Global Response Exercise (GREx) 18	2	2018	3	2018
(EX) Steadfast Alliance 18	2	2018	3	2018
(WG) Ronald Reagan Forum 18	3	2018	3	2018
(EX) European Air & Missile Defense Exercise Alliance 18	3	2018	3	2018
(WG) Demonstration, Table-top Exercises & Experiments 18	3	2018	1	2019
(EX) Joint Air Defense Exercise Series 18	4	2018	4	2018
(WG) Huntsville Wargames 18	4	2018	4	2018
(EX) Arabian Gulf Shield (AGS) Event 3 18	4	2018	4	2018
(EX) Pacific Sentry 18	4	2018	4	2018
(EX) Ulchi Freedom Guardian 18	4	2018	4	2018

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Space & Missile Defense Symposium 18	4	2018	4	2018
(WG) Multi-National Missile Defense Conference (MNC) 18	4	2018	1	2019
(WG) BMDS Wargames 19	4	2018	3	2019
(WG) Nimble Titan Year 1 20	4	2018	3	2019
(EX) Air and Missile Defense Exercise Series 19	1	2019	1	2019
(EX) EPOCH PLANEX 20	1	2019	1	2019
(EX) Arabian Gulf Shield (AGS) Event 1 19	1	2019	1	2019
(EX) Vigilant Shield/Global Thunder 18	1	2019	1	2019
(EX) Global Lightning 19	1	2019	2	2019
(EX) EPOCH PLANEX 21	1	2019	1	2020
(EX) Fleet Synthetic Training-Joint 18	2	2019	2	2019
(EX) Fleet Synthetic Training-Joint 19	2	2019	2	2019
(EX) Arabian Gulf Shield (AGS) Event 2 19	2	2019	2	2019
(EX) Key Resolve 19	2	2019	2	2019
(EX) Steadfast Alliance 19	2	2019	3	2019
(EX) Austere Challenge 19	2	2019	3	2020
(EX) European Air & Missile Defense Exercise Alliance 19	3	2019	3	2019
(EX) KEEN Sword 19	3	2019	1	2020
(WG) Demonstration, Table-top Exercises & Experiments 19	3	2019	1	2020
(EX) KEEN Edge 20	3	2019	2	2020
(EX) Joint Air Defense Exercise Series 19	4	2019	4	2019
(WG) Huntsville Wargames 19	4	2019	4	2019
(EX) Eagle Resolve 19	4	2019	4	2019
(EX) Arabian Gulf Shield (AGS) Event 3 19	4	2019	4	2019
(EX) Pacific Sentry 19	4	2019	4	2019

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(EX) Ulchi Freedom Guardian 19	4	2019	4	2019
(WG) Space & Missile Defense Symposium 19	4	2019	4	2019
(WG) Multi-National Missile Defense Conference (MNC) 19	4	2019	1	2020
(WG) Nimble Titan Year 2 20	4	2019	3	2020
(EX) Air and Missile Defense Exercise Series 20	1	2020	1	2020
(EX) Arabian Gulf Shield (AGS) Event 1 20	1	2020	1	2020
(EX) Vigilant Shield/Global Thunder 19	1	2020	1	2020
(EX) Global Lightning 20	1	2020	2	2020
(EX) Fleet Synthetic Training-Joint 20	2	2020	2	2020
(EX) Arabian Gulf Shield (AGS) Event 2 20	2	2020	2	2020
(EX) Global Response Exercise (GREx) 20	2	2020	2	2020
(EX) Key Resolve 20	2	2020	2	2020
(EX) Steadfast Alliance 20	2	2020	3	2020
(EX) Host Nation 20	3	2020	3	2020
(EX) European Air & Missile Defense Exercise Alliance 20	3	2020	3	2020
(WG) Ronald Reagan Forum 20	3	2020	3	2020
(WG) Demonstration, Table-top Exercises & Experiments 20	3	2020	1	2021
(EX) KEEN Sword 21	3	2020	2	2021
(WG) Huntsville Wargames 20	4	2020	4	2020
(EX) Arabian Gulf Shield (AGS) Event 3 20	4	2020	4	2020
(EX) Pacific Sentry 20	4	2020	4	2020
(EX) Ulchi Freedom Guardian 20	4	2020	4	2020
(WG) Space & Missile Defense Symposium 20	4	2020	4	2020
(WG) Multi-National Missile Defense Conference (MNC) 20	4	2020	1	2021
(WG) BMDS Wargames 21	4	2020	3	2021



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MT03 / <i>Joint Warfighter Support Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
(WG) Nimble Titan Year 1 22	4	2020	3	2021
(WG) Nimble Titan Year 2 22	4	2020	3	2021
(EX) EPOCH PLANEX 22	1	2021	1	2021
(EX) Joint Air Defense Exercise Series 20	1	2021	1	2021
(EX) Air and Missile Defense Exercise Series 21	1	2021	1	2021
(EX) Arabian Gulf Shield (AGS) Event 1 21	1	2021	1	2021
(EX) Vigilant Shield/GlobalThunder 20	1	2021	1	2021
(EX) Global Lightning 21	1	2021	2	2021
(EX) Arabian Gulf Shield (AGS) Event 2 21	2	2021	2	2021
(EX) Fleet Synthetic Training-Joint 21	2	2021	2	2021
(EX) Key Resolve 21	2	2021	2	2021
(EX) Steadfast Alliance 21	2	2021	3	2021
(EX) Austere Challenge 21 (Continues into FY 2022)	2	2021	3	2022
(EX) European Air & Missile Defense Exercise Alliance 21	3	2021	3	2021
(WG) Demonstration, Table-top Exercises & Experiments 21	3	2021	1	2022
(EX) KEEN Edge 22	3	2021	2	2022
(EX) Eagle Resolve 21	4	2021	4	2021
(WG) Huntsville Wargames 21	4	2021	4	2021
(EX) Pacific Sentry 21	4	2021	4	2021
(EX) Arabian Gulf Shield (AGS) Event 3 21	4	2021	4	2021
(EX) Ulchi Freedom Guardian 21	4	2021	4	2021
(WG) Space & Missile Defense Symposium 21	4	2021	4	2021
(WG) Multi-National Missile Defense Conference (MNC) 21	4	2021	1	2022

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> 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>	6.582	2.531	2.180	1.936	-	1.936	2.420	2.589	2.749	2.869	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and FY 2017, Program Wide Support reflects proportional changes in Ballistic Missile Defense Joint Warfighter Support. 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
<b>Title:</b> Program Wide Support	2.531	2.180	1.936
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	2.531	2.180	1.936

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various : Multi: AK, AL, CA, CO, VA	1.200	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various Multi: AL, CO, CA, VA : Various	0.000	0.663		0.000		0.039	Jul 2017	-		0.039	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	MDA : Multi:AK,AL, CA, CO, VA	0.000	1.504		1.617	Nov 2015	1.464	Nov 2016	-		1.464	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	ALATEC , INC. : AL, CO, VA	5.125	0.364		0.563	Oct 2015	0.433	Aug 2017	-		0.433	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi:AK, AL, CA, CO, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	MIPR	Naval Surface Warfare Center; VA, AL : Various	0.257	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	Various : Multi: AL, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			6.582	2.531		2.180		1.936		-		1.936	-	-	-

**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
<b>Project Cost Totals</b>	6.582	2.531	2.180	1.936	-	1.936	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603898C / <i>Ballistic Missile Defense Joint Warfighter Support</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</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	269.316	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
MD22: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	260.242	50.127	45.303	51.773	-	51.773	50.663	52.076	54.468	55.255	Continuing	Continuing
MC22: <i>Cyber Operations</i>	0.514	0.592	0.472	0.456	-	0.456	0.612	0.617	0.640	0.653	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	8.560	3.253	2.164	2.521	-	2.521	2.619	2.831	2.992	3.121	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

In FY 2017, the Missile Defense Integration and Operations Center increase is for critical end-of-life infrastructure components.

The MDIOC Program provides the necessary infrastructure and support services to operate and sustain a mission execution platform for MDA elements/components and designated Combatant Commanders' Ballistic Missile Defense System (BMDS) activities executing missions at the MDIOC. Perturbations in the MDIOC Program outyears' funding cycle are a result of prioritizing Agency baseline and critical mission requirements higher than Facilities Sustainment, Repair, and Modernization (FSRM).

**A. Mission Description and Budget Item Justification**

The Missile Defense Integration and Operations Center (MDIOC) is the Missile Defense Agency's (MDA) field operating activity in Colorado Springs, Colorado. It provides the necessary infrastructure and support services through a mission execution platform for MDA elements/components and designated Combatant Commanders' Ballistic Missile Defense System (BMDS) operations executing missions at the MDIOC. The Integration Center is the organization responsible for providing a single, integrated set of skilled personnel matrixed from across MDA to manage this mission. The MDIOC mission facilities consist of a highly secure research and development complex and a mission support module (area) located at Schriever Air Force Base, adjacent to North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM). The MDA Integration Center provides mission critical system technical capabilities and subject matter expertise in a dedicated and adaptable environment that enables developers, testers, and operators to evolve, assess and deliver the capabilities for layered missile defense execution for homeland defense and theater/regional support. The MDIOC interfaces with the Information Technology/Information Assurance Enterprise to provide high availability access to worldwide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise for all MDA directed activities and events. The MDIOC functions as the mission control for BMDS distributed ground tests and system wide flight tests enabling the mission and test directors to control both main and associated test operations using secure voice, test, and mission network hubs from the MDIOC. The MDIOC also functions as the only system-level integration and interoperability mission execution platform for BMDS fire control; and it provides the physical interface between the developers and the Combatant Command warfighters.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
<p>MD22 and MC22 MDIOC mission facilities contribute to the BMDS by directly supporting the concept of Concurrent Test, Training, and Operations (CTTO) for the BMDS by providing engineering integration, resource scheduling, configuration management, and implementation development support for MDA and BMDS-level test, training, and operational mission execution. The Integration Center provides engineering and operational integration by:</p> <ul style="list-style-type: none"><li>-Implementing technical event architectures for models and simulations supporting missile defense planning seminars, wargames, exercises, and analyses</li><li>-Supporting BMDS Critical Engagement Conditions (CEC) testing and analysis by operating the Test Execution Control (TEC) for distributed BMDS ground tests, and ensuring technical system architecture integrity</li><li>-Providing network operations and information assurance for all on-site integration activities</li><li>-Integrating and sustaining the enabling infrastructure, services, and processes supporting the operation of designated BMDS elements and resident Combatant Command operations and/or support centers</li><li>-Providing technical support for the BMDS Watch Officers, BMDS Safety Officers, and Information Assurance Officers in their efforts to monitor and assess the health and status of the networks and elements that impact BMDS test and operations</li><li>-Operating the Joint Early Warning Laboratory for anomaly resolution</li><li>-Supporting the Intelligence Support Center for critical situational awareness intelligence on worldwide ballistic missile developments that could affect the development and/or operation of the BMDS</li></ul> <p>MDIOC Major Program Goals:</p> <ul style="list-style-type: none"><li>-Provide the capabilities and services necessary to support engineering integration, resource scheduling for ground and flight tests, configuration management, and implementation development support of on-site activities</li><li>-Ensure around the clock support and restoral of designated BMDS operational activities</li><li>-Improve interface with designated Combatant Command missile defense activities; host/support the headquarters and operations center for United States Strategic Command Joint Functional Component Command - Integrated Missile Defense</li><li>-Continue to achieve cost effectiveness and efficiencies by leveraging existing Missile Defense Integration and Operations Center infrastructure, services, processes, and expertise to support assigned missions</li><li>-Maintain and improve the reliability, availability, and maintainability of MDIOC mission critical systems</li></ul> <p>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.</p>		



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	58.503	49.211	58.074	-	58.074
Current President's Budget	53.972	47.939	54.750	-	54.750
Total Adjustments	-4.531	-1.272	-3.324	-	-3.324
• Congressional General Reductions	0.000	-0.041			
• Congressional Directed Reductions	0.000	-1.231			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.555	0.000			
• SBIR/STTR Transfer	-0.976	0.000			
• Other Adjustment	0.000	0.000	-3.324	-	-3.324

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)				<b>Project (Number/Name)</b> MD22 / Missile Defense Integration and Operations Center (MDIOC)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD22: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	260.242	50.127	45.303	51.773	-	51.773	50.663	52.076	54.468	55.255	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2017, the Missile Defense Integration and Operations Center increase is a result of planning for projects deferred in FY 2016 and critical end-of-life infrastructure components.

**A. Mission Description and Budget Item Justification**

The Missile Defense Integration and Operations Center (MDIOC) sustains and operates a 24 hours a day, 7 days a week, 365 days a year mission complex for critical research, development, testing, training, and operations for BMDS activities. The MDIOC supports the Ground-based Midcourse Missile Defense Mission Control Center Facility, as well as the Command, Control, Battle Management, and Communications (C2BMC) Integration and Test Centers and the C2BMC Experimentation Laboratories. It provides infrastructure support for the Satellite Tracking and Surveillance System's (STSS) Missile Defense Space Center (MDSC); and the Targets and Countermeasures' (TC) Joint Target Operations Center (JTOC). The MDIOC also provides developmental support to the Enterprise Sensors Laboratory (ESL) composed of a common satellite ground station and sensor netting test bed for designated Ballistic Missile Defense System (BMDS) elements. The MDIOC supports BMDS test events based on the Integrated Master Test Plan (IMTP.) It supports BMDS Critical Engagement Conditions testing and analysis through the operation of the Test Execution Control node for distributed BMDS ground tests. During system flight tests, the MDIOC provides infrastructure (power, Heating, Ventilation and Air Conditioning, and communications) support to the Flight Test Director and crew, and ensures the protection of facility and test assets throughout the test window. Further, the MDIOC provides the facilities that support operations of the Missile Defense Element, manned by the U.S. Army 100th Missile Defense Brigade, the United States Northern Command (USNORTHCOM) C2BMC Command and Control Center (CCC), the United States Strategic Command's (USSTRATCOM's) Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD) and the Missile Defense Agency (MDA) Warfighter Support Center. In addition, the MDIOC supports the MDA Operations Support Center, which provides situational awareness of the health and status of the end-to-end BMDS, and provides network subject matter expertise and technical reach back for the program elements and Combatant Commanders. The MDIOC hosts BMDS wargames and exercises in support of the warfighter, and delivers requisite infrastructure to integrate the modeling and simulation assets that form system-level constructive simulations for full-envelope BMDS performance assessment, with surrogate capability for BMDS ground tests. The MDIOC maintains a technical repository of BMDS Implementation Architectures for real-time operations and configuration control; provides state change management and asset management technical support for the BMDS; and provides the technical environment for BMDS Watch Officers, Safety Officers, and Information Assurance Officers to perform their assigned duties. The MDIOC also supports the operations of the Joint Early Warning Laboratory (JEWL), which provides USSTRATCOM with quick response analyses of real-world launches, and rapid anomaly identification and resolution.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Infrastructure Systems and Support	20.221	19.191	20.880

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p align="right"><i>Articles:</i></p> <p><i>Description:</i> N/A</p> <p><b>FY 2015 Accomplishments:</b> MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> <li>- Maintained a mission execution platform to provide an enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) that supports MDA Research, Development, Test and Evaluation (RDT&amp;E) efforts at the Missile Defense Integration and Operations Center (MDIOC) for the MDA elements/components, and Combatant Command and Warfighter operational elements</li> <li>- Provided computer hosting of specified threat models and supported the integration of threat tools</li> <li>- Planned/Initiated the installation of additional data feeds required to support the Operations Support Center (OSC)</li> <li>- Maintained the technical infrastructure and equipment including routers and switches, Core Cryptographic Devices, Edge Encryption Devices, Global Engagement Manager (GEM), base and long-haul communications Information Assurance Systems</li> <li>- Provided network management services by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources</li> <li>- Acquired and distributed mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements</li> <li>- Installed communications and networking hardware/software to support evolving mission requirements of resident MDA development, testing, training, and operational activities</li> <li>- Provided information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the Missile Defense Integration and Operations Center (MDIOC)</li> <li>- Maintained DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; managed the Information Assurance Vulnerability Assessment Program and provided technical assistance to Controls Validation Tests</li> <li>- Managed and maintained the MDA Enterprise directory services supporting user access to MDA Enterprise network resources; performed preventive maintenance and ensured data recovery capability through proper data backup scheduling and execution</li> <li>- Implemented Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion to include the completion of the MDIOC VOIP implementation</li> <li>- Provided telephony services to include: Telephone/Fax Service, local and long distance and Defense Switch Network and Defense Red Switch telephone systems. Operated, maintained, and upgraded telephone switches, nodes,</li> </ul>	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>and Private Branch Exchanges to include 911 support</p> <ul style="list-style-type: none"> <li>- Designed/Implemented upgrades to audio/visual support to the MDIOC supporting the distribution of Signals Over Internet Protocol</li> <li>- Developed and coordinated Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS); testing and contingency deployments</li> <li>- Planned/Designed enhancements to the MDIOC Special Purpose Processing Node (SPPN) including floor space allocations, equipment staging areas, and streamlined logistics support function</li> <li>- Maintained software licensing and maintenance agreements to meet critical customer and legal requirements; enabled continued software support necessary to maintain the directed computer network defense posture and ensured continued system operational availability</li> <li>- Planned/Designed/Implemented technical lifecycle, refresh, and standardization of MDIOC print services</li> <li>- Implemented a consolidated Project Server for RDT&amp;E and delivered as an intranet service</li> </ul> <p>End User Support:</p> <ul style="list-style-type: none"> <li>- Sustained End User core service support 18 hours a day, 6 days a week for administrative and business information systems for unclassified and classified users</li> <li>- Monitored networks for user compliance with DoD policies and reported incidents</li> <li>- Maintained Printing and Copy Services</li> <li>- Sustained email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks)</li> <li>- Sustained file services (file servers and storage area networks)</li> <li>- Maintained Directory Services (Active Directory and domain controller servers)</li> <li>- Maintained Authentication services (Public Key Infrastructure/Common Access Card)</li> <li>- Maintained current hardware and software licenses for IT operational systems</li> <li>- Maintained an Integrated Service Desk</li> <li>- Maintained IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys)</li> </ul> <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> <li>- Implemented intelligence hardware/software updates for the Operations Support Center</li> <li>- Provided MDIOC centric test event network related detailed designs in support of Test Events and real world operational events; provided implementation plans, updated interface control documents and performed Change</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>
<p>Control and Configuration Management services</p> <ul style="list-style-type: none"> <li>- Planned, designed, tested and operated the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub-networks and eventual post event return to base line</li> <li>- Provided technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality Control (QA/QC) seals with configuration management and job control</li> <li>- Implemented final Defense Information Systems Agency - Global Information Grid (DISA GIG) Mission Assurance node configuration</li> </ul> <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> <li>- Managed government property in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management</li> <li>- Maintained an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks</li> </ul> <p>Cable Plant Cubicle Workstation</p> <ul style="list-style-type: none"> <li>- Installed facility connectivity cabling; provided trouble-shooting and repair on a critical basis</li> <li>- Installed and reconfigured furniture and workstations on a critical basis</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> <li>- Continue to maintain a mission execution platform to provide an enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) that supports MDA Research, Development, Test and Evaluation (RDT&amp;E) efforts at the Missile Defense Integration and Operations Center (MDIOC) for the MDA elements/components, and Combatant Command and Warfighter operational elements</li> <li>- Provide computer hosting of specified threat models and support the integration of other threat tools as required</li> <li>- Plan/Initiate, when directed, the installation of any additional data feeds required to support the Operations</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Support Center (OSC)</p> <ul style="list-style-type: none"> <li>- Maintain the technical infrastructure and equipment including routers and switches, Core Cryptographic Devices; Edge Encryption Devices, Global Engagement Manager (GEM) and base and long-haul communications Information Assurance Systems</li> <li>- Provide management of network capabilities by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources</li> <li>- Acquire and distribute mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements</li> <li>- Install communications and networking hardware/software) in support of evolving mission requirements of resident MDA development, testing, training, and operational activities</li> <li>- Provide information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the Missile Defense Integration and Operations Center (MDIOC)</li> <li>- Maintain DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; manage the Information Assurance Vulnerability Assessment Program and provide technical assistance to Controls Validation Tests</li> <li>- Manage and maintain the MDA Enterprise directory services supporting user access to MDA Enterprise network resources; perform preventive maintenance and ensure data recovery capability through proper data backup scheduling and execution</li> <li>- Implement Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion to include the completion of the MDIOC VOIP implementation</li> <li>- Provide telephony services including local, long distance, Defense Switch Network and Defense Red Switch telephone/fax services.</li> <li>- Operate, maintain, and upgrade telephone switches, nodes, and Private Branch Exchanges including 911 support</li> <li>- Design/Implement upgrades to audio/visual support to the MDIOC supporting the distribution of Signals Over Internet Protocol</li> <li>- Develop and coordinate Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS); testing and contingency deployments</li> <li>- Plan/Design enhancements to the MDIOC SPPN including floor space allocations, equipment staging areas, and streamlined logistics support function</li> <li>- Maintain software licensing and maintenance agreements to meet critical customer and legal requirements, enable continued software support necessary to maintain the directed computer network defense posture and ensure continued system operational availability</li> <li>- Plan/Design/Implement technical lifecycle, refresh, and standardization of MDIOC print services</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Implement a consolidated Project Server for RDT&amp;E and delivered as an intranet service</p> <p>End User Support:</p> <ul style="list-style-type: none"> <li>- Sustain End User core service support 18 hours a day, 6 days a week for administrative and business information systems for unclassified and classified users</li> <li>- Monitor networks for user compliance with DoD policies and report incidents</li> <li>- Maintain Printing and Copy Services</li> <li>- Sustain email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks)</li> <li>- Sustain file services (file servers and storage area networks)</li> <li>- Maintain Directory Services (Active Directory and domain controller servers)</li> <li>- Maintain Authentication services (Public Key Infrastructure/Common Access Card)</li> <li>- Maintain current hardware and software licenses for IT operational systems</li> <li>- Maintain an Integrated Service Desk</li> <li>- Maintain IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys)</li> </ul> <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> <li>- Manage government property and IT hardware and software in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management</li> <li>- Maintain an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks</li> </ul> <p>Cable Plant Cubicle Workstation:</p> <ul style="list-style-type: none"> <li>- Install facility connectivity cabling; provide trouble-shooting and repair</li> <li>- Install and reconfigure furniture and workstations</li> </ul> <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> <li>- Implement intelligence hardware/software updates as required to support the Operations Support Center</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Provide MDIOC centric test event network related detailed designs in support of Test Events and real world operational events, provide implementation plans, update interface control documents and perform Change Control and Configuration Management services</li> <li>- Plan, design, test and operate the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub networks and eventual post event return to base line</li> <li>- Provide technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality Control (QA/QC) seals with configuration management and job control</li> <li>- Implement final Defense Information Systems Agency - Global Information Grid (DISA GIG) Mission Assurance node configuration</li> </ul> <p>The decrease in FY2016 is due to the realignment of funds to other Department of Defense priorities</p> <p><b>FY 2017 Plans:</b> The increase from FY16 to FY17 is to replace end-of-life equipment that the MDIOC Program was compelled to forego in FY16</p> <p>MDIOC Communications and Special Purpose Processing Node:</p> <ul style="list-style-type: none"> <li>- Continue to provide enabling infrastructure (to include hardware, software maintenance, licenses, and upgrades) supporting MDA Research, Development, Test and Evaluation (RDT&amp;E) efforts at the MDIOC for MDA elements/components, and Combatant Command and Warfighter operational elements</li> <li>- Provide computer hosting of specified threat models and support the integration of other threat tools as required</li> <li>- Plan/Initiate, when directed, the installation of any additional data feeds required to support the Operations Support Center (OSC)</li> <li>- Maintain technical infrastructure and equipment including routers and switches, Core Cryptographic Devices; Edge Encryption Devices, Global Engagement Manager (GEM) and base and long-haul communications</li> <li>- Manage network capabilities by monitoring and controlling the network infrastructure, available bandwidth, hardware, and distributed software resources</li> <li>- Acquire and distribute mission critical unclassified and secure communications capability to ten resident MDA elements/components and BMDS and Warfighter operational elements</li> <li>- Install communications and networking infrastructure (hardware/software) in support of evolving mission</li> </ul>			



**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>requirements of resident MDA development, testing, training, and operational activities</p> <ul style="list-style-type: none"> <li>- Provide information assurance services to MDA elements/components, BMDS elements, and Combatant Command and Warfighter operational elements resident at the MDIOC</li> <li>- Maintain DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation packages; manage the Information Assurance Vulnerability Assessment Program and provide technical assistance to Controls Validation Tests</li> <li>- Manage and maintain MDA Enterprise directory services supporting user access to MDA Enterprise network resources; perform preventive maintenance and ensure data recovery capability through proper data backup scheduling and execution</li> <li>- Implement Classified and Unclassified Voice Over Internet Protocol (VOIP) expansion</li> <li>- Provide telephony services including local and long distance and Defense Switch Network and Defense Red Switch telephone/fax service.</li> </ul> <p>Telephone Switch Operations: Operate, maintain, and upgrade telephone switches, nodes, and Private Branch Exchanges including 911 support</p> <ul style="list-style-type: none"> <li>- Design/Implement upgrades to audio/visual support supporting the signal distribution over Internet Protocol</li> <li>- Develop and coordinate Cross-Domain Solution architectures for high priority Ballistic Missile Defense System (BMDS) and testing and contingency deployments</li> <li>- Plan/Design enhancements to the MDIOC SPPN including floor space allocations, equipment staging areas, and streamlined logistics support function</li> <li>- Maintain software licensing and maintenance agreements to meet critical customer and legal requirements; enable continued software support necessary to maintain the directed computer network defense posture and ensure continued system operational availability</li> <li>- Plan/Design/Implement technical lifecycle, refresh, and standardization of MDIOC print services</li> <li>- Implement a consolidated Project Server for RDT&amp;E and delivered as an intranet service</li> </ul> <p>End User Support:</p> <ul style="list-style-type: none"> <li>- Sustain unclassified and classified End User core service support 18 hours a day, 6 days a week for administrative and business information systems</li> <li>- Monitor networks for user compliance and report incidents</li> <li>- Maintain Printing and Copy Services</li> <li>- Sustain email services (Exchange servers, BlackBerry Enterprise Services servers and archiving storage area networks)</li> </ul>			

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Sustain file services (file servers and storage area networks)</li> <li>- Maintain Directory Services (Active Directory and domain controller servers)</li> <li>- Maintain Authentication services (Public Key Infrastructure/Common Access Card)</li> <li>- Maintain current hardware and software licenses for IT operational systems</li> <li>- Maintain an Integrated Service Desk</li> <li>- Maintain IT life-cycle asset management of end user devices (desktops, laptops, monitors, printers, thin clients, and BlackBerrys)</li> </ul> <p>Hardware and Software Asset Management:</p> <ul style="list-style-type: none"> <li>- Manage government property and IT hardware and software in accordance with the Federal Acquisition Regulations (FAR)/DoD FAR Supplements (DFARs) to include accountability, reporting, warehouse management, asset transportation and excess asset management</li> <li>- Maintain an inventory of IT hardware and software assets connected or used in the ULAN, CLAN, SIPRNET and TS/SCI networks</li> </ul> <p>Cable Plant Cubicle Workstation:</p> <ul style="list-style-type: none"> <li>- Install facility connectivity cabling; provide trouble-shooting and repair</li> <li>- Install and reconfigure furniture and workstations</li> </ul> <p>Infrastructure Implementation Engineering:</p> <ul style="list-style-type: none"> <li>- Implement intelligence hardware/software updates as required to support the Operations Support Center</li> <li>- Provide MDIOC centric test event network related detailed designs in support of Test Events and real world operational events, provide implementation plans, update interface control documents and perform Change Control and Configuration Management services</li> <li>- Plan, design, test and operate the IT and communications technical architecture including Internet Protocol addressing schema, routing tables, switching policies, data paths, information assurance controls, fire wall configurations, application configurations, band width allocations for sub-networks and eventual post event return to base line</li> <li>- Provide technical health and status monitoring, troubleshooting, and break/fix, IT/Communications support for each of the event architectures including critical asset identification, monitoring, Quality Assurance/Quality</li> </ul>			

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Control (QA/QC) seals with configuration management and job control				
<b>Title:</b> Facilities and Maintenance		13.166	12.359	14.935
<b>Description:</b> N/A		<b>Articles:</b>	-	-
<b>FY 2015 Accomplishments:</b> Host Tenant Support(Electrical, Gas, Sewer, Water, Steam, Chilled Water, Waste Water, Landscaping, Refuse Removal, and Communications Support):				
<ul style="list-style-type: none"> <li>- Procured utility services through 50th Air Force Space Wing (Host Base)</li> <li>- Sustained utility infrastructure and delivery systems</li> </ul>				
Environmental, Safety and Occupational Health (ESOH):				
<ul style="list-style-type: none"> <li>- Maintained and updated the program accident prevention plan</li> <li>- Provided required industrial safety training to facility services personnel</li> <li>- Procured and distributed personal protection equipment for contracted activities</li> <li>- Ensured compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs</li> <li>- Conducted recurring safety and environmental audits</li> </ul>				
Facilities Operations and Sustainment:				
<ul style="list-style-type: none"> <li>- Provided 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours</li> <li>- Conducted preventative maintenance inspections (PMIs) for all building systems</li> </ul>				
Facilities Engineering:				
<ul style="list-style-type: none"> <li>- Conducted Management Process Facility Installation Standard Audits</li> <li>- Provided risk management analysis and mitigation plans</li> <li>- Maintained infrastructure drawings configuration management databases on a limited basis</li> </ul>				

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Developed and documented facility long range planning programming</li> <li>- Provided consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes</li> </ul> <p>Missile Defense Integration and Operations Center (MDIOC) Operating Expenses:</p> <ul style="list-style-type: none"> <li>- Lease General Services Administration (GSA) vehicles and a commercial warehouse</li> <li>- Funded calibration of measuring and monitoring equipment</li> <li>- Funded repair of classified network switches</li> </ul> <p>Facility Services:</p> <ul style="list-style-type: none"> <li>- Provided custodial services for over 675,000 square feet of floor space in Buildings 720 and 730</li> <li>- Provided limited Copy Center and Shuttle Services for over 2,000 personnel</li> <li>- Provided in/out processing and personnel moves</li> </ul> <p><b>FY 2016 Plans:</b> Host Tenant Support(Electrical, Gas, Sewer, Water, Steam, Chilled Water, Waste Water, Landscaping, Refuse Removal, and Communications Support):</p> <ul style="list-style-type: none"> <li>- Procure utility services through 50th Air Force Space Wing (Host Base)</li> <li>- Sustain utility infrastructure and delivery systems</li> </ul> <p>Environmental, Safety and Occupational Health (ESOH):</p> <ul style="list-style-type: none"> <li>- Continue maintenance and updating of the program accident prevention plan</li> <li>- Provide required industrial safety training to facility services personnel</li> <li>- Procure and distribute personal protection equipment for contracted activities</li> <li>- Ensure compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs</li> <li>- Conduct recurring safety and environmental audits</li> </ul> <p>Facilities Operations and Sustainment:</p>				

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Provide 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours</p> <p>- Conduct preventative maintenance inspections (PMIs) for all building systems</p> <p>Facilities Engineering:</p> <p>- Conduct Management Process Facility Installation Standard Audits</p> <p>- Provide risk management analysis and mitigation plans</p> <p>- Maintain infrastructure drawings configuration management databases on a limited minimum basis</p> <p>- Develop and document facility long range planning programming</p> <p>- Provide consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes</p> <p>Missile Defense Integration and Operations Center (MDIOC) Operating Expenses:</p> <p>- Lease GSA vehicles and a commercial warehouse</p> <p>- Funded calibration of measuring and monitoring equipment</p> <p>- Funded repair of classified network switches</p> <p>Facility Services:</p> <p>- Provide custodial services for over 675,000 square feet of floor space in Buildings 720 and 730</p> <p>- Provide limited Copy Center and Shuttle Services for over 2,000 personnel</p> <p>- Provide in/out processing and personnel moves</p> <p><b>FY 2017 Plans:</b></p> <p>The increase from FY 2016 to FY 2017 is a result of increased cost for host tenant support and increased rigor of configuration management documentation</p> <p>Host Tenant Support (Electrical, Gas, Water, Steam, Chilled Water, Waste Water, Grounds Maintenance, Refuse Removal, and Communications Support):</p> <p>- Procure utility services through 50th Air Force Space Wing (Host Base)</p>				

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Sustain utility infrastructure and delivery systems</p> <p>Environmental, Safety and Occupational Health (ESOH):</p> <ul style="list-style-type: none"> <li>- Continue maintenance and updating of the program accident prevention plan</li> <li>- Provide required industrial safety training to facility services personnel</li> <li>- Procure and distribute personal protection equipment for contracted activities</li> <li>- Ensure compliance with Hazardous Waste, Hazardous Material Recycling, and National Environmental Policy Act (NEPA) programs</li> <li>- Conduct recurring safety and environmental audits</li> </ul> <p>Facilities Operations and Sustainment:</p> <ul style="list-style-type: none"> <li>- Provide 24 hours a day, 7 days a week, 365 days a year, facility maintenance break/fix response for all facility systems (electrical; Heating, Ventilation, and Air Conditioning; plumbing; locksmith) with a response time of 15 minutes after normal duty hours</li> <li>- Conduct preventative maintenance inspections (PMIs) for all facility infrastructure systems</li> </ul> <p>Facilities Engineering:</p> <ul style="list-style-type: none"> <li>- Conduct Management Process Facility Installation Standard Audits</li> <li>- Provide risk management analysis and mitigation plans</li> <li>- Maintain infrastructure drawings configuration management databases</li> <li>- Develop and document facility long range planning programming</li> <li>- Provide consulting services, preliminary designs and engineering rough order of magnitude estimates for required infrastructure buildout changes</li> </ul> <p>MDIOC Operating Expenses:</p> <ul style="list-style-type: none"> <li>- Lease GSA Vehicles and a commercial warehouse</li> <li>- Fund calibration of measuring and monitoring equipment</li> <li>- Fund repair of classified network switches</li> </ul> <p>Facility Services:</p>				

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provide custodial services for over 675,000 square feet of floor space in Buildings 720 and 730</li> <li>- Provide limited Copy Center and Shuttle Services for over 2,000 personnel</li> <li>- Provide in/out processing and personnel moves</li> </ul>			
<p><b>Title:</b> Engineering and Event Services</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b> Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> <li>- Implemented baseline technical control for all Missile Defense Integration and Operations Center (MDIOC) mission critical subsystems and services</li> <li>- Executed MDIOC engineering management, quality assurance, configuration management and integration of all mission critical systems including:                             <ul style="list-style-type: none"> <li>- Technical power distribution, Uninterruptable Power Supply Systems, major transformer substations, and circuit protection</li> <li>- Heating, Ventilation and Air Conditioning (HVAC), chilled water, and steam systems</li> <li>- Secure and non-secure voice communications for Ballistic Missile Defense Systems (BMDS); Operations, major tests, and general constituencies</li> <li>- Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year</li> <li>- Ensured high availability of integrated MDIOC systems and BMDS Operations support 24 hours a day, 7 days a week, 365 days a year</li> <li>- Implemented 'last mile' integration for BMDS Operations, BMDS test, wargaming, exercise, training and general admin services</li> <li>- Executed comprehensive configuration baseline integrity periods of non-disruption and work screening for all major tests and real world contingencies</li> <li>- Coordinated process improvement investments across all mission areas</li> <li>- Executed aggressive, proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including:                                     <ul style="list-style-type: none"> <li>- Command, Control, Battle Management and Communications (C2MBC) incremental development and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), and the International</li> </ul> </li> </ul> </li> </ul>	6.772 -	8.311 -	7.202 -

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Point of Presence</p> <ul style="list-style-type: none"> <li>- BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution</li> <li>- Modeling and Simulation validation, verification and accreditation</li> <li>- BMDS flight tests including Flight Test Ground-Based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this included protection of power, Heating, Ventilation and Air Conditioning, and communications critical to test execution and control.</li> <li>- Joint Target Operations Center (JTOC) Target of Opportunity (TOO) and target tracking, coordination and visualization</li> <li>- BMDS Operational Support Center and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year</li> <li>- MDA Intelligence Support Cell and Threat Modeling Center services</li> <li>- BMDS Wargame, exercise and Distributed Multi-Echelon Training System (DMETS) training execution; Warfighter Support Center program integration</li> <li>- Missile Defense Space Development Center (MDSDC) Satellite Operations, Ground System and experiment support operations, and Space Tracking and Surveillance System (STSS) testing</li> <li>- Enterprise Sensor Laboratory experimental, networking and facility support and coordination</li> <li>- Ground-Based Midcourse Defense (GMD) Fire Control component-level operations, integration, testing, and training</li> <li>- Joint Early Warning Laboratory mission services and connectivity</li> <li>- Combatant Command operations work centers including the United States Northern Command (USNORTHCOM) Command, Control, Battle Management and Communications (C2BMC) Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command's Joint Functional Component Command-Integrated Missile Defense</li> <li>- MDA General Services Network and Operational Support Center and Network Communications Center</li> <li>- MDA Computer Emergency Response Team</li> </ul> <p>Technical Watch Support</p> <ul style="list-style-type: none"> <li>- Provided on-site technical environment for Ballistic Missile Defense System (BMDS) ;Watch Officers, Safety Officers, and Information Assurance Officers to execute their duties 24 hours a day, 7 days a week, 365 days a year</li> <li>- Implemented recall procedures to augment subject matter expertise availability during contingencies and major events</li> <li>- Executed tabletop exercises to asses readiness for Combatant Command Operational contingencies and major BMDS tests</li> </ul>			



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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provided state change management and asset management technical support for the BMDS</li> <li>- Coordinated, reported and escalated critical information and BMDS test and operational event information to all Missile Defense Integration and Operations Center (MDIOC) technical and management staff to ensure rapid break/fix actions were executed</li> </ul> <p>Program Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> <li>- Provided overarching contract and financial management support for all Joint National Integration Center Research and Development Contract (JRDC) integrated programs projects</li> <li>- Provided engineering coordination, resource management, and event integration across all MDIOC mission areas</li> <li>- Conducted continuous process improvement and implementation across all JRDC execution and MDIOC missions</li> <li>- Delivered integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events</li> <li>- Executed integrated resource forecasting and de-confliction</li> <li>- Performed project management for discrete enterprise enhancements</li> </ul> <p>Event Architecture &amp; Engineering Design:</p> <ul style="list-style-type: none"> <li>- Coordinated design and implementation of technical architectures for all major MDIOC hosted BMDS tests, training and operations</li> <li>- Delivered technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support</li> <li>- Led requirements coordination and technical architecture enhancements for Ballistic Missile Defense System (BMDS); wargame, exercise and training networks</li> <li>- Updated BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments</li> <li>- Maintained a technical repository of BMDS Implementation Architectures for real-time operations and configuration management</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> <li>- Implement baseline technical control for all Missile Defense Integration and Operations Center (MDIOC) mission critical subsystems and services</li> </ul>				

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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Execute MDIOC engineering management, quality assurance, configuration management and integration of all mission critical systems including:</li> <li>- Technical power distribution, Uninterruptable Power Supply Systems, major transformer substations, and circuit protection</li> <li>- Heating, Ventilation and Air Conditioning, chilled water and steam systems</li> <li>- Secure and non-secure voice communications for Ballistic Missile Defense Systems (BMDS); Operations, major tests, and general constituencies</li> <li>- Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year</li> <li>- Ensure high availability of integrated MDIOC systems and BMDS Operations support 24 hours a day, 7 days a week, 365 days a year</li> <li>- Implement 'last mile' integration for BMDS Operations, BMDS tests, wargames, exercises, training, and general admin services</li> <li>- Execute comprehensive configuration baseline integrity periods of non-disruption, periods of interest and work screening for all major tests and real world contingencies</li> <li>- Coordinate MDIOC process improvement investments across all mission areas</li> <li>- Execute aggressive, proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including:</li> <li>- Command, Control, Battle Management and Communications (C2MBC) incremental development and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), and the International Point of Presence</li> <li>- BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution</li> <li>- Modeling and Simulation validation, verification and accreditation</li> <li>- BMDS flight tests including Flight Test Ground-Based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this includes ensuring the protection of power, Heating, Ventilation and Air Conditioning, and communications critical to test execution and control.</li> <li>- Joint Target Operations Center (JTOC) Target of Opportunity (TOO) and target tracking, coordination and visualization</li> <li>- BMDS Operational Support Center and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year</li> <li>- MDA Intelligence Support Cell and Threat Modeling Center services</li> <li>- BMDS Wargame, exercise and DMETS training execution; Warfighter Support Center program integration</li> <li>- Missile Defense Space Development Center (MDSDC) Satellite Operations, Ground System and experiment</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>
<p>support operations, and Space Tracking and Surveillance System (STSS) testing</p> <ul style="list-style-type: none"> <li>- Enterprise Sensor Laboratory experimental, networking and facility support and coordination</li> <li>- Ground-Based Midcourse Defense (GMD) Fire Control component-level operations, integration, testing, and training</li> <li>- Joint Early Warning Laboratory mission services and connectivity</li> <li>- Combatant Command operations work centers including the United States Northern Command (USNORTHCOM) Command, Control, Battle Management and Communications (C2BMC) Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command`s Joint Functional Component Command-Integrated Missile Defense</li> <li>- MDA General Services Network and Operational Support Center and Network Communications Center</li> <li>- MDA Computer Emergency Response Team</li> </ul> <p>Technical Watch Support</p> <ul style="list-style-type: none"> <li>- Provide on-site technical environment for Ballistic Missile Defense System (BMDS) ;Watch Officers, Safety Officers, and Information Assurance Officers to execute their duties 24 hours a day, 7 days a week, 365 days a year</li> <li>- Implement recall procedures to augment subject matter expertise availability during contingencies and major events</li> <li>- Execute tabletop exercises to asses readiness for Combatant Command Operational contingencies and major BMDS tests</li> <li>- Provide state change management and asset management technical support for the BMDS</li> <li>- Coordinate, report and escalate critical information and BMDS test and operational event information to all Missile Defense Integration and Operations Center (MDIOC) technical and management staff to ensure rapid break/fix actions are executed</li> </ul> <p>Program Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> <li>- Provide overarching contract and financial management support for all JNIC Research and Development Contract (JRDC)integrated programs projects</li> <li>- Provide engineering coordination, resource management, and event integration across all MDIOC mission areas</li> <li>- Conduct continuous process improvement and implementation across all JRDC execution and MDIOC missions</li> <li>- Deliver integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events</li> <li>- Execute integrated resource forecasting and de-confliction</li> <li>- Perform project management for discrete enterprise enhancements</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Event Architecture and Engineering Design:</p> <ul style="list-style-type: none"> <li>- Coordinate design and implementation of technical architectures for all major MDIOC hosted Ballistic Missile Defense System (BMDS) tests, training and operations</li> <li>- Deliver technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support</li> <li>- Lead requirements coordination and technical architecture enhancements for BMDS; wargame, exercise and training networks</li> <li>- Update BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments</li> <li>- Maintain a technical repository of BMDS Implementation Architectures for real-time operations and configuration management</li> </ul> <p><b>FY 2017 Plans:</b> The decrease in funding from FY16 to FY17 is a result of efficiencies gained through consolidation of some mission assurance and technical watch support functions</p> <p>Mission Assurance and Event Execution Support</p> <ul style="list-style-type: none"> <li>- Implement baseline technical control for all MDIOC mission critical systems and services</li> <li>- Execute MDIOC Program engineering management, quality assurance, configuration management and integration of all mission critical systems including:               <ul style="list-style-type: none"> <li>- Technical power distribution, Uninterruptable Power Supply systems, major transformer substations and power distribution units, and circuit protection</li> <li>- Heating, ventilation and air conditioning (HVAC), chilled water, and steam systems</li> <li>- Secure and non-secure BMDS voice communications for; BMDS Operations, major tests, training, exercises, and general constituencies</li> <li>- Local and wide area secure data networking environments and network health and status tools 24 hours a day, 7 days a week, 365 days a year</li> <li>- Ensure availability of MDIOC Program provisioned systems and services supporting BMDS operations 24 hours a day, 7 days a week, 365 days a year</li> <li>- Implement 'last mile' integration for BMDS operations, test, wargames, Combatant Commander exercises, training and general administrative services</li> </ul> </li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Execute comprehensive configuration management of technical architecture baseline capabilities during all major tests and real world contingencies</li> <li>- Coordinate process improvement investments across all mission areas</li> <li>- Execute proactive and tailored risk management to ensure integrity and persistent connectivity for all MDIOC missions including:                             <ul style="list-style-type: none"> <li>- C2MBC incremental development, test, and integration across the Integration Laboratory, Experimentation Laboratory (X-Lab), BMDS Overhead Persistent Architecture (BOA), and the International Point of Presence</li> <li>- BMDS focused, system and distributed ground testing and Hardware-in-the-Loop (HWIL) execution</li> <li>- Modeling and Simulation Open Systems Architecture Sensor Model (OSM) development and validation, verification and accreditation</li> <li>- BMDS flight tests, including operational and developmental testing at the system and element level: Flight Test Operational (FTO), Flight Test Ground-based Midcourse Defense (FTG) execution; Flight Test - Aegis (FTM) and Flight Test - THAAD (FTT) planning, coordination and situational awareness. For system flight tests directed from the MDIOC, this includes ensuring the protection of power, environmental controls and communications critical to test execution</li> <li>- BMDS Network Operation Security Center (BNOSC) and technical integration and implementation services 24 hours a day, 7 days a week, 365 days a year</li> <li>- MDA Intelligence Support Cell and Threat Modeling Center services</li> <li>- BMDS wargames, Combatant Commander exercise and training execution and Warfighter Exercise Support Center program integration</li> <li>- Missile Defense Space Center (MDSC) Satellite Operations, Ground System and experiment support operations, and Space Tracking and Surveillance System (STSS) testing</li> <li>- Enterprise Sensor Laboratory experimental, networking and facility support and coordination</li> <li>- Ground-based Midcourse Defense Fire Control component-level operations, integration, testing, and training</li> <li>- Joint Early Warning Laboratory mission services and connectivity</li> <li>- Combatant Command operations work centers including the USNORTHCOM Command, C2BMC Control Center (CCC), Army 100th Missile Defense Brigade, and United States Strategic Command's Joint Functional Component Command-Integrated Missile Defense</li> <li>- MDA General Services Network and Operational Support Center (OSC) supporting the BMDS Watch Officer (BWO) and the Information Technology-Network Security Center (IT-NSC)</li> <li>- MDA Computer Emergency Response Team</li> </ul> </li> </ul> <p>Technical Watch Support</p> <ul style="list-style-type: none"> <li>- Provide on-site technical environment for BMDS Watch Officers, Safety Officers, and Information Assurance Officers to</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>execute their duties 24 hours a day, 7 days a week, 365 days a year</p> <ul style="list-style-type: none"> <li>- Provide MDIOC Duty Officers to maintain situational awareness of BMDS Concurrent Test, Training, and Operations (CTTO) activities supported by MDIOC Program provisioned systems and services</li> <li>- Implement recall procedures to augment subject matter expertise availability during contingencies and major events</li> <li>- Provide state change management and asset management technical support for the BMDS</li> <li>- Coordinated, report and escalate critical facility information and BMDS test and operational event information to all MDIOC technical and management staff to ensure rapid break/fix actions are executed and reported to leadership</li> </ul> <p>Program Management, Quality Management, Risk Management, and Earned Value Management</p> <ul style="list-style-type: none"> <li>- Provide overarching contract and financial management support for all JNIC Research and Development Contract(JRDC) integrated programs projects</li> <li>- Provide engineering coordination, resource management, and event integration across all MDIOC mission areas</li> <li>- Conduct continuous process improvement and implementation across all JRDC execution and MDIOC missions</li> <li>- Deliver integrated skill mix planning, coordination and workforce deployment across the dynamic spectrum of MDIOC events</li> <li>- Execute integrated resource forecasting and de-confliction</li> <li>- Perform project management for discrete enterprise enhancements</li> </ul> <p>Event Architecture and Engineering Design:</p> <ul style="list-style-type: none"> <li>- Coordinate design and implementation of technical architectures for all major MDIOC hosted BMDS CTTO activities</li> <li>- Deliver technical documentation packages for all major BMDS flight tests, ground tests, training and Combatant Command exercise support</li> <li>- Lead requirements coordination and technical architecture enhancements for BMDS wargames, exercises, and training networks</li> <li>- Update BMDS end-to-end Combatant Command deployed architecture as-built documentation reflecting new incremental content and deployments</li> <li>- Maintain a technical repository of BMDS Implementation Architectures for real-time operations and configuration management</li> </ul>				
<b>Title:</b> Operations and Sustainment		5.355	5.442	5.899
<b>Description:</b> N/A		<b>Articles:</b> -	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b><i>FY 2015 Accomplishments:</i></b></p> <ul style="list-style-type: none"> <li>- Funded Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform</li> <li>- Provided quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors</li> <li>- Delivered integrated service coordination for all MDIOC event and protocol support including:               <ul style="list-style-type: none"> <li>- Event Registration Web site</li> <li>- Offsite event registration</li> <li>- Security processing, including clearance verification and badging</li> <li>- Coordination of group lodging</li> <li>- Arrangement/Coordination/Scheduling of bus transportation</li> <li>- Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms</li> <li>- Operation of Audio Visual equipment during events</li> </ul> </li> <li>- Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination</li> <li>- Funded Training and Travel</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Fund Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform</li> <li>- Provide quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors</li> <li>- Deliver integrated service coordination for all MDIOC event and protocol support including management of the:               <ul style="list-style-type: none"> <li>- Event Registration Web site</li> <li>- Offsite event registration</li> <li>- Security processing, including clearance verification and badging</li> <li>- Arrangement/Coordination/Scheduling of bus transportation</li> <li>- Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms</li> <li>- Operation of Audio Visual equipment during events</li> </ul> </li> <li>- Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination</li> <li>- Fund Training and Travel</li> </ul> <p><b><i>FY 2017 Plans:</i></b></p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Fund Civilian and CSS positions supporting operations and sustainment of all Missile Defense Integration and Operations Center (MDIOC) activities contributing to the mission execution platform</li> <li>- Provide quality event planning, coordination, logistics, security access and host support for all MDIOC events and visitors</li> <li>- Deliver integrated service coordination for all MDIOC event and protocol support including management of the:                             <ul style="list-style-type: none"> <li>- Event Registration Web site</li> <li>- Offsite event registration</li> <li>- Security processing, including clearance verification and badging</li> <li>- Arrangement/Coordination/Scheduling of bus transportation</li> <li>- Reservation, setup, and coordination of access for all primary shared MDIOC conference rooms</li> <li>- Operation of Audio Visual equipment during events</li> <li>- Preparation for and conduct of official ceremonies; coordination and hosting of Distinguished Visitor itineraries; and information disclosure approval coordination</li> <li>- Fund Training and Travel</li> </ul> </li> </ul>				
<p><b>Title:</b> Infrastructure Systems Repair, Sustainment, and Critical Upgrades</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Completed electrical power distribution projects in four mission quadrants to replace end-of-life systems, increased reliability; and improved power distribution efficiency, and redundancy for mission critical areas (multi-year project)</li> <li>- Completed electrical power distribution of the non-technical power switchgear scheduled maintenance (second and third phases)</li> <li>- Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance for critical mission areas within the facility (second phase)</li> <li>- Completed the first phase of the compliance project to modify fire suppression system to meet building code requirements</li> </ul> <p><b>FY 2016 Plans:</b> The decrease in FY2016 is due to the realignment of funds to other Department of Defense priorities</p> <p><b>FY 2017 Plans:</b> The Missile Defense Integration and Operations Center Program funding increase in FY17 is needed to accomplish scheduled Facility Sustainment, Restoration, and Modernization</p>		<p><b>Articles:</b></p> <p>4.613</p> <p>-</p>	<p>0.000</p> <p>-</p>	<p>2.857</p> <p>-</p>



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Replace and upgrade capacity of Heating, Ventilation, and Air Conditioning end-of-life components to improve mission assurance for critical mission areas within the Research and Development Building (one quadrant)</li> <li>- Complete Fire Suppression System Compliance Project (two quadrants)</li> <li>- Execute Electrical Distribution TUS2 Switch Gear Refurbish Project</li> <li>- Replace/repair drainage/sewer system (Phase I -Building 720)</li> <li>- Replace Heating, Ventilation, and Air Conditioning Chilled Water Pumps (North System)</li> <li>- Reconfigure space to accommodate IT and Infrastructure support personnel (Phase II)</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	50.127	45.303	51.773

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
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
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	29.530	28.605	32.129	-	32.129	33.869	34.884	36.203	36.821	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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**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
• 0603895C: <i>Ballistic Missile Defense System Space Programs</i>	7.560	21.507	20.690	-	20.690	15.670	11.641	11.796	11.992	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603913C: <i>Israeli Cooperative Programs</i>	268.842	267.595	103.835	-	103.835	105.612	108.271	110.009	112.168	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The Joint National Integration Center Research and Development Contract is the major performing integrated contract and is scheduled to be recompeted in FY 2016. The acquisition strategy for Missile Defense Integration and Operation Center (MDIOC) mission execution is to employ a contract to perform designated integration and sustainment tasks to conduct Ballistic Missile Defense System (BMDS) Research, Development, Test and Evaluation (RDT&E). The MDIOC is operated by missile defense subject matter experts (SME) composed of Government, military, civilian personnel, Federally Funded Research and Development Center (FFRDC), MDIOC Contract Support Services, and major defense contractors.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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<b>Support (\$ in Millions)</b>				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
Infrastructure Systems and Support - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	97.741	20.221		19.191	Nov 2015	20.880	Nov 2016	-		20.880	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC Custodial	C/FFP	MDIOC/Ability One : Colorado Springs, CO	0.000	1.161		0.000		1.158	Oct 2016	-		1.158	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC GSA / Leases / Calibration	MIPR	Various (GSA, 50th Space Wing, Warehouses) : Colorado Springs, CO	5.654	0.481		0.667		0.617	Nov 2016	-		0.617	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	67.076	8.421		9.127	Nov 2015	10.052	Nov 2016	-		10.052	Continuing	Continuing	Continuing
Facilities and Maintenance - MDIOC Utilities	MIPR	50th Space Wing : Schriever AFB, CO	11.439	3.103		2.565		3.108	Oct 2016	-		3.108	Continuing	Continuing	Continuing
Engineering and Event Services - MDIOC NG	C/CPAF	MDIOC/Northrup Grumman Mission Systems : Colorado Springs, CO	44.959	6.772		8.311	Oct 2015	7.202	Oct 2016	-		7.202	Continuing	Continuing	Continuing
Operations and Sustainment - FFRDC	FFRDC	MDIOC : Colorado Springs, CO	2.167	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operations and Sustainment - Operations & Sustainment	Allot	MDIOC : Colorado Springs, CO	15.298	2.703		2.740	Oct 2015	3.091	Oct 2016	-		3.091	Continuing	Continuing	Continuing
Operations and Sustainment - Support Services	C/FFP	SRS/ManTech/ MiDAESS Multi : Colorado Springs, CO	11.869	2.564		2.640	Nov 2015	2.719	Nov 2016	-		2.719	Continuing	Continuing	Continuing
Operations and Sustainment - Travel and Training	Allot	MDIOC : Colorado Springs, CO	0.538	0.088		0.062	Oct 2015	0.089	Oct 2016	-		0.089	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / Missile Defense Integration and Operations Center (MDIOC)	<b>Project (Number/Name)</b> MD22 / Missile Defense Integration and Operations Center (MDIOC)
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<b>Support (\$ in Millions)</b>				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			
Infrastructure Systems Repair, Sustainment, and Critical Upgrades - MDIOC NG	C/CPAF	MDIOC/Northrop Grumman Mission Systems : Colorado Springs, CO	3.501	4.613		0.000		2.857	Dec 2016	-		2.857	Continuing	Continuing	Continuing
<b>Subtotal</b>			260.242	50.127		45.303		51.773		-		51.773	-	-	-

**Remarks**  
Funds for utilities and base communications are specified in the Inter-service Support Agreement with the 50th Space Wing. In addition, the Missile Defense Integration and Operations Center (MDIOC) provides Technical Contract Support Services employees, for MDIOC operations and oversight of the Joint Research and Development Contractor (JRDC), as well as funding for JRDC work as required by the government.

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	260.242	50.127	45.303	51.773	-	51.773	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</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		
Completed electrical power distribution in four mission quadrants to replace End-of-life systems, increase reliability, improve power distribution efficiency and redundancy to mission critical areas	✦	✦	✦	✦																										
Completed Fire Suppression Compliance Project in two mission quadrants	✦	✦	✦	✦																										
Replaced outside one Air Handling Unit			✦																											
Installed Computer Room Air Conditioning to support reliability of Uninterruptible Power Supply			✦	✦																										
Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance in one of the mission quadrants			✦	✦																										
Installed Electrical Remote Power Panels (RPP) to support future migration of dispersed IT into a Special Purpose Processing Node			✦	✦																										
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY17)											✦	✦	✦	✦																
Replace/repair drainage/sewer system (Phase I - Building 720)											✦	✦	✦	✦																
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase II)											✦	✦	✦	✦																
Fire Suppression System Compliance Project (two quadrants)(FY17)											✦	✦	✦																	
Replace Heating, Ventilation, and Air Conditioning (HVAC) Chilled Water Pumps (North System)											✦	✦	✦																	
Electrical Distribution TUS2 Switch Gear Refurbish Project											✦	✦																		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</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
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY18)													◆	◆	◆	◆												
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase III)													◆	◆	◆	◆												
Replace/repair drainage/sewer system (Phase II -Building 720)													◆	◆	◆	◆												
Electrical power distribution in two mission quadrants to replace- End-of-Life systems, increase reliability, improve power distribution efficiency, and redundancy to mission critical areas													◆	◆														
Fire Suppression System Compliance Project (two quadrants)(FY18)													◆	◆	◆													
Replace end-of-life Emergency Lighting Module (Building 730)														◆	◆													
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY19)																	◆	◆	◆	◆								
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase IV)																	◆	◆	◆	◆								
Replace/repair drainage/sewer system (Phase III -Building 720)																	◆	◆	◆	◆								
Fire Suppression System Compliance Project (two quadrants)(FY19)																	◆	◆	◆									
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY20)																					◆	◆	◆	◆				
Install Ambient Air Economizer (greening initiative)																					◆	◆	◆	◆				

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</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
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase I)																				⚡	⚡	⚡	⚡					
Fire Suppression System Compliance Project (two quadrants)(FY20)																					⚡	⚡	⚡					
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY21)																											⚡	
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase II)																											⚡	
Fire Suppression System Compliance Project (two quadrants)(FY21)																											⚡	
Availability/Arc Flash/Short Circuit Coordination Study																											⚡	



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Completed electrical power distribution in four mission quadrants to replace End-of-life systems, increase reliability, improve power distribution efficiency and redundancy to mission critical areas	1	2015	4	2015
Completed Fire Suppression Compliance Project in two mission quadrants	1	2015	4	2015
Replaced outside one Air Handling Unit	3	2015	3	2015
Installed Computer Room Air Conditioning to support reliability of Uninterruptible Power Supply	3	2015	4	2015
Completed Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance in one of the mission quadrants	3	2015	4	2015
Installed Electrical Remote Power Panels (RPP) to support future migration of dispersed IT into a Special Purpose Processing Node	3	2015	4	2015
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY17)	1	2017	4	2017
Replace/repair drainage/sewer system (Phase I -Building 720)	1	2017	4	2017
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase II)	1	2017	4	2017
Fire Suppression System Compliance Project (two quadrants)(FY17)	2	2017	4	2017
Replace Heating, Ventilation, and Air Conditioning (HVAC) Chilled Water Pumps (North System)	2	2017	4	2017
Electrical Distribution TUS2 Switch Gear Refurbish Project	3	2017	4	2017
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY18)	1	2018	4	2018

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase III)	1	2018	4	2018
Replace/repair drainage/sewer system (Phase II -Building 720)	1	2018	4	2018
Electrical power distribution in two mission quadrants to replace- End-of-Life systems, increase reliability, improve power distribution efficiency, and redundancy to mission critical areas	2	2018	3	2018
Fire Suppression System Compliance Project (two quadrants)(FY18)	2	2018	4	2018
Replace end-of-life Emergency Lighting Module (Building 730)	3	2018	4	2018
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY19)	1	2019	4	2019
Re-purpose basement space to accommodate IT and Infrastructure support personnel (Phase IV)	1	2019	4	2019
Replace/repair drainage/sewer system (Phase III -Building 720)	1	2019	4	2019
Fire Suppression System Compliance Project (two quadrants)(FY19)	2	2019	4	2019
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY20)	1	2020	4	2020
Install Ambient Air Economizer (greening initiative)	1	2020	4	2020
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase I)	1	2020	4	2020
Fire Suppression System Compliance Project (two quadrants)(FY20)	2	2020	4	2020
Heating, Ventilation, and Air Conditioning end-of-life component replacement and capacity upgrade to improve mission assurance to critical mission areas within Building 720 (one quadrant)(FY21)	1	2021	4	2021
Re-purpose cafeteria as a multi-purpose facility (cafeteria, conference, and training center – Phase II)	1	2021	4	2021
Fire Suppression System Compliance Project (two quadrants)(FY21)	2	2021	4	2021

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency			<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD22 / <i>Missile Defense Integration and Operations Center (MDIOC)</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
Availability/Arc Flash/Short Circuit Coordination Study	3	2021	3	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MC22 / <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
MC22: <i>Cyber Operations</i>	0.514	0.592	0.472	0.456	-	0.456	0.612	0.617	0.640	0.653	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The Missile Defense Integration and Operations Center (MDIOC) conducts Cyber Defensive Operations through Key Management Infrastructure and Information Assurance Training which interfaces with the Information Technology/Information Assurance Enterprise to provide secure communications, network health and status monitoring, mission critical restoral capability, and technical expertise.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Cyber Defensive Operations	0.592	0.472	0.456
<b>Articles:</b>	-	-	-
<b>Description:</b> The Missile Defense Integration and Operations Center (MDIOC) conducts Defensive Cyber Operations in the following categories:			
<b>FY 2015 Accomplishments:</b>			
Key Management Infrastructure			
- The MDIOC interfaced with the Information Technology/Information Assurance Enterprise to provide for the generation, production, control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.			
Information Assurance Training			
- The MDIOC maintained an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570			
<b>FY 2016 Plans:</b>			
Key Management Infrastructure			
- Interface with the Information Technology/Information Assurance Enterprise to provide for the generation, production,			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MC22 / <i>Cyber Operations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.			
Information Assurance Training			
- Maintain an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570			
<b><i>FY 2017 Plans:</i></b>			
Key Management Infrastructure			
- Interface with the Information Technology/Information Assurance Enterprise to provide for the generation, production, control and distribution, and training for utilizing the keying material used with the Agency's cryptographic devices.			
Information Assurance Training			
- Maintain an Information Assurance (IA) certified workforce through continuous IA training as required by DoD Directive 8570			
<b>Accomplishments/Planned Programs Subtotals</b>	0.592	0.472	0.456

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MC22 / <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			
Cyber Defensive Operations - Cyber Defensive Operations	C/CPAF	MDIOC/Northrop : Grumman Mission Systems Colorado Springs, CO	0.514	0.592		0.472	Nov 2015	0.456	Dec 2016	-		0.456	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.514	0.592		0.472		0.456		-		0.456	-	-	-

**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
<b>Project Cost Totals</b>	0.514	0.592	0.472	0.456	-	0.456	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MC22 / <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
MC22 Cyber Operations					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MC22 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MC22 Cyber Operations	1	2016	4	2020



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	8.560	3.253	2.164	2.521	-	2.521	2.619	2.831	2.992	3.121	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, Program Wide Support (PWS) reflects a proportional change as a result of decreases in the Missile Defense Integration and Operations Center and in FY 2017, PWS reflects a proportional change as a result of increases in the Missile Defense Integration and Operations Center. 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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	3.253	2.164	2.521
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	3.253	2.164	2.521

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Facilities, Operations, and Maintenance	MIPR	Various : Multi: AK, AL, CA, CO, VA	5.301	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	0.241	0.073		0.000		0.178	Jul 2017	-		0.178	0.241	0.733	0
Program Wide Support - Agency Operations and Support Services	Reqn	Various : Multi: AK, AL, CA, CO, VA	3.018	3.180		2.164	Dec 2015	2.145	Nov 2016	-		2.145	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services.	C/CPFF	Various : Alatec INC, AL, CO, VA	0.000	0.000		0.000		0.198	Aug 2017	-		0.198	Continuing	Continuing	Continuing
<b>Subtotal</b>			8.560	3.253		2.164		2.521		-		2.521	-	-	-

**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
<b>Project Cost Totals</b>	8.560	3.253	2.164	2.521	-	2.521	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603904C / <i>Missile Defense Integration and Operations Center (MDIOC)</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603906C / <i>Regarding Trench</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	37.930	15.912	9.583	8.785	-	8.785	9.161	9.314	9.786	9.934	Continuing	Continuing
MD35: <i>Regarding Trench</i>	37.930	15.912	9.583	8.785	-	8.785	9.161	9.314	9.786	9.934	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	16.199	9.583	9.082	-	9.082
Current President's Budget	15.912	9.583	8.785	-	8.785
Total Adjustments	-0.287	0.000	-0.297	-	-0.297
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.287	0.000			
• Other Adjustment	0.000	0.000	-0.297	-	-0.297

**Change Summary Explanation**

FY 2017 other adjustments reflect realignment for Department of Defense priorities.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603907C I <i>Sea Based X-Band Radar (SBX)</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	286.017	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
<i>MX46: Sea Based X-Band Radar Development Support</i>	275.958	60.882	68.061	65.678	-	65.678	69.759	66.842	81.471	70.276	Continuing	Continuing
<i>MD40: Program-Wide Support</i>	10.059	3.728	3.205	3.109	-	3.109	3.570	3.581	4.410	3.913	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The SBX is an advanced X-Band radar that provides the capability for mid-course acquisition, tracking, discrimination and hit-assessment of ballistic missiles. The SBX radar is mounted on a mobile, ocean-going, semi-submersible platform, enabling it to cover any region of the globe. The SBX supports the Ballistic Missile Defense System (BMDS) Homeland defense mission by tracking and discriminating sophisticated Intercontinental Ballistic Missile (ICBM) threats.

SBX Test and Operational Support status includes 120-days at sea per year for BMDS flight and ground test participation while remaining recallable to an active, operational status when indications and warnings signal the need for enhanced discrimination. The SBX is located in a Pacific port when not required at sea. The SBX maintains vessel certifications for operations at sea as well as software compatibility with the BMDS.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	64.409	72.866	71.267	-	71.267
Current President's Budget	64.610	71.266	68.787	-	68.787
Total Adjustments	0.201	-1.600	-2.480	-	-2.480
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.600			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.275	0.000			
• SBIR/STTR Transfer	-1.074	0.000			
• Other Adjustment	0.000	0.000	-2.480	-	-2.480

**Change Summary Explanation**

The FY 2017 decrease reflects a realignment of funds from the Sea Based X-Band Radar (SBX) Program Element (0603907C) to the Long Range Discrimination Radar Program Element (0604873C) for evolving requirements to support updates to radar capability, technical requirements and configuration.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)				<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MX46: Sea Based X-Band Radar Development Support	275.958	60.882	68.061	65.678	-	65.678	69.759	66.842	81.471	70.276	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The SBX is in a test and operations support status, supporting Ballistic Missile Defense System (BMDS) ground and flight testing while maintaining the ability to be recalled to an active, operational status when indications and warnings indicate need for enhanced discrimination. SBX will be located in a Pacific port when not required to be at sea. SBX will maintain vessel certifications for operations at sea and software compatibility with the BMDS, ready for recall to active operational status.

This project provides for developmental operations and support of the SBX Radar and its four major sub-systems: the self-propelled vessel; the X-Band Radar (XBR); the In-Flight Interceptor Communications System Data Terminal; and the communications network. Developmental operations and support activities include operation and sustainment of the vessel, developmental operation and sustainment of the XBR, limited XBR software support and vessel and shoreside security.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Vessel Operations and Support	34.140	33.882	30.620
<b>Articles:</b>	-	-	-
<b>Description:</b> The SBX is in a test and operations support status, supporting Ballistic Missile Defense System (BMDS) ground and flight testing while maintaining the ability to be recalled to an active, operational status when indications and warnings indicate need for enhanced discrimination. SBX will be located in a Pacific port when not required to be at sea. SBX will maintain vessel certifications for operations at sea and software compatibility with the BMDS, ready for recall to active operational status.			
This project provides for developmental operations and support of the SBX Radar and its four major sub-systems: the self-propelled vessel; the X-Band Radar (XBR); the In-Flight Interceptor Communications System Data Terminal; and the communications network. Developmental operations and support activities include operation and sustainment of the vessel, developmental operation and sustainment of the XBR, limited XBR software support and vessel and shoreside security.			
<b>FY 2015 Accomplishments:</b>			
-Sustained the SBX in test and operations support status			
-Maintained certification and readiness for operational contingencies			
-Participated in targets of opportunity for developmental testing: FTX-20, GT-214 and GT-215			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Completed recurring 5-year vessel U.S. Coast Guard and American Bureau of Shipping recertification and special survey efforts</p> <p><b>FY 2016 Plans:</b></p> <p>-Sustain the SBX vessel in a test and operational support status</p> <p>-Maintain certification and readiness for operational contingencies, with increased responsiveness</p> <p>-Participate in Ballistic Missile Defense System (BMDS) Ground-Based Midcourse Defense Interceptor Development Test (CTV-02+)</p> <p>-Annual surveys and U.S. Coast Guard Certification</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease due to completion of thruster spare refurbishment</p> <p>-Sustain the SBX vessel in a test and operational support status</p> <p>-Maintain certification and readiness for operational contingencies, maintain responsiveness</p> <p>-Participate in (BMDS) Ground-Based Midcourse Defense Intercept Flight Test (FTG-15) per the Integrated Master Test Plan</p> <p>-Annual surveys and U.S. Coast Guard Certification</p>				
<p><b>Title:</b> System Force Protection</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Provided force protection for SBX in test and operations support status</p> <p><b>FY 2016 Plans:</b></p> <p>-Provide force protection for SBX</p> <p><b>FY 2017 Plans:</b></p> <p>-Provide force protection for SBX</p>		<p>2.960</p> <p><b>Articles:</b> -</p>	<p>3.010</p> <p>-</p>	<p>3.070</p> <p>-</p>
<p><b>Title:</b> XBR Operations and Support</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Operated and sustained the X-Band Radar (XBR), operated and sustained SBX communications systems, and performed mission integration functions in test and operations support status. Limited software sustainment will maintain system capability with the BMDS.</p>		<p>23.782</p> <p><b>Articles:</b> -</p>	<p>31.169</p> <p>-</p>	<p>31.988</p> <p>-</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Fielded additional XBR capability to the Warfighter (Build 3.2 software) with the BMDS Capability Update, and delivered software (Build 3.3 software upgrade) to support future fielding -Participated in targets of opportunity for developmental testing: FTX-20, GT-214 and GT-215 -The amount requested in FY 2015 reflects an annualized funding requirement based on evolving requirements for maintaining SBX in Test and Operations Support Status  <b>FY 2016 Plans:</b> -Operate and sustain the X-Band Radar (XBR), operate and sustain SBX communications systems, and perform mission integration functions for SBX. Limited software sustainment maintains system capability with the BMDS. -Field additional XBR capability to the Warfighter (added to Build 3 software) with the BMDS Capability Update  <b>FY 2017 Plans:</b> -Continue maintaining SBX including support for contingency operations with manning for improved readiness and short time from notification to underway. Planned underway days are 120 days per year. -Operate and sustain the X-Band Radar (XBR), operate and sustain SBX communications systems, and perform mission integration functions for SBX. Limited software sustainment will maintain system capability with the BMDS. Support equipment obsolescence mitigation within limited maintenance budget. -Field additional XBR capability to the Warfighter (added to Build 3 software) with the BMDS Capability Update -Provide precision track, discrimination and hit assessment for engagement support in (BMDS) Ground-Based Midcourse Defense Intercept Flight Test (FTG-15) per the approved Integrated Master Test Plan -Provide precision track, discrimination and hit assessment for engagement support in Ballistic Missile Defense System (BMDS) Ground-Based Midcourse Defense Interceptor Development Test (CTV-02+)			
<b>Accomplishments/Planned Programs Subtotals</b>	60.882	68.061	65.678

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603884C: Ballistic Missile Defense Sensors	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603891C: Special Programs - MDA	301.201	400.387	321.607	-	321.607	307.410	284.785	264.031	268.024	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

SBX will be contractor operated and maintained through a variety of contracts between the Navy and Missile Defense Agency (MDA). SBX-1 Vessel Management and Security contracts are managed by Military Sealift Command. The SBX X-Band Radar is operated and maintained on contracts managed by MDA. The MDA contracts also support the Army Navy/Transportable Radar Surveillance (AN/TPY-2) and the Ground Based Radar Prototype (GBR-P).

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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			
Vessel Operations and Support - Fuel	MIPR	Military Sealift Command : VA	27.031	4.103		5.070	Nov 2015	4.990	Nov 2016	-		4.990	Continuing	Continuing	Continuing
Vessel Operations and Support - Navy Transition Office	MIPR	US Navy : AL	5.732	0.000		0.000		0.000		-		0.000	0	5.732	0
Vessel Operations and Support - Program Management Office	MIPR	Military Sealift Command : VA	0.952	1.465		1.150	Nov 2015	1.010	Nov 2016	-		1.010	Continuing	Continuing	Continuing
Vessel Operations and Support - SBX Operations & Support (Vessel)	C/FFP	Tote : HI/NJ	81.527	15.998		15.276	Oct 2015	12.313	Oct 2016	-		12.313	Continuing	Continuing	Continuing
Vessel Operations and Support - SBX Vessel Maintenance	C/FFP	Tote : HI/NJ	13.683	4.781		4.906	Oct 2015	3.677	Oct 2016	-		3.677	Continuing	Continuing	Continuing
Vessel Operations and Support - Vessel Mission Integration	C/FFP	Gryphon Tech. : AL/ HI	23.643	7.793		7.480	Dec 2015	8.630	Dec 2016	-		8.630	Continuing	Continuing	Continuing
System Force Protection - Force Protection	SS/CPFF	AQuate : Hi	16.159	2.960		3.010	Oct 2015	3.070	Oct 2016	-		3.070	Continuing	Continuing	Continuing
XBR Operations and Support - SBX Communications Support	SS/CPIF	Boeing : AL/ HI	3.014	2.282		2.590	Dec 2015	2.640	Dec 2016	-		2.640	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support
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<b>Support (\$ in Millions)</b>				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			
XBR Operations and Support - XBR Operations & Support	SS/CPHF	Raytheon : AL/AK/HI	104.217	21.500		28.579	Nov 2015	29.348	Nov 2016	-		29.348	Continuing	Continuing	Continuing
<b>Subtotal</b>			275.958	60.882		68.061		65.678		-		65.678	-	-	-

**Remarks**  
Increase in XBR support reflects an annualized funding requirement based on evolving requirements for maintaining and sustaining readiness to support contingency operations.

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	275.958	60.882	68.061	65.678	-	65.678	-	-	-



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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>			<b>Project (Number/Name)</b> MX46 / <i>Sea Based X-Band Radar Development Support</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

<b>Remarks</b> N/A									
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**Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MX46 / Sea Based X-Band Radar Development Support
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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				
FTO-04 (OTA, Intercept Flight Test)																																▲
FTG-11 (IOT&E) (GM, Intercept Flight Test)												▲																				
GM CTV-02 Plus (GM, Intercept Flight Test)						▲																										
FTG-15 (GM, Intercept Flight Test)											▲																					
GM CTV-03 (GM, Non-Intercept Flight Test)												▲																				
FTG-17 (DT/OT) (GM, Intercept Flight Test)																			▲													
FTG-18 (GM, Intercept Flight Test)																							▲									

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>	<b>Project (Number/Name)</b> MX46 / <i>Sea Based X-Band Radar Development Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FT0-04 (OTA, Intercept Flight Test)	3	2021	3	2021
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
GM CTV-03 (GM, Non-Intercept Flight Test)	3	2018	3	2018
FTG-17 (DT/OT) (GM, Intercept Flight Test)	3	2019	3	2019
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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>	10.059	3.728	3.205	3.109	-	3.109	3.570	3.581	4.410	3.913	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016, Program Wide Support reflects proportional decreases as a result of changes to the Sea-Based X-Band Radar (SBX). 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
<b>Title:</b> Program Wide Support	3.728	3.205	3.109
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	3.728	3.205	3.109

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / Sea Based X-Band Radar (SBX)	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities, Operations and Maintenance	MIPR	Various : Multi: AK, AL, CA, CO, VA	1.613	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	0.737	0.834		0.000		0.077	Jul 2017	-		0.077	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi: AL, CA, CO, VA	0.027	2.832		3.205		3.032	Mar 2017	-		3.032	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (CPAF)	C/CPAF	Northrop Grumman : CO	7.541	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various : Multi: VA,WA	0.141	0.062		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Dept of Labor : VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			10.059	3.728		3.205		3.109		-		3.109	-	-	-

**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
<b>Project Cost Totals</b>	10.059	3.728	3.205	3.109	-	3.109	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603907C / <i>Sea Based X-Band Radar (SBX)</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</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	1,123.117	268.842	267.595	103.835	-	103.835	105.612	108.271	110.009	112.168	Continuing	Continuing
MD20: <i>Israeli Upper Tier</i>	319.548	74.707	74.550	55.793	-	55.793	56.861	58.285	59.225	60.392	Continuing	Continuing
MD26: <i>Israeli ARROW Program</i>	249.294	56.201	56.519	10.831	-	10.831	10.833	11.117	11.285	11.505	Continuing	Continuing
MD34: <i>Short Range Ballistic Missile Defense (SRBMD)</i>	554.275	137.934	136.526	37.211	-	37.211	37.918	38.869	39.499	40.271	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Content supports expected contributions from Israel per international agreements.

**A. Mission Description and Budget Item Justification**

Since 1986, the United States and the State of Israel have cooperated on missile defense. Currently, Missile Defense Agency (MDA) has three major projects with Israel to develop and improve their indigenous capability to defend against short and medium range ballistic missiles. These include Upper Tier Interceptors (MD20), the Arrow Weapon System (MD26) and the Short-Range Ballistic Missile Defense, also known as the David's Sling Weapon System (MD34). Within these projects MDA develops and produces weapon systems, conducts tests, and exercises interoperability between U.S. Ballistic Missile Defense System (BMDS) and the Israeli Missile Defense Architecture.

U.S.-Israel Cooperative Programs consist of the following major efforts:

**Israeli Upper Tier Interceptor (UTI) Project (MD20):** The Upper Tier Program provides the Arrow-3 missile, increasing the system's capability against advanced medium range threats by providing approximately four times the current Arrow-2 battle space. The primary near term objective is to complete and demonstrate Upper Tier design, and initiate acquisition for Long Lead items and begin Initial Lot Production (ILP).

**Israeli Arrow Weapon System (AWS) (MD26):** The Arrow System Improvement Program (ASIP) includes block upgrades to the AWS that enhances capabilities against evolving medium range threats by increasing the total defended area by approximately 50 percent. ASIP elements include the Arrow-2 missile and launcher, Citron Tree Battle Management Center (BMC), Green Pine (GP) and Super Green Pine (SGP) Radars, and the Hazelnut Tree Launcher Control Center (LCC). Also included is the integration of Block 5 assets which include the Arrow-3 missile and launcher. Arrow Block 5, under the ASIP agreement will also incorporate a Long Range Detection suite that consists of an unmanned aerial vehicle Airborne Early Warning System (ABEWS) and an S-Band Silver Oak radar for increased sensor range, early detection and enhanced raid size capacity. The program also includes the continued development of Arrow's interoperability with U.S. BMDS. Related activities include the Israeli Test Bed (ITB) and the Israeli Systems Architecture and Integration (ISA&I) study that assesses requirements and growth paths for the 2025 Israel Missile Defense Architecture.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>
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Short Range Ballistic Missile Defense (SRBMD) (MD34): SRBMD, also known as the David`s Sling Weapon System (DSWS), is designed to counter short range rockets, cruise missiles, and tactical ballistic missiles and will be integrated into the Israeli Missile Defense Architecture adding another layer of defense to the current Arrow System. Block 1 capability will enhance the short range rocket and missile defense capability. Block 2 will add capability to defend against medium range and cruise missiles. Block 3 will provide robust defense capability and add significant detection capability to the Israeli Air Defense Architecture The David`s Sling Weapon System (DSWS) includes the Stunner Interceptor, Missile Firing Unit (MFU), Multi-Mission Radar (MMR), Launch Site Controller (LSC) and the Golden Almond Battle Management Center (BMC). The near term objectives are completion of Block 1 development, demonstrate system capability and flight test, and procure material of Initial Lot Production (ILP) utilizing Research, Development, Test, & Evaluation (RDT&E) funding and field the system to the Israeli Air Force for first unit delivery in 2016.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	268.842	102.795	104.923	-	104.923
Current President's Budget	268.842	267.595	103.835	-	103.835
Total Adjustments	0.000	164.800	-1.088	-	-1.088
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	164.800			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustment	0.000	0.000	-1.088	-	-1.088

**Change Summary Explanation**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</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
MD20: <i>Israeli Upper Tier</i>	319.548	74.707	74.550	55.793	-	55.793	56.861	58.285	59.225	60.392	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This project code encompasses the Missile Defense Agency's (MDA) U.S.-Israeli cooperative program for the Israeli Upper Tier Program.

**A. Mission Description and Budget Item Justification**

This project provides funding for the Upper Tier component of the Arrow Weapon System (AWS) development. The Upper Tier Interceptor will enhance Israel's indigenous capability to defend against short and medium range ballistic missiles by increasing the battle space by a factor of four. The scope of the Upper Tier Program covers interceptor development, testing, material procurement to include initial lot production, and integration of spiral software development for Block 5 AWS. The United States through the cooperative effort gains knowledge and experience of the Israeli Defense Forces operation of a multi-layered defense architecture. This project also includes the procurement of the Silver Sparrow Air-Launched Target which is necessary to validate the performance of the Arrow-3 Missile and related Block 5 spiral development activities.

The Upper-Tier Interceptor Project Agreement was signed in 2010. This agreement states that the project will be jointly managed by the U.S. Missile Defense Agency and the Israeli Missile Defense Organization. The agreement also documents the U.S.-Israeli cost share, in which the development costs will be equitable between the U.S. and Israel.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Upper Tier Interceptor	74.707	74.550	55.793
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
-Continued lab testing to demonstrate discrimination Knowledge Points.			
-Conducted one Element-Level Knowledge Point demonstration to provide critical data to assess viability of component design.			
-Began Arrow-3 component Production Readiness Reviews for Initial Lot Production.			
<b>FY 2016 Plans:</b>			
-Conduct Interceptor Test #1 of the Arrow-3 Interceptor.			
-Conduct algorithm design review for Interceptor Test Number #2 and 3 to verify requirements.			
-Continue procurement of Initial Lot Production assets.			
-Conduct Upper Tier Interceptor Production Readiness Review (PRR).			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>-Continue spiral development of Arrow 3.</li> <li>-Acquire targets for use in Flight Tests</li> </ul> <p><b><i>FY 2017 Plans:</i></b></p> <ul style="list-style-type: none"> <li>-Conduct Interceptor Test #2 of the Arrow-3 Interceptor.</li> <li>-Conduct algorithm design review for Interceptor Test Number #4 to verify requirements.</li> <li>-Continue procurement of Initial Lot Production assets.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	74.707	74.550	55.793

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The Upper-Tier Interceptor Project Agreement under the Research, Development, Test and Evaluation (RDT&E) Framework agreement between the U.S. and Israel creates a joint program office to manage this program. Missile Defense Agency (MDA) and the Israeli Ministry of Defense (IMoD) continue to implement best management practices that allow for the more effective use of program management tools to ensure risk is adequately managed to include Knowledge Points that assess Israel's development progress. The DoD U.S. Israeli Cooperative Program Office jointly manages the Upper Tier program with IMoD to ensure that all systems are delivered on time, on budget, and meet the needs of the warfighter. The program is equitably funded between the U.S. and Israel. A portion of the Israeli cost share comes from non-financial contributions such as previously completed work prior to joint program initiation. Contracts are awarded by IMoD or MDA dependent on what is most advantageous to the Joint Governments. In regard to the Upper Tier Interceptor, IMoD will contract with Israel Aerospace Industries (IAI). IAI subcontracts with Israeli companies, Boeing and other U.S. companies.

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</i>
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<b>Product Development (\$ in Millions)</b>				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			
Upper Tier Interceptor - Upper Tier Interceptor	C/CPFF	Israel Aerospace Industries (IAI) : Israel	319.548	74.707		74.550	Dec 2015	55.793	Dec 2016	-		55.793	Continuing	Continuing	Continuing
<b>Subtotal</b>			319.548	74.707		74.550		55.793		-		55.793	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</i>
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<b>Management Services (\$ in Millions)</b>				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			

**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
<b>Project Cost Totals</b>	319.548	74.707	74.550	55.793	-	55.793	-	-	-

**Remarks**  
Contract cost reflect U.S. contribution only. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests, and civilian salaries on the R-3.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</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
Israeli Cooperative Arrow 3 Intercept Test #1- FY 2016					+	+	+	+																				
Israeli Cooperative Arrow 3 Intercept Test #2- FY 2017									◆	◆	◆	◆																
Israeli Cooperative Arrow 3 Intercept Test #3 FY 2018													◆	◆	◆	◆												
Israeli Cooperative Arrow 3 Intercept Test #4- FY 2019																	◆	◆	◆	◆								
Israeli Cooperative Arrow 3 Intercept Test #5- FY 2020																					◆	◆	◆	◆				
Israeli Cooperative Arrow 3 Intercept Test #6 FY 2021																									◆	◆	◆	◆

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD20 / <i>Israeli Upper Tier</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Israeli Cooperative Arrow 3 Intercept Test #1- FY 2016	1	2016	4	2016
Israeli Cooperative Arrow 3 Intercept Test #2- FY 2017	1	2017	4	2017
Israeli Cooperative Arrow 3 Intercept Test #3 FY 2018	1	2018	4	2018
Israeli Cooperative Arrow 3 Intercept Test #4- FY 2019	1	2019	4	2019
Israeli Cooperative Arrow 3 Intercept Test #5- FY 2020	1	2020	4	2020
Israeli Cooperative Arrow 3 Intercept Test #6 FY 2021	1	2021	4	2021



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW 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
MD26: <i>Israeli ARROW Program</i>	249.294	56.201	56.519	10.831	-	10.831	10.833	11.117	11.285	11.505	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

This project includes funding for the Arrow Weapon Improvement System (ASIP), Israeli Test Bed (ITB) and the Israeli Systems Architecture and Integration (ISA&I).

The Arrow Weapon System (AWS) continues development of Block 4. Also included is the integration of Block 5 assets which consists of the Arrow-3 missile, launcher and the Long Range Detection Suite (LRDS). The LRDS consists of an unmanned aerial vehicle Airborne Early Warning System (ABEWS) and an S-Band Silver Oak radar for increased sensor range and early detection and enhanced salvo engagement capability. The AWS provides Israel an indigenous capability to defend against short and medium range ballistic missiles. The ASIP effort will enhance the performance of the AWS to defeat longer-range and more robust ballistic missile threats expected to be introduced in the Middle East in the near future. ASIP elements include the Arrow-2 missile and launcher, Citron Tree Battle Management Center (BMC), Green Pine (GP) and Super Green Pine (SGP) Radars, and the Hazelnut Tree Launcher Control Center (LCC). The ASIP also ensures AWS interoperability via Joint Tactical Information Data System (JTIDS) Link-16 common communication architecture with the U.S. Ballistic Missile Defense System elements such as Terminal High Altitude Area Defense (THAAD), AEGIS, Command and Control, Battle Management, and Communications (C2BMC), Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2), and Phased Array Tracking Intercept of Target (PATRIOT) through ground tests, flight tests, and operational exercises.

The Israeli Test Bed (ITB) provides experiments to evaluate Human Machine Interface (HMI) battle management. Israeli Systems Architecture and Integration (ISA&I) conducts studies to assess Israel's future 2025 Missile Defense Architecture. The ITB and ISA&I efforts will continue to support AWS development as well as to define future missile defense architectures and growth paths.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Arrow System Improvement Program	49.839	50.157	4.469
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
-Continued Block 5 Arrow Weapon System integration.			
-Continued Long Range Detection Suite Development.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Conducted Lab and flight testing and analysis to demonstrate and complete Knowledge Points.</p> <p><b>FY 2016 Plans:</b></p> <p>-Continue Block 5 Arrow Weapon System integration.</p> <p>-Continue Long Range Detection Suite Development.</p> <p>-Conduct Lab and flight testing and analysis to demonstrate and complete Knowledge Points.</p> <p><b>FY 2017 Plans:</b></p> <p>-Continue Block 5 Arrow Weapon System integration.</p>				
<p><b>Title:</b> Israeli Test Bed (ITB)</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Conducted HMI experiments with warfighters to integrate David's Sling Weapon System (DSWS) and Iron Dome into Lower Tier TTPs and CONOPS.</p> <p>-Conducted HMI experiments with warfighters to integrate Block 5 Arrow Weapon System TTPs and CONOPS.</p> <p><b>FY 2016 Plans:</b></p> <p>-Conduct HMI experiments with warfighters to integrate Block 5 Arrow Weapon System TTPs and CONOPS.</p> <p><b>FY 2017 Plans:</b></p> <p>-Conduct HMI experiments with warfighters to integrate Block 5 Arrow Weapon System TTPs and CONOPS.</p>		<p><b>Articles:</b></p> <p>3.535 -</p>	<p>3.535 -</p>	<p>3.535 -</p>
<p><b>Title:</b> Israeli Systems Architecture and Integration (ISA&amp;I)</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Conducted studies and analysis to identify the preferred missile defense architecture and reference threat for 10-15 year future epoch and interoperability special studies on regional threats and growth path options.</p> <p><b>FY 2016 Plans:</b></p> <p>-Conduct studies and analysis to identify the preferred missile defense architecture and reference threat for 10-15 year future epoch and interoperability special studies on regional threats and growth path options.</p> <p><b>FY 2017 Plans:</b></p>		<p><b>Articles:</b></p> <p>2.827 -</p>	<p>2.827 -</p>	<p>2.827 -</p>

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW Program</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-Conduct studies and analysis to identify the preferred missile defense architecture and reference threat for 10-15 year future epoch and interoperability special studies on regional threats and growth path options.			
<b>Accomplishments/Planned Programs Subtotals</b>	56.201	56.519	10.831

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The DoD U.S. Israeli Cooperative Program Office jointly manages the Arrow Program with Israel Ministry of Defense (IMoD) to ensure that all systems are delivered with quality on time, on budget, and meet the needs of the warfighter. The program funding is equitably funded between the U.S. and Israel with Israel providing matching contributions. However, a portion of the Israeli cost share comes from non-financial contributions such as previously completed work prior to joint program initiation. Contracts are awarded by IMoD or MDA dependent on what is most advantageous to the Joint Governments. In regard to Arrow System Improvement Program (ASIP), IMoD contracts on behalf of U.S. government with Israel Aerospace Industries (IAI). IAI subcontracts with Israeli and U.S. companies. For the Israeli Test Bed, the Missile Defense Agency (MDA) contracts directly with Elbit Systems, Ltd. while IMoD provides an equitable share of the funding to the U.S. Finally, MDA contracts directly with WALES, Ltd for the Israeli System Architecture and Integration program.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW Program</i>
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<b>Product Development (\$ in Millions)</b>				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			
Arrow System Improvement Program - Arrow System Improvement Program (ASIP)	C/CPFF	Israel Aerospace Industries (IAI) : Israel	213.852	49.839		50.157	Dec 2015	4.469	Dec 2016	-		4.469	Continuing	Continuing	Continuing
Israeli Test Bed (ITB) - Israeli Test Bed	C/FFP	Elbit Systems : Israel	21.210	3.535		3.535	Oct 2015	3.535	Dec 2016	-		3.535	Continuing	Continuing	Continuing
Israeli Systems Architecture and Integration (ISA&I) - ISA&I	C/FFP	Wales LTD : Israel	14.232	2.827		2.827	Oct 2015	2.827	Dec 2016	-		2.827	Continuing	Continuing	Continuing
<b>Subtotal</b>			249.294	56.201		56.519		10.831		-		10.831	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW Program</i>
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<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	249.294	56.201	56.519	10.831	-	10.831	-	-	-

**Remarks**  
Contract cost reflect U.S. contribution only.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW 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
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2015	✦	✦	✦	✦																								
Israeli Test Bed Experiments FY 2015	✦	✦	✦	✦																								
Israeli Test Bed Exercise with Warfighter FY2015	✦	✦	✦	✦																								
Israeli Test Bed Human-Machine Interface Experiment with Warfighter FY2015	✦	✦	✦	✦																								
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2016					✦	✦	✦	✦																				
Israeli Test Bed Experiments FY 2016					✦	✦	✦	✦																				
Israeli Test Bed Exercise with Warfighter FY2016					✦	✦	✦	✦																				
Israeli Test Bed Human-Machine Interface Experiment with Warfighter FY2016					✦	✦	✦	✦																				
Israeli Test Bed Experiments FY 2017									✦	✦	✦	✦																
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2017									✦	✦	✦	✦																
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2018													✦	✦	✦	✦												
Israeli Test Bed Experiments FY 2018													✦	✦	✦	✦												
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2019																	✦	✦	✦	✦								
Israeli Test Bed Experiments FY 2019																	✦	✦	✦	✦								
Israeli Test Bed Experiments FY 2020																					✦	✦	✦	✦				
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2020																					✦	✦	✦	✦				
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2021																									✦	✦	✦	✦
Israeli Test Bed Experiments FY 2021																									✦	✦	✦	✦

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD26 / <i>Israeli ARROW Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2015	1	2015	4	2015
Israeli Test Bed Experiments FY 2015	1	2015	4	2015
Israeli Test Bed Exercise with Warfighter FY2015	1	2015	4	2015
Israeli Test Bed Human-Machine Interface Experiment with Warfighter FY2015	1	2015	4	2015
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2016	1	2016	4	2016
Israeli Test Bed Experiments FY 2016	1	2016	4	2016
Israeli Test Bed Exercise with Warfighter FY2016	1	2016	4	2016
Israeli Test Bed Human-Machine Interface Experiment with Warfighter FY2016	1	2016	4	2016
Israeli Test Bed Experiments FY 2017	1	2017	4	2017
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2017	1	2017	4	2017
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2018	1	2018	4	2018
Israeli Test Bed Experiments FY 2018	1	2018	4	2018
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2019	1	2019	4	2019
Israeli Test Bed Experiments FY 2019	1	2019	4	2019
Israeli Test Bed Experiments FY 2020	1	2020	4	2020
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2020	1	2020	4	2020
Israeli Test Bed Exercise to include Ground Test (GT) Support FY 2021	1	2021	4	2021
Israeli Test Bed Experiments FY 2021	1	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603913C / Israeli Cooperative Programs				<b>Project (Number/Name)</b> MD34 / Short Range Ballistic Missile Defense (SRBMD)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD34: Short Range Ballistic Missile Defense (SRBMD)	554.275	137.934	136.526	37.211	-	37.211	37.918	38.869	39.499	40.271	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

The goal of the Israeli Short Range Ballistic Missile Defense (SRBMD) program, also known as the David's Sling Weapon System (DSWS) is to provide an affordable SRBM, cruise missiles and large caliber rocket defense capability. The current Program Agreement utilizes Research, Development, Test, & Evaluation (RDT&E) funding to develop the capability against large caliber rockets, cruise missiles and short range ballistic missiles and procure material for Initial Lot Production (ILP). The DSWS is comprised of the Stunner Interceptor, Golden Almond Battle Management Center, the Multi-Mission Radar, Launch Site Controller and the Missile Firing Unit.

Under the U.S.-Israeli Project Agreement signed in September 2010, the DSWS Program is jointly managed by the U.S. Missile Defense Agency and the Israeli Missile Defense Organization. Responsibilities and cost share are specified in the Project Agreement. Development costs are equitably shared between the U.S. and Israel.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> SRBMD Program	137.934	136.526	37.211
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- Completed Initial Lot Production (ILP) delivery of first Battle Management Center.			
- Completed Block Two System Preliminary Design Review (PDR).			
- Conducted ground test and simulations to validate missile and system performance to complete four Knowledge points and provide data to assess subsystem and system design robustness.			
- Conducted 1 Block One system intercept test with production representative interceptor to validate the Block One system performance.			
<b>FY 2016 Plans:</b>			
-Deliver Initial Lot Production (ILP) Interceptors to the Israeli Air Force.			
-Conduct 1 Block One system intercept test with ILP Interceptor to demonstrate production stunner performance.			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Continue Block 2 Development and conduct Critical Design Review.</li> <li>-Complete remaining Block One Knowledge Points and conduct final Performance Design Review</li> <li>-Conduct ground test and simulations to validate missile and system performance and provide data to assess subsystem and system design robustness.</li> <li>-Conduct ILP Production Readiness Review</li> <li>-Conduct Test Preliminary Design Reviews for FY2017 Block One and Two Flight Tests</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Conduct 1 Block 2 System Intercept Test to demonstrate cruise missile defense performance</li> <li>-Deliver final Initial Lot Production (ILP) Interceptors to the Israeli Air Force</li> </ul>				
<b>Accomplishments/Planned Programs Subtotals</b>		137.934	136.526	37.211
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
<p>The Short Range Ballistic Missile Defense (SRBMD), also known as the David's Sling Weapon System (DSWS) Project Agreement under the Research, Development, Test and Evaluation (RDT&amp;E) Framework agreement between the U.S. and Israel creates a joint program office to manage this program. Missile Defense Agency (MDA) and the Israeli Ministry of Defense (IMoD) continue to implement management practices that allow for the more effective use of program management tools to ensure risk is adequately managed to include Knowledge Points that assess Israel's development progress. The DoD U.S. Israeli Cooperative Program Office jointly manages the SRBMD/DSWS program with IMoD to ensure that all systems are delivered in an effective manner, and meet the needs of the warfighter. The program is equitably funded between the U.S. and Israel. A portion of the Israeli cost share comes from non-financial contributions such as previously completed work prior to joint program initiation. Contracts are awarded by IMoD or MDA dependent on what is most advantageous to the Joint Governments. For the Stunner Interceptor, Rafael Advanced Systems (an Israeli company), subcontracts to Raytheon Missile Systems for Stunner interceptor components.</p>				
<b>E. Performance Metrics</b>				
N/A				

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / Israeli Cooperative Programs	<b>Project (Number/Name)</b> MD34 / Short Range Ballistic Missile Defense (SRBMD)
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<b>Product Development (\$ in Millions)</b>				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			
SRBMD Program - SRBMD Program	C/CPFF	Rafael : Israel	554.275	137.934		136.526	Dec 2015	37.211	Dec 2016	-		37.211	Continuing	Continuing	Continuing
<b>Subtotal</b>			554.275	137.934		136.526		37.211		-		37.211	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)</i>
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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			

**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
<b>Project Cost Totals</b>	554.275	137.934	136.526	37.211	-	37.211	-	-	-

**Remarks**  
Contract cost reflect U.S. contribution only.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)</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
System Flight Test #3 FY 2015	+	+	+	+																								
System Flight Test #4 FY 2016					+	+	+	+																				
System Flight Test #5 FY 2017									+	+	+	+																
System Flight Test #6 FY 2018													+	+	+	+												
System Flight Test #7 FY 2019																	+	+	+	+								
System Flight Test #8 FY 2020																					+	+	+	+				
System Flight Test #9 FY 2021																									+	+	+	+

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603913C / <i>Israeli Cooperative Programs</i>	<b>Project (Number/Name)</b> MD34 / <i>Short Range Ballistic Missile Defense (SRBMD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Flight Test #3 FY 2015	1	2015	4	2015
System Flight Test #4 FY 2016	1	2016	4	2016
System Flight Test #5 FY 2017	1	2017	4	2017
System Flight Test #6 FY 2018	1	2018	4	2018
System Flight Test #7 FY 2019	1	2019	4	2019
System Flight Test #8 FY 2020	1	2020	4	2020
System Flight Test #9 FY 2021	1	2021	4	2021

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> 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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>
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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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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
<b>Title:</b> Program Planning and Operations	109.986	98.160	97.780
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- 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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Developed and coordinated the IMTP Decision Memorandum in support of the Program Objective Memorandum 17 (POM 17) submission to OSD.</li> <li>- 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.</li> <li>- Executed ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, digital assessment, and international testing.</li> <li>- 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.</li> <li>- Established authority and maintained configuration control of the test baseline via the Test Baseline Working Group.</li> <li>- 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.</li> <li>- Executed duties as the Test &amp; Evaluation Standing Committee (TESC) Executive Secretary. Provided strategic technical planning support for the TESC.</li> <li>- Developed and implemented test policy, standards, directives, and procedures for creating unified BMD test processes.</li> <li>- Executed Flight Test Design Analysis (FTDA) processes ensuring proper pre-mission analysis and test designs are safe and sufficient to meet test objectives.</li> <li>- 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.</li> <li>- 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.</li> <li>- Updated and maintained the classified Test Resource Mission Planning-Tool (Classified), TRMP-T(C) database.</li> <li>- Coordinated budget planning and execution activities as well as manpower activities.</li> <li>- Inspired professional excellence and a diverse and professional workforce.</li> <li>- 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.</li> <li>- Managed the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services.</li> </ul> <p><b>FY 2016 Plans:</b></p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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 \$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"> <li>-Develop, update, and coordinate the Integrated Master Test Plan (IMTP), including MDA Test Baseline development, management and affordability.</li> <li>-Serve as the MDA Test Interface/Liaison with the Director, Operational Test and Evaluation (DOT&amp;E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD(DT&amp;E)); the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD); and the Operational Test Agency (OTA).</li> <li>-Provide strategic technical planning support for the Test and Evaluation Standing Committee (TESC).</li> <li>-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.</li> <li>-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.</li> <li>-Update and maintain the classified Test Resources Mission Planning Tool (TRMP-T) data base.</li> <li>-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.</li> <li>-Manage the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services.</li> <li>-Utilize the Program Integration Center for analytical needs in support of Flight and Ground Test Activities.</li> </ul> <p><b>FY 2017 Plans:</b> 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"> <li>- Develop, update, and coordinate the IMTP, including MDA Test Baseline development, management and affordability.</li> <li>- Execute Flight Test Design Analysis ensuring test designs are safe and sufficient to meet test objectives.</li> <li>- Execute ground test planning activities supporting MDA test requirements and priorities to include test design, test integration, digital assessment, and international testing.</li> <li>- 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.</li> <li>- Coordinate budget planning and execution activities as well as manpower activities for test planning.</li> <li>- Provide strategic technical planning support for the Test and Evaluation Standing Committee (TESC).</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Serve as the MDA Test Interface/Liaison with the Director, Operational Test and Evaluation (DOT&amp;E); the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DASD (DT&amp;E)); the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD); and the BMDS Operational Test Agency (OTA).</li> <li>- Establish authority and maintain configuration control of the test baseline.</li> <li>- Review BMDS component programs' content on a quarterly basis to ensure consistency with the approved IMTP.</li> <li>- 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).</li> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- Manage the MDA Data Center Program and its library, operations, and infrastructure providing centralized data management, archival, and distribution services.</li> <li>- Utilize the Program Integration Center for analytical needs in support of Flight and Ground Test Activities.</li> </ul>			
<p><b>Title:</b> Flight Test</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Flight Test Execution program solely reflects the Integrated Master Test Plan (IMTP) cost model.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- 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).</li> <li>-- Completed test planning for two operational tests (FTO-02 E1 and FTO-02 E2).</li> <li>-- 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.</li> </ul>	54.665 -	2.697 -	23.686 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

**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 &amp; 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><b>FY 2016 Plans:</b> 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>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> <li>- 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).</li> <li>- 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).</li> <li>- 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).</li> <li>- 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).</li> <li>- 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</li> <li>- Complete planning and defer execution of FEV-01 until 4QFY 2017, a demonstration of Launch on Remote objective with Aegis BMD engaging a MRBM.</li> <li>- 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.</li> <li>- Develop flight test training requirements for Test Directors and other console operators.</li> <li>- Identify mission risks, and implement mitigation practices as required to ensure safe &amp; successful test outcomes.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Provide Failure Response Team and ensures implementation of response plan. Captures lessons learned for process improvement.</li> <li>- Train test personnel and track/maintain training records for all test personnel.</li> <li>- Complete test planning for BMDS Flight Test events as shown in Exhibit R-4 Schedule.</li> <li>- Identify and execute focused investments in the BMDS test infrastructure.</li> <li>- 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.</li> <li>- 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.</li> <li>- Identify, monitor and develop burn down plans for target system mission risks for all FY 2016 BMDS missions as defined in the IMTP.</li> </ul> <p><b>FY 2017 Plans:</b> 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"> <li>- 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).</li> <li>- 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).</li> <li>- 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.</li> <li>- Complete planning and successfully execute FEV-01, a demonstration of Launch on Remote objective with Aegis BMD engaging a MRBM.</li> <li>- 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).</li> <li>- Complete planning and successfully execute FTT-15, a Terminal High Altitude Area Defense (THAAD) TH 3.0.0 endo-atmospheric engagement of a MRBM.</li> <li>- Complete planning and successfully execute FTX-24, an Aegis BL 9.C2 simulated engagement of a separating Short Range ballistic Missile (SRBM).</li> <li>- Complete planning for successful execution of FTM-24, Aegis BL 9.C1 SM-3 Blk IB Threat Upgrade (TU) engagement of a MRBM.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- 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).</li> <li>- 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.</li> <li>- Provide logistical support packages at Wake Island for FTG-15, FTM-29, and FTG-11.</li> <li>- Develop flight test training requirements for Test Directors and other console operators.</li> <li>- Identify mission risks, and implement mitigation practices as required to ensure safe &amp; successful test outcomes.</li> <li>- Provide Failure Response Team and ensure implementation of response plan. Capture lessons learned for process improvement.</li> <li>- Train test personnel and track/maintain training records for all test personnel.</li> <li>- Complete test planning for BMDS Flight Test events as shown in Exhibit R-4 Schedule.</li> <li>- Identify and execute focused investments in the BMDS test infrastructure.</li> <li>- 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.</li> <li>- 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.</li> <li>- Identify, monitor and develop burn down plans for target system mission risks for all FY 2017 BMDS missions as defined in the IMTP.</li> </ul>			
<p><b>Title:</b> Ground Test</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> The Ground Test Execution program solely reflects the Integrated Master Test Plan (IMTP) cost model.</p> <p><b>FY 2015 Accomplishments:</b> Completed the following baselined Ground Tests reflected in the Integrated Master Test Plan (IMTP) cost model:</p> <ul style="list-style-type: none"> <li>- GTD-04e Part 2 (BMDS Distributed Ground Test)</li> <li>- GTI-06 Part 1 (BMDS Integrated Ground Test)</li> <li>- GTI-06 Part 3</li> <li>- FTO-02 Event 1 System Pre-mission Test (SPMT)</li> <li>- FTO-02 Event 2 SPMT</li> <li>- FTO-02 Event 1a SPMT</li> </ul> <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>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- GTD-06 Part 1</li> <li>- GTI-ISR (16)</li> <li>- GTI-06 Part 2</li> <li>- CTV-02+ SPMT</li> </ul> <p>Continued the following ongoing efforts listed under FY 2015 plans:</p> <ul style="list-style-type: none"> <li>- Received GT-06 Campaign Re-plan approval in 1QFY2015</li> <li>- Facilitated strategic planning of ground test campaigns in support of IMTP</li> <li>- Developed strategies for Ground Test International test execution</li> <li>- Updated IMTP cost model estimates with DOC for Non-MDA elements for inclusion in IMTP 17.0</li> <li>- Provided input to MDA modeling and simulation development (e.g. Objective Simulation Framework)</li> <li>- Implemented Cyber testing in ground test events</li> <li>- Fostered the development of Cyber Test Plans and Strategies</li> <li>- Developed process improvement initiatives to include System Test Observation (STO), Executive Review Minutes, Lessons Learned and Test Execution Risk Management Standard Operating Procedures</li> <li>- Championed a GTI-07a Early Integration testing phase as a GTI-07a risk reduction initiative</li> <li>- 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</li> <li>- Continued the development of training requirements for ground test MDs, SMMs and MTDs</li> </ul> <p><b>FY 2016 Plans:</b> 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"> <li>- Complete the GT-06 campaign in support of the Technical Capability Declaration (TCD) of European Phased Adaptive Approach (EPAA) Phase II</li> <li>- Incorporate new cybersecurity testing requirements into the Ballistic Missile Defense System (BMDS) ground tests</li> <li>- Develop plan for implementation of cybersecurity testing objectives to include adversarial actors in the GT-07a campaign</li> <li>- Coordinate emerging requirements for ground test event planning, design, and execution</li> <li>- Support ground test strategic planning in development of the Integrated Master Test Plan</li> <li>- 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.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- 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</li> <li>- 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</li> <li>- Execute BMDS Ground Tests as shown in Exhibit R-4 schedule</li> <li>- Ensure capabilities are tested within respective test venues</li> </ul> <p><b>FY 2017 Plans:</b> 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"> <li>- Continue to incorporate cybersecurity testing requirements into the BMDS ground tests.</li> <li>- Complete cybersecurity red team testing in GTI-07a (BMDS Integrated Ground Test) event.</li> <li>- Coordinate emerging requirements for ground test event planning, design, and execution.</li> <li>- Support ground test strategic planning in development of the IMTP.</li> <li>- Work with international partners (to include National Treaty Organization (NATO), Israel, etc.) to incorporate their testing requirements into the DoD BMDS ground testing.</li> <li>- 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</li> <li>- 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.</li> <li>- Execute BMDS Ground Tests as shown in Exhibit R-4 schedule.</li> <li>- Ensure capabilities are tested within appropriate test venues.</li> </ul>			
<p><b>Title:</b> Test Resources</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued deferral of upgrades to the flight test instrumentation and development of hardware-in-the-loop (HWIL) equipment.</li> <li>- Continued deferral of tech refresh and upgrades to hardware-in-the-loop (HWIL) Labs and communication test assets</li> <li>- Continued deferral of non-critical maintenance and spares for hardware-in-the-loop (HWIL) Labs and communication test assets</li> <li>- Completed build-up of Wake Island infrastructure necessary to conduct FTO-02.</li> </ul>	137.769	135.496	120.725
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>
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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"> <li>- 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</li> <li>- Sea Based Systems (SBS) continued sustainment of test instrumentation ships, PACIFIC COLLECTOR and PACIFIC TRACKER, and associated telemetry and radar systems</li> <li>- SBS completion of the Mobile Launch Platform program termination and disposal of associated property to include ex-USS TRIPOLI and NARRAGANSETT</li> <li>- 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.</li> <li>- Completed a Business Case Analysis to migrate Airborne Sensors to newer platforms</li> <li>- Took possession of the new 4.6M transportable C/X band antenna</li> <li>- Built and tested Sea Based Systems XTR-1 Main Radar Computer obsolescence replacement</li> <li>- Completed the Sea Based Systems XTR-1 Cooling System repair</li> <li>- Continued working on the XTR-1 operating system improvement (VxWorks to Linux)</li> <li>- Continued the Software and Hardware efforts to replace VxWorks-based subsystems with Linux-based subsystems</li> <li>- 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.</li> <li>- 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.</li> <li>- Continued to work a Business Case Analysis (BCA) with DOI for a consolidated GT capability fostering operational improvements and potential relocation onto Redstone Arsenal.</li> <li>- 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.</li> <li>- Continued to support BMDS cybersecurity testing utilizing HWIL labs.</li> <li>- Continued deployment for Directorate of Test Support (DTSS) to provide cyber Host Based Security System (HBSS) for HWIL Labs and remote sites.</li> <li>- 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.</li> </ul> <p><b>FY 2016 Plans:</b> 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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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"> <li>- 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.</li> <li>- Establish and maintain Agency test policies and test functional area organizational accountability, contracts, and budgets.</li> <li>- Ground Test Resource Managers (TRMs) continue to complement test execution teams by managing the scheduling, funding, and management of ground test resource assets.</li> <li>- 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.</li> <li>- 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,</li> <li>- 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.</li> <li>- 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.</li> <li>- Continue sustainment of the flight test infrastructure at the Missile Defense Integrated Operations Center (MDIOC).</li> <li>- Maintain accreditation for the Transportable Telemetry Systems (TTS), Pacific Collector Range Safety System (PCRSS), and the Flight Test Communications Network (FTCN).</li> <li>- Maintain a dedicated cybersecurity program to maintain accreditation of the DTR flight test instrumentation</li> <li>- Maintain Sea Based Systems (SBS), including test instrumentation ships, Pacific Collector and Pacific Tracker, and associated telemetry and radar systems</li> <li>- Finalize Advanced Research Center (ARC) study for operational improvements and potential relocation onto Redstone Arsenal.</li> <li>- 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.</li> <li>- Discontinued MLP &amp; Narragansett use in FY 2015.</li> <li>- MLP &amp; 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.</li> <li>- Initiate the Sea Based Systems X-Band Transportable Radar-1(XTR-1) Cooling System replacement.</li> <li>- Replace obsolete International Marine/Maritime Satellite (INMARSAT) with Swift Broadband solution on Pacific Collector.</li> <li>- Replace Catamaran vessels that are required for Meck Island Operations and Maintenance (O&amp;M) and mission support.</li> <li>- Continue study for migration of Airborne Sensors airframes to newer platforms.</li> </ul> <p><b>FY 2017 Plans:</b></p>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<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"> <li>- 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.</li> <li>- Establish and maintain Agency test policies and test functional area organizational accountability, contracts, and budgets.</li> <li>- Maintain a dedicated cybersecurity program to maintain accreditation of the DTR flight test instrumentation and ground test hardware and software.</li> <li>- Continue sustainment of the flight test infrastructure at the Missile Defense Integrated Operations Center (MDIOC).</li> <li>- 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.</li> <li>- 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.</li> <li>- Maintain MDA-unique ground test facilities to support BMDS ground tests, including basic ground test control as well as some element representations.</li> <li>- 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.</li> <li>- 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.</li> <li>- Continue deferral for migration of some Airborne Sensors airframes to newer platforms. Phased operations and maintenance approach beginning in FY 2017.</li> <li>- Continue deferral of required maintenance of airborne sensor platforms.</li> <li>- Conduct Sustainment Restoration and Moderation (SRM) on BMDS support facilities on Kwajalein and Meck Island.</li> <li>- 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.</li> <li>- Evaluate the condition of the Meck Island temporary housing for removal or storage for future test events.</li> <li>- Reconstitute the COMM01 shelter and integrate with existing transportable 4.9M antenna.</li> <li>- Conduct the tech refresh for the MDIOC Orion voice communication switch and intercom panels.</li> <li>- Maintain land-based Telemetry Systems, including TTS-3 thru 5.</li> <li>- Continue deferral of Transportable Telemetry System receiver obsolescence and IA upgrades.</li> <li>- Continue deferral of TTS mission control room replacement on Pacific Tracker.</li> </ul>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Continue deferral of C-band upgrade for TTS 1, 2, 3 and 5.</li> <li>- Continue deferral of permanent installation of Cast Glance data relay system on the Pacific Collector.</li> <li>- Defer weather system support and O&amp;M on the Pacific Collector.</li> <li>- Perform limited PCRSS operation and maintenance (O&amp;M) to include spares management, hardware repair, and training to maintain system readiness.</li> <li>- Execute a UMC project to construct a Flight Test Communications Facility.</li> <li>- Execute several mission support facility modernization projects, including work on mission critical Missile Assembly Buildings and test equipment storage facilities.</li> <li>- Assess currently degraded lodging capability on Wake Island and develop path forward to modernize/procure/construct housing.</li> <li>- Assist in performing Wake upgrades to support 14 test events across the IMTP.</li> <li>- Defer PCRSS critical overhauls or major maintenance work.</li> <li>- Utilize Ground Test Resource Managers to complement test execution teams by managing the scheduling, funding, and management of ground test resource assets.</li> <li>- 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.</li> <li>- 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.</li> <li>- Continue sustainment of the ground test infrastructure at the MDIOC.</li> <li>- Support planning for operational improvements and potential relocation of the Advanced Research Center (ARC) onto Redstone Arsenal.</li> <li>- 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.</li> <li>- Conduct re-compete of the ARC contract with a potential award in FY 2018.</li> <li>- Continue to provide Technical and Managerial expertise to support MDA Element Developmental Test Technology activities.</li> </ul>				
<b>Title:</b> Engineering and Test Analysis		26.944	26.837	27.805
		<b>Articles:</b>	-	-
<b>Description:</b> N/A				
<b>FY 2015 Accomplishments:</b>				
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"> <li>- Designed test architecture, defined target requirements, and generated appropriate scenarios for ground and flight tests.</li> </ul>				

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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"> <li>- Defined test objectives and assessment criteria for all System level test events to anchor Modeling and Simulation (M&amp;S) and address data collection requirements.</li> <li>- Performed System-level and interoperability analysis.</li> <li>- Participated in major test reviews.</li> <li>- Generated BMDS test observations and coordinated associated BMDS Discrepancy Reports (BDR) within the Failure Reporting, Analysis, and Corrective Action System (FRACAS).</li> <li>- Produced the threat data required to enable BMDS ground tests, flight tests and performance assessment.</li> <li>- Utilized models and simulations (M&amp;S) for pre-test assessment and post-test review, as well as M&amp;S updates.</li> <li>- Provided Systems Engineering and Integration (SE&amp;I) test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements.</li> <li>- Analyzed test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data.</li> <li>- Developed and documented long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration</li> <li>- 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.</li> <li>- Populated the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments.</li> <li>- 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)</li> <li>- Developed and provided infrastructure, software, and associated MDA/IA compliance for the Rapid Scenario Prototype (RASP) capability</li> <li>- Developed and optimized candidate ground test scenarios and produced the associated scenario data packages</li> <li>- Developed and established hardware-in-the-loop (HWIL) M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provided modeling and technical analysis support during Combatant Command (COCOM) wargames and exercises.</li> <li>- Developed, delivered, and presented the Quick Look Brief (QLB), Executive Quick Look Brief (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR).</li> <li>- Developed and established Hardware-in-the-loop (HWIL) M&amp;S Integration Test Cases for flight and ground tests.</li> <li>- Conducted M&amp;S HWIL Integration Bench Mark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> <li>- Integrated, tested, functionally qualified, and delivered end-to-end BMDS simulations supporting ground test missions.</li> </ul> <p><b>FY 2016 Plans:</b></p>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<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"> <li>- Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests.</li> <li>- 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&amp;S) and address data collection requirements.</li> <li>- Perform System-level and interoperability analysis.</li> <li>- Develop inputs to the Test Analysis Report.</li> <li>- Participate in major test reviews, analysis team meetings, and mission planning events.</li> <li>- Generate BMDS test observations and coordinate associated BMDS Discrepancy Reports (BDR) within the Failure Reporting, Analysis, and Corrective Action System (FRACAS).</li> <li>- Produce the threat data required to enable BMDS ground tests, flight tests and performance assessment.</li> <li>- Utilize models and simulations (M&amp;S) for pre-test assessment and post-test review, as well as M&amp;S updates.</li> <li>- Provide Systems Engineering and Integration (SE&amp;I) test configuration management; risk assessment; and anomaly/deficiency review, assessment and closure to support data gathering for BMDS hardware/software reliability improvements.</li> <li>- Analyze test results to identify shortfalls so that objectives can be reassigned to future events to provide required verification and model validation data.</li> <li>- Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration.</li> <li>- 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.</li> <li>- Populate the MARS database with data from the most recently completed tests to support as-built analysis and capability assessments.</li> <li>- 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).</li> <li>- Develop and provide infrastructure, software, and associated MDA/IA compliance for the RAPid Scenario Prototype (RASP) capability.</li> <li>- Develop and optimize candidate ground test scenarios and produce the associated scenario data packages.</li> <li>- Develop and establish hardware-in-the-loop (HWIL) M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provide modeling and technical analysis support during Combatant Command (COCOM) wargames and exercises.</li> <li>- Develop, deliver, and present the Quick Look Brief (QLB), Mission Data Review (MDR), and Executive MDR (EMDR).</li> <li>- Conduct M&amp;S HWIL Integration Bench Mark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> <li>- Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions.</li> </ul>			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>FY 2016 reduction reflects partial workload transfer to Enabling PE 0603890C, Budget Project MT23 (Enabling Test).</p> <p><b>FY 2017 Plans:</b></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"> <li>- Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests.</li> <li>- 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&amp;S and address data collection requirements.</li> <li>- Assess the feasibility of Flight Test Design Analysis results to meet test objectives, and provide inputs to Approved Test Configuration packages.</li> <li>- Perform System-level and interoperability analyses.</li> <li>- Lead test requirements and analysis reviews, and participate in major test reviews, analysis team meetings, and mission planning events.</li> <li>- Utilize M&amp;S for pre-test assessment and post-test review; update M&amp;S with flight and ground test data.</li> <li>- 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.</li> <li>- 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.</li> <li>- Coordinate with BMDS Operational Test Agency to address OTA issue sheets allocated to test events.</li> <li>- Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration.</li> <li>- 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).</li> <li>- Develop and provide infrastructure, software, and associated MDA/IA compliance for the RApid Scenario Prototype (RASP) capability.</li> <li>- Develop and optimize candidate ground test scenarios and produce the associated scenario data packages.</li> <li>- Develop operational overlay scenarios to support flight test planning and design.</li> <li>- Develop and establish hardware-in-the-loop (HWIL) M&amp;S integration test cases for ground and flight tests (pre-post mission).</li> <li>- Provide modeling and technical analysis support during Combatant Command wargames and exercises.</li> <li>- Integrate non-MDA element models and simulations for participation in IMTP events.</li> <li>- Develop, deliver, and present the Quick Look Brief (QLB), Mission Data Review (MDR), and Executive MDR (EMDR).</li> <li>- Conduct M&amp;S HWIL Integration Benchmark testing for ground tests by integrating the BMDS HWIL M&amp;S framework with MDA and non-MDA Elements into the test event BMDS architecture.</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions.			
<b>Accomplishments/Planned Programs Subtotals</b>	334.185	267.225	277.851

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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 - 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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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2017 Missile Defense Agency</b>											<b>Date: February 2016</b>				
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>					<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>					

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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
<b>Subtotal</b>			998.832	334.185		267.225		277.851		-		277.851	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	998.832	334.185	267.225	277.851	-	277.851	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MT04 / <i>BMDS Test Program</i>

Significant Event Complete ▲    Milestone Decision Complete ★    Element Test Complete ◆    System Level Test Complete ●    Complete Activity Planned Activity ✦  
 Significant Event Planned △    Milestone Decision Planned ☆    Element Test Planned ◇    System Level Test Planned ○

	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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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

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

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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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
<b>Title:</b> Network / System Certification and Accreditation (C&A)	1.141	2.450	2.479
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- 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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MC04 / <i>Cyber Operations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<p>- Developed DT DIACAP certification and accreditation packages.</p> <p><b>FY 2016 Plans:</b> 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><b>FY 2017 Plans:</b> 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>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.141	2.450	2.479

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MC04 / <i>Cyber Operations</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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
<b>Subtotal</b>			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
<b>Project Cost Totals</b>	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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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
<b>Title:</b> Program Wide Support	19.088	12.065	13.111
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	19.088	12.065	13.111

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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
<b>Subtotal</b>			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
<b>Project Cost Totals</b>	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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603914C / <i>Ballistic Missile Defense Test</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</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	1,338.543	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing
MT05: <i>BMDS Targets Program</i>	1,302.171	422.612	504.989	539.837	-	539.837	448.238	409.425	431.477	438.049	Continuing	Continuing
MD40: <i>Program Wide Support</i>	36.372	24.812	22.574	23.739	-	23.739	22.821	21.924	23.353	24.380	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Increase from FY 2016 to FY 2017 is due to additional target requirements consistent with the Integrated Master Test Plan (IMTP).

**A. Mission Description and Budget Item Justification**

The Ballistic Missile Defense System (BMDS) Targets Program provides centrally managed targets and countermeasures development and procurement for a cost effective, integrated system-level approach to BMDS testing. The Targets Program has realized past and future savings by centralized competition and management of targets and countermeasures using efficient acquisition strategies and lot buys resulting in economies of scale. Based on engineering assessments of threat intelligence data, the BMDS Targets Program develops, builds, and supports the launch of Short Range Ballistic Missile (SRBM: Less than 1000 Kilometer range) targets, Medium Range Ballistic Missile (MRBM: 1000-3000 Kilometer Range) targets, Intermediate Range Ballistic Missile (IRBM: 3000-5500 Kilometer Range) targets, Intercontinental Ballistic Missile (ICBM: Greater than 5500 Kilometer range) targets, and Multi-Class Components to test, verify, and validate the performance of the BMDS against threats. MDA's BMDS Targets Program provides an economical and reliable inventory of targets which are representative of feasible future threats and support demonstration of the capability of the evolving layered missile defense system in a simultaneous test and operations threat environment.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	455.068	513.256	585.727	-	585.727
Current President's Budget	447.424	527.563	563.576	-	563.576
Total Adjustments	-7.644	14.307	-22.151	-	-22.151
• Congressional General Reductions	0.000	-0.431			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	14.738			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.028	0.000			
• SBIR/STTR Transfer	-7.616	0.000			
• Other Adjustment	0.000	0.000	-22.151	-	-22.151

**Change Summary Explanation**

The FY 2017 decrease reflects realignment of Department of Defense priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>				<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT05: <i>BMDS Targets Program</i>	1,302.171	422.612	504.989	539.837	-	539.837	448.238	409.425	431.477	438.049	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**  
All Budget Project MT05 funds support Ballistic Missile Defense System (BMDS)-Level Testing.

**A. Mission Description and Budget Item Justification**

The mission of the MDA BMDS Targets program is to provide an economical and reliable inventory of targets that are representative of feasible future threats. These targets enable demonstration of the evolving layered missile defense system capability in operationally realistic scenarios. The BMDS Targets Program develops and acquires three target types across four target classes. The classes include: Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), Intermediate Range Ballistic Missiles (IRBM), and Intercontinental Ballistic Missiles (ICBM). The target types (Type 1-3) designate the complexity of the target within its class. Type-1 targets are simple baseline configurations. Type-2 targets have increased capability or complexity. Type-3 targets have unique configurations. Target requirements are derived from the Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) that are documented in the Agency's Integrated Master Test Plan.

The BMDS Targets Program develops and provides Modified Ballistic Re-Entry Vehicles (MBRV) and Countermeasures that can be used across the spectrum of target types and classes. The BMDS Targets Program provides target digital models that enable MDA weapon system program offices to simulate end to end sensor and interceptor performance during pre-mission analysis. The BMDS Targets Program also provides maintenance, aging surveillance, refurbishment, and routine testing of government furnished equipment boosters and target components.

The BMDS Targets Program carefully plans the year of execution to assure the best use of appropriated funds. However, the BMDS Targets Program must be flexible in its execution of the program in order to respond to emerging real world threats or changes in the intelligence community estimates of when a threat will be deployed. The targets program must also work with BMDS systems engineers on a continuing basis to align the targets program to the BMDS capabilities as reflected in MDA's Integrated Master Test Plan (IMTP). The BMDS Targets Program makes every effort to reduce instability in contracts, production base and budget while managing in this dynamic work environment.

The BMDS Targets Program develops and builds targets and countermeasures at multiple locations including: Courtland, AL; Orlando, FL; Huntsville, AL; and Chandler, AZ. Storage and maintenance facilities are also located throughout the country including: Huntsville, AL; White Sands, NM; Ogden, UT; Tooele, UT; Cape Canaveral Air Force Station, FL, and Courtland, AL.

The BMDS Targets Program consists of four major areas: Consumables, Program Planning and Operations, Resources, and Flight Test Execution.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Title:</b> Consumables - Short Range Ballistic Missiles (SRBM)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Consumables include SRBM target hardware development and manufacturing. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program.</p> <p>Target development includes non-recurring engineering, Modified Ballistic Re-Entry Vehicles, Countermeasures, and launch support equipment for BMDS flight testing. Target development provides air, sea, and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, and characterization. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. Through the development program, BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>Target manufacturing includes building targets and target components that are required to execute the BMDS IMTP. Manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Aegis Readiness Assessment Vehicle-B (ARAV-B) - delivered Ship Sets 11, 12, and 13 to support a successful flight test in the second quarter FY 2015</li> <li>-ARAV-G - initiated non-recurring engineering development efforts for booster hardware and the re-entry vehicle (RV) nose tip; this will be the first guided ARAV target</li> <li>-Terrier Orion - delivered Ship Sets 1-4 in fourth quarter FY 2015 to support successful flight tests in fourth quarter FY 2015 (Ship Set 2) and first quarter FY 2016 (Ship Sets 1, 3, and 4); delivered Ship Set 5 to inventory</li> <li>-Short Range Air-Launched Target (SRALT) - completed qualification testing and delivered Ship Set 5 to support pre-ship readiness review and flight test in FY 2016</li> <li>-Foreign Materiel Acquisition-1 (FMA-1) - completed qualification testing and delivered Ship Set 15 to support a flight test in FY 2016</li> </ul> <p><b>FY 2016 Plans:</b></p> <p>Increase is due to the increased non-recurring engineering and initial hardware purchases for the ARAV-G target, and the initiation of the non-recurring engineering efforts for the Juno target.</p>	18.266	31.109	29.956
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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Aegis Readiness Assessment Vehicle-G (ARAV-G) - continue non-recurring engineering development efforts for booster hardware and the re-entry vehicle (RV) nose tip; initiate manufacturing of Ship Sets 1 and 2 to support pre-ship readiness reviews in FY 2017 (Ship Set 1) and FY 2018 (Ship Set 2)</p> <p>-Terrier, Terrier, Oriole-Extended Vehicle (TTO-E) - deliver Ship Sets 1, 3, and 4 to support pre-ship readiness reviews in FY 2016 (Ship Set 1) and FY 2017 (Ship Sets 3 and 4) and flight tests in FY 2016 (Ship Set 1) and FY 2017 (Ship Sets 3 and 4)</p> <p>-Juno - initiate non-recurring engineering development/modification efforts to meet test requirements for flight test in FY 2019</p> <p>-Develop and manufacture additional SRBMs, MBRVs, and Countermeasures, as required by the BMDS IMTP</p> <p><b>FY 2017 Plans:</b> Decrease is due to the completion of non-recurring engineering efforts for the ARAV-G target.</p> <p>-Aegis Readiness Assessment Vehicle-G (ARAV-G) - deliver Ship Set 1 to support pre-ship readiness review and flight test in FY 2017, continue manufacturing of Ship Set 2 to support pre-ship readiness review and flight test in FY 2018</p> <p>-Juno - continue non-recurring engineering development efforts; initiate hardware purchases for Ship Set 3 to support a pre-ship readiness review in FY 2018 and flight test in FY 2019</p> <p>-Develop and manufacture additional SRBMs, MBRVs, and Countermeasures, as required by the BMDS IMTP</p>				
<p><b>Title:</b> Consumables - Medium Range Ballistic Missiles (MRBM)</p> <p><b>Description:</b> Consumables include MRBM target hardware development and manufacturing. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program.</p> <p>Target development includes non-recurring engineering, MBRVs, Countermeasures, and launch support equipment for BMDS flight testing. Target development provides air, sea, and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, and characterization. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. The BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>Target manufacturing includes the build of targets and target components that are required to execute the BMDS IMTP. Manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p>		95.265	115.013	138.654
		<b>Articles:</b>	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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Starting in FY 2017, Modified Ballistic Re-Entry Vehicle-7 (MBRV-7) efforts are being transferred to this section from the Consumables - Multi-Class section.

***FY 2015 Accomplishments:***

- Extended Medium Range Ballistic Missile (eMRBM) - completed assembly, integration and test of Ship Set 1 to support flight test in FY 2015
- MRBM Type 3 (MRBM T3) - initiated motor delivery and integration in late FY 2015 for Ship Sets 2-4 to support pre-ship readiness reviews in FY 2016 (Ship Set 3 and 4) and FY 2017 (Ship Set 2)
- MRBM Type 3 Configuration 2 (MRBM T3C2) - continued source selection activities for three units (MRBM T3 Ship Sets 5-7)
- Modified Ballistic Re-entry Vehicle-5 (MBRV-5) - delivered Ship Set 2 to inventory to support a flight test in FY 2018; continued manufacturing of Ship Sets 3 and 4 to support flight tests in FY 2016 (Ship Set 3), FY 2017 (Ship Set 4)
- MRBM T1/T2 - continued non-recurring engineering efforts; continued manufacturing of Ship Set 1 to support first target acceptance review in FY 2017
- Extended Long Range Air Launch Target (E-LRALT) - initiated manufacture of Ship Set 2 to support pre-ship readiness review in FY 2017

***FY 2016 Plans:***

- Increase is due to a full year of Medium Range Ballistic Missile T3C2 effort
- MRBM Type 3 (MRBM T3) - deliver Ship Sets 3 and 4 to support pre-ship readiness reviews in FY 2016 and flight tests in FY 2016; continue manufacturing of Ship Set 2 to support a pre-ship readiness review in FY 2017
  - MRBM Type 3 Configuration 2 (MRBM T3C2) - initiate non-recurring engineering design and development of MRBM T3C2; initiate manufacture of Ship Set 5 for delivery in FY 2018
  - Modified Ballistic Re-entry Vehicle-5 (MBRV-5) - implement Phase II effort for MRBM T3/MBRV-5 Program; deliver Ship Sets 3 and 4 to support flight tests in FY 2016; continue manufacturing Ship Set 2 to support a flight test in FY 2018
  - MRBM T1/T2 - continue non-recurring engineering efforts; continue manufacturing of Ship Set 1 to support first target acceptance review in FY 2017 and pre-ship readiness review in FY 2019; initiate long lead purchase and manufacture of Ship Sets 2-6 to support pre-ship readiness reviews in FY 2020 (Ship Set 2), FY 2021 (Ship Sets 3 and 4), FY 2022 (Ship Set 5), and FY 2023 (Ship Set 6)
  - Extended Long Range Air Launch Target (E-LRALT) - complete qualification testing and prepare Ship Set 2 for delivery to support a planned flight test in FY 2017
  - Develop and manufacture additional MRBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP

***FY 2017 Plans:***



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Increase is due transfer of funds previously captured in the Consumables - Multi-Class section for the MRBM costs related to the Modified Ballistic Re-Entry Vehicle-7 (MBRV-7) effort and hardware purchases for the Medium Range Ballistic Missile T3C2.</p> <p>-MRBM Type 3 (MRBM T3) - deliver Ship Set 2 to support a pre-ship readiness review in FY 2017</p> <p>-MRBM Type 3 Configuration 2 (MRBM T3C2) - continue non-recurring engineering design and development of MRBM T3C2; continue manufacturing Ship Set 5 for delivery in FY 2018; initiate manufacturing of Ship Set 6 for delivery in FY 2019</p> <p>-MBRV-7 - continue manufacturing Ship Sets 6-9 (4 MBRVs) to support Flight Test Missions in FY 2018, FY 2020, and FY 2021; additional MBRV-7s are needed to meet IMTP requirements and the Government is competing the contract, the Request for Information (RFI) was released to the public in 2015</p> <p>-MRBM T1/T2 - continue non-recurring engineering efforts; continue manufacturing Ship Set 1 to support first target acceptance review in FY 2017 and pre-ship readiness review in FY 2019; continue manufacturing Ship Sets 2-6 to support pre-ship readiness reviews in FY 2020 (Ship Set 2), FY 2021 (Ship Sets 3 and 4), FY 2022 (Ship Set 5), and FY 2023 (Ship Set 6)</p> <p>-Extended Long Range Air Launch Target (E-LRALT) - deliver Ship Set 2 to support pre-ship readiness review and flight test in FY 2017</p> <p>-Develop and manufacture additional MRBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP</p>			
<p><b>Title:</b> Consumables - Intermediate Range Ballistic Missiles (IRBM)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Consumables include IRBM target hardware development and manufacturing. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program.</p> <p>IRBM target development includes non-recurring engineering, MBRVs, Countermeasures, and launch support equipment for BMDS flight testing. Target development provides air, sea, and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, and characterization. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. Through the development program, BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>IRBM target manufacturing includes the build of targets and target components that are required to execute the BMDS IMTP. Manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p>	100.800	92.330	141.986
	-	-	-

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Starting in FY 2017, Modified Ballistic Re-Entry Vehicle-8 (MBRV-8), MBRV-8 Characterization, and Countermeasures efforts associated with the IRBM are being transferred to this section from the Consumables - Multi-Class section.</p> <p><b>FY 2015 Accomplishments:</b> -IRBM T1/T2 - delivered Ship Sets 1 and 3 to support pre-ship readiness reviews in FY 2015; continued progress on production and missionization of Ship Sets 2 and 4 for delivery and pre-ship readiness reviews in FY 2016 (Ship Set 4) and FY 2017 (Ship Set 2). Initiated production of Ship Sets 5-14 to support pre-ship readiness reviews in FY 2017 (Ship Set 5), FY 2018 (Ship Sets 6-9), FY 2019 (Ship Sets 10-13), and FY 2020 (Ship Set 14). Delivered Countermeasure hardware to support the CTV-02+ Flight Test in FY 2016.</p> <p><b>FY 2016 Plans:</b> Decrease is due to completion of non-recurring engineering associated with the IRBM T1/T2 target.</p> <p>-IRBM T1/T2 - deliver Ship Set 4 to support pre-ship readiness review in FY 2016; continue manufacturing and integration of Ship Sets 2 and 5-14 to support pre-ship readiness reviews in FY 2017 (Ship Sets 2 and 5), FY 2018 (Ship Sets 6-9), FY 2019 (Ship Sets 10-13), and FY 2020 (Ship Set 14); initiate production of Ship Sets 15-16 to support pre-ship readiness reviews in FY 2021 -Develop and manufacture additional IRBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP</p> <p><b>FY 2017 Plans:</b> Increase is due transfer of funds previously captured in the Consumables - Multi-Class section for the IRBM costs related to the MBRV-8, MBRV-8 Characterization, and Countermeasures efforts. Additionally, FY 2017 hardware purchases for IRBM T1/T2 Ship Sets 13-16 contributed to the increase over FY 2016.</p> <p>-IRBM T1/T2 - deliver Ship Sets 2 and 5 to support pre-ship readiness reviews and flight tests in FY 2017; continue manufacturing and integration of Ship Sets 6-16 to support pre-ship readiness reviews in FY 2018 (Ship Sets 6-9), FY 2019 (Ship Sets 10-13), FY 2020 (Ship Set 14), and FY 2021 (Ship Sets 15 and 16) -MBRV-8 - deliver Ship Set 2 to support a flight test in FY 2017 and continue manufacturing Ship Sets 4-7 to support flight tests in FY 2018; perform additional characterization on the MBRV-8 -Develop and manufacture additional IRBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP</p>				
<b>Title:</b> Consumables - Intercontinental Ballistic Missiles (ICBM)		47.065	42.264	63.414
<b>Description:</b> Consumables include the ICBM target hardware development and manufacturing. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program.		<b>Articles:</b> -	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>ICBM target development includes non-recurring engineering, MBRVs, Countermeasures, and launch support equipment for BMDS flight testing. Target development provides air, sea, and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, and characterization. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. Through the development program, BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>ICBM target manufacturing includes the build of targets and target components that are required to execute the BMDS IMTP. ICBM manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p> <p>Starting in FY 2017, MBRV-8, MBRV-8 Characterization, and Countermeasures efforts associated with the ICBM are being transferred to this section from the Consumables - Multi-Class section.</p> <p><b>FY 2015 Accomplishments:</b>                      -ICBM T1/T2 - continued non-recurring engineering efforts; completed qualification testing and delivered Ship Set 1 to support pre-ship readiness review in FY 2016; continued manufacturing of Ship Set 2 to support pre-ship readiness review in FY 2018                      -Continued integration of the ICBM Ground Test Missile used as a pathfinder for the Concept of Operations</p> <p><b>FY 2016 Plans:</b>                      Decrease is due to completion of Non-Recurring Engineering (NRE) and qualification test efforts for the ICBM target.</p> <p>-ICBM T1/T2 - deliver Ship Set 1 for first flight test currently scheduled in the Integrated Master Test Plan for first quarter FY 2017 and deliver Ship Set 2 to support pre-ship readiness review in FY 2017 for flight test in FY 2018; initiate manufacturing of Ship Set 3 to support pre-ship readiness review in FY 2020                      -Continue integration of the ICBM Ground Test Missile used as a pathfinder for the Concept of Operations                      -Develop and manufacture additional ICBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP</p> <p><b>FY 2017 Plans:</b>                      Increase is due transfer of funds previously captured in the Consumables - Multi-Class section for the ICBM costs related to the MBRV-8, MBRV-8 Characterization, and Countermeasures efforts.</p> <p>-ICBM T1/T2 - continue manufacturing Ship Set 3 to support pre-ship readiness review in FY 2020; initiate manufacturing of Ship Set 4 and 5 to support pre-ship readiness reviews in FY 2021 and FY 2022</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-MBRV-8 - deliver Ship Set 3 to support a flight test in FY 2017; continue manufacturing Ship Set 8 to support a flight test in FY 2019; perform additional characterization on the MBRV-8</p> <p>-Continue integration of the ICBM Ground Test Missile used as a pathfinder for the Concept of Operations</p> <p>-Develop and manufacture additional ICBMs, Re-Entry Vehicles, and Countermeasures, as required by the BMDS IMTP</p>				
<p><b>Title:</b> Consumables - Multi-Class</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Consumables includes the development and manufacturing of target hardware. The BMDS Targets Program delivers fully assembled and integrated targets to the BMDS Test Program.</p> <p>Target development includes non-recurring engineering for all four target classes, MBRVs, Countermeasures, and launch support equipment for BMDS flight testing. Target development provides air, sea, and ground launch capabilities to maximize flexibility in MDA test design. Development activities include requirements decomposition, design, modeling and simulation, qualification testing, and characterization. The BMDS Targets Program Office manages target configuration, component interface specifications, range integration, reliability, mission assurance, and costs. Through the development program, BMDS Targets Program ensures target designs are producible, reliable, and affordable.</p> <p>Target manufacturing includes the build of targets and target components that are required to execute the BMDS IMTP. Manufacturing includes government furnished equipment and new component acquisition, assembly, and integration. Also included are target characterization, quality and mission assurance, transportation, and logistics support. Future revisions to the IMTP will likely affect target types and quantities noted in the Planned Accomplishments.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Modified Ballistic Re-Entry Vehicle-7 (MBRV-7) - delivered Front Section #1, Ship Set #4 (MBRV and Re-entry Vehicle Support Module (RVSM)), and Ship Set #5 (MBRV and RVSM)); Front Section #1 was successfully flown during the FTO-02 E2.1 mission; Ship Set #4 functioned as designed on the FTG-02 E1 mission. Ship Set #5 was successfully integrated with the Intermediate Range Ballistic Missile (IRBM) return-to-flight mission, FTO-02 E2.1a</p> <p>-MBRV-8 - initiated Ship Sets 3 and 4 to support flight tests in FY 2017 (Ship Set 3) and FY 2018 (Ship Set 4)</p> <p>-Continued Associated Object (AO) package deliveries in accordance with Ballistic Missile Defense System Integrated Master Test Plan requirements</p> <p><b>FY 2016 Plans:</b></p> <p>Increase is due to initiation of four MBRV-8 Ship Sets to support flight tests in FY 2018 and FY 2019 and the start of Non-Recurring Engineering to support family 4A of the Associated Objects (AO).</p>		49.203 -	59.224 -	0.000 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Modified Ballistic Re-Entry Vehicle-7 (MBRV-7) - continue manufacturing of Ship Sets 6-7 to support flight tests in FY 2018 and FY 2019; initiate production of Ship Sets 8 and 9 to support flight tests in FY 2019 and FY 2020</p> <p>-MBRV-8 - continue manufacturing of Ship Sets 3 and 4 to support flight tests in FY 2017 (Ship Set 3) and FY 2018 (Ship Set 4); initiate production of Ship Sets 5-8 to support flight tests in FY 2018</p> <p>-Develop and manufacture additional MBRVs and Countermeasures as required by the BMDS IMTP</p> <p><b>FY 2017 Plans:</b> Beginning in FY 2017, funds previously associated with this R2A Accomplishment are captured in the specific target class they support.</p> <p>-MBRV-7 efforts have been transferred to Consumables - Medium Range Ballistic Missiles (MRBM)</p> <p>-MBRV-8 and MBRV-8 Characterization efforts have been transferred to Consumables - Intermediate Range Ballistic Missiles (IRBM) and Intercontinental Ballistic Missiles (ICBM)</p> <p>-Countermeasures efforts have been transferred to Consumables - Intermediate Range Ballistic Missiles (IRBM) and Intercontinental Ballistic Missiles (ICBM)</p>				
<b>Title:</b> Program Planning & Operations		55.967	63.188	67.373
<b>Description:</b> Program Planning and Operations provides for government management of the Targets program. Included in this effort is program and business management, program administration, technical and testing oversight, verification of hardware and software development, government manpower and infrastructure to develop, test and sustain the BMDS Targets Program Office system and components. Other Government Agency and Federally Funded Research and Development Research Centers are used for highly specialized skill sets not available internal to Targets for specific time periods.		<b>Articles:</b> -	-	-
<b>FY 2015 Accomplishments:</b> -Provided technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, and integration activities -Provided program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight -Ensured Targets and Countermeasures program compliance with internal and external direction, policies, and regulations -Conducted Internal Program Plans that align with the Missile Defense Agency (MDA) approved Integrated Master Test Plan (IMTP)				
<b>FY 2016 Plans:</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDs Targets Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Increase over FY 2015 is due to the transfer of Target Launch Operations civilian personnel plus their associated travel and contractor support into this PE from PE 0603914C.</p> <ul style="list-style-type: none"> <li>-Provide technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, and integration activities</li> <li>-Provide program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight</li> <li>-Ensure Targets and Countermeasures program compliance with internal and external direction, policies, and regulations</li> <li>-Conduct Internal Program Plans that align with the Missile Defense Agency (MDA) approved Integrated Master Test Plan (IMTP)</li> <li>-Provide program and technical management of target launch operations activities to include oversight of mission planning, range coordination, and mission requirements.</li> </ul> <p><b>FY 2017 Plans:</b> Increase over FY 2016 is due to the addition of cost sharing for Information Technology (IT) services such as end user support, portal and data services, business automation, and IT consumables.</p> <ul style="list-style-type: none"> <li>-Provide technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, and integration activities</li> <li>-Provide program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight</li> <li>-Ensure Targets and Countermeasures program compliance with internal and external direction, policies, and regulations</li> <li>-Conduct Internal Program Plans that align with the MDA approved IMTP</li> <li>-Provide program and technical management of target launch operations activities to include oversight of mission planning, range coordination, and mission requirements</li> <li>-Provide information technology services to support management of the Targets program</li> </ul>				
<b>Title:</b> Resources		56.046	59.474	57.836
		<b>Articles:</b>	-	-
<b>Description:</b> BMDs Target Resources consist of two sub-elements: Systems Engineering/Program Management and Logistics.				
Systems Engineering/Program Management provides technical direction to meet Target Program requirements while balancing cost, schedule, performance, and risk. It conducts functional requirements allocation to product lines, defines product line specifications/interfaces, performs configuration and data management, and follows guidelines for design reviews. It performs target system analysis to verify system performance, defines target program baselines, controls flight test configurations, and				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>conducts pre and post-flight analysis. It identifies treaty and environmental issues and develops plans for issue resolution. It provides Quality, Safety, and Mission Assurance operations to ensure compliance with Missile Defense Agency requirements for design, test, manufacturing, quality, safety and reliability to ensure high quality products are delivered for test events. It also includes Single Stimulation Framework (SSF)/Objective Stimulation Framework (OSF) compatible Modeling and Simulation execution and improvements to evolve TC Modeling and Simulation capability; trajectory analyses; signature analyses and characterization; studies to assess alternative target and platform solutions; assessments of risk management; and design approval of government furnished equipment.</p> <p>BMDS Targets Program Logistics support provides target storage, aging surveillance, and transportation of TC hardware in support of BMDS testing. Also included are integrated logistics support for facilities, inventory maintenance, spare parts, aging surveillance, disposal, special testing for rocket motor propellants, and other hazardous material handling. This task manages and oversees accountability of all government furnished equipment and contractor acquired property. Logistics also provides common support equipment for launch vehicles, MBRVs, countermeasures, and all up integrated target rounds. It also supports launch site activations through the transportation of support equipment to various test sites.</p> <p><b><i>FY 2015 Accomplishments:</i></b> System Engineering and Program Management:</p> <ul style="list-style-type: none"> <li>-Continued Program Management and Business Operations for target components to provide a framework for overall management of the Targets program</li> <li>-Continued providing classified network connections to Other Government Agencies (OGAs) so their subject matter experts can be used to support Target requirements</li> <li>-Continued analyses of future target Launch Vehicles, Re-Entry Vehicles, and launch platforms to ensure they are threat representative and that the Agency is making use of available technology in our future designs</li> <li>-Continued performing Pedigree Reviews to ensure high probability of mission success</li> <li>-Continued information technology and classified network support to ensure sensitive target information is not compromised</li> <li>-Continued Software Independent Verification and Validation (IV&amp;V) to provide risk reduction of flight missions for target systems under development, including the Medium Range Ballistic Missile Type 3 (MRBM T3), Intermediate Range Ballistic Missile (IRBM), and Modified Ballistic Re-Entry Vehicle-5 (MBRV-5)</li> </ul> <p>Logistics:</p> <ul style="list-style-type: none"> <li>-Continued Multi-Class Inventory storage, aging surveillance, maintenance of existing assets, and transportation support to ensure availability of Modified Ballistic Re-entry Vehicles and ground support equipment</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>
<p>-Conducted disposal actions of inert assets</p> <p><b>FY 2016 Plans:</b> Increase in FY 2016 due to Target Resource requirements for the mix of flight tests planned.</p> <p>System Engineering and Program Management:</p> <p>-Continue Program Management and Business Operations for target components to provide a framework for overall management of the Targets program</p> <p>-Continue providing classified network connections to Other Government Agencies (OGAs) so their subject matter experts can be used to support Target requirements</p> <p>-Continue analyses of future target Launch Vehicles, Re-Entry Vehicles, and launch platforms to ensure they are threat representative and that the Agency is making use of available technology in our future designs</p> <p>-Continue performing Pedigree Reviews to ensure high probability of mission success</p> <p>-Continue information technology and classified network support to ensure sensitive target information is not compromised</p> <p>-Continue Software Independent Verification and Validation (IV&amp;V) to provide risk reduction of flight missions for target systems under development, including the Intermediate Range Ballistic Missile (IRBM) and Modified Ballistic Re-Entry Vehicle-5 (MBRV-5)</p> <p>Logistics:</p> <p>-Continue Multi-Class Inventory storage, aging surveillance, maintenance of existing assets, and transportation support to ensure availability of Modified Ballistic Re-entry Vehicles and ground support equipment</p> <p>-Conduct disposal actions of inert assets</p> <p><b>FY 2017 Plans:</b> Decrease in FY 2017 due to Target Resource requirements for the mix of flight tests planned.</p> <p>Continuation of FY 2016 Plans.</p>			
<b>Title:</b> Flight Test Execution		0.000	42.387
		-	-
<b>Description:</b> Flight Test Execution is performed by the Target Launch Operations group. This group conducts target mission planning, coordinates target range and mission requirements, and provides target technical information to the Missile Defense Agency's General Counsel to support treaty approvals. The Target Launch Operations Group is the primary link between the		40.618	-
		<b>Articles:</b>	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>target developer and the Ballistic Missile Defense System test community, incorporating target system constraints into the BMDS mission countdown and launch constraints.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> Increase from FY 2015 to FY 2016 due to transfer of Target Launch Operations into this PE from to PE 0603914C.</p> <ul style="list-style-type: none"> <li>-Conduct a Ground-Based Midcourse Defense (GMD) 3-stage Capability Enhancement II (CE-II) interceptor characterization test with an air-launched Intermediate Range Ballistic Missile (IRBM) target</li> <li>-Conduct a Ground-Based Midcourse Defense (GMD) 3-stage CE-II Configuration 2 (C2)/Consolidated Booster Avionics Upgrade (CBAU) CE-II BIK I Exoatmospheric Kill Vehicle (EKV) Ground-Based Interceptor engagement of a InterContinental Ballistic Missile (ICBM) target</li> <li>-Conduct an Aegis BMD Baseline 9.C2 (5.1) SM-3 BIK IIA missile simulated engagement of a Medium Range Ballistic Missile (MRBM) target</li> <li>-Conduct an Aegis BMD Baseline 9.C2 (5.1) SM-3 BIK IIA missile engagement of a Medium Range Ballistic Missile (MRBM) target</li> <li>-Conduct target test engineering, mission logistics, and launch operations with consistent test expertise to support operational and developmental flight testing across the Ballistic Missile Defense System Targets Program in accordance with the Integrated Master Test Plan (IMTP) in various test Major Range and Test Facilities (MRTF).</li> <li>-Conduct mission planning and range coordination activities, perform final target system integration and execute target missions, provided communications security equipment and management for Ballistic Missile Defense System Flight Test events</li> </ul> <p><b>FY 2017 Plans:</b> Decrease from FY 2016 due to mix of flight tests in the Agency's Integrated Master Test Plan.</p> <ul style="list-style-type: none"> <li>--Conduct final target integration with the test range and accomplish launch operations of an ICBM target (First Flight Target) in support of a Ground-Based Midcourse Defense (GMD) 3-stage CE-II Configuration 2 (C2)/Consolidated Booster Avionics Upgrade (CBAU) CE-II BIK I Exoatmospheric Kill Vehicle (EKV) Ground-Based Interceptor engagement</li> <li>Conduct final target integration with the test range and accomplish launch operations of an ICBM target in support of a GMD salvo engagement of a 3-stage Heritage CE-II and a 3-stage Heritage CE-I GBI</li> <li>-Conduct final target integration with the test range and accomplish launch operations of a MRBM target in support of an Aegis BMD Baseline 9.C1 SM-6 Dual Interceptor salvo engagement</li> <li>-Conduct final target integration with the test range and accomplish launch operations of a MRBM target in support of an Aegis BMD SM-3 Launch on Remote engagement</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Conduct final target integration with the test range and accomplish launch operations of a MRBM target in support of an Aegis BMD Baseline 9.C2 SM-3 Block IIA engagement</li> <li>-Conduct final target integration with the test range and accomplish launch operations of one MRBM target and one SRBM target in support of a THAAD TH3.0.0 endo-atmospheric engagement</li> <li>-Conduct final target integration with the test range and accomplish launch operations of an air launched IRBM target in support of GMD simulated engagement through Weapons Task Plan (WTP)</li> <li>-Conduct final target integration with the test range and accomplish launch operations of a SRBM target in support of an Aegis BMD Baseline 9.C2 simulated engagement</li> <li>-Conduct final target integration with the test range and accomplish launch operations of a SRBM target in support of an Aegis BMD Baseline 9.C2 SM-6 Dual Interceptor engagement</li> <li>-Conduct target test engineering and launch operations with consistent test expertise to support operational and developmental flight testing across the BMDS Targets Program in accordance with the IMTP in various test Major Range and Test Facilities (MRTF).</li> <li>-Conduct mission planning and range coordination activities, perform final target system integration and execute target missions, provided communications security equipment and management for Ballistic Missile Defense System Flight Test events</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	422.612	504.989	539.837

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The MDA BMDS Targets Program provides for the development and purchase of ballistic missile targets and countermeasures for the BMDS in support of the MDA's flight test program. The BMDS Targets Program requirements are derived from the BMDS IMTP.

The BMDS Targets and Countermeasures Program Acquisition Strategy is based on three premises. The first is to utilize existing capabilities. The second is to initiate new development if there is no existing capability using firm-fixed price contracts with incentive fee based on cost, schedule and performance. The third premise is to use cost reimbursable contracts with incentive fee based on cost, schedule, and performance for new development that has high-risk.

MDA BMDS Targets Program competitively awarded a prime contract to Lockheed Martin Space Systems Company (LMSSC) for development of the Flexible Target Family (FTF). SRBM, MRBM, and IRBM targets, as well as MBRVs, are procured using this contract. Hardware purchases will remain on existing contract and launch services and engineering services have been broken out into a follow-on contract. The follow-on launch and engineering services contract was awarded via a sole-source fixed price contract.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

MDA BMDS Targets Program competitively awarded a prime contract to Orbital Sciences Corporation air-launched IRBM targets. This award included two follow-on options; one for eight IRBM targets (exercised) and another for one to six IRBM targets.

MDA BMDS Targets Program conducted a limited competition and awarded a contract modification to Orbital Sciences Corporation for development of ICBM targets. This award included two ICBM Stage Zero Kits to be used with an existing air-launched IRBM target.

The United States Air Force competitively awarded a contract to L-3 Communications/Coleman Aerospace to provide one air-launched medium range ballistic missile and one air-launched short range ballistic missile. Execution of the contract elements for this effort was transferred to the Missile Defense Agency.

MDA BMDS Targets Program competitively awarded a prime contract to L-3 Communications/Coleman Aerospace (Coleman) to provide 6 MRBM targets. This award includes one follow-on option, for up to six additional MRBM targets.

The Solid Rocket Motor Technical Services Contract was competitively awarded to Alliant Tech Systems in May 2005 and provides aging and surveillance, refurbishment, transportation, testing, and sensitivity studies for MDA BMDS Targets Program solid rocket motors to include A3, C4, Orbus 1/1A, GEM, and Castor IV variants. A follow-on sole source contract was awarded 30 September 2011.

The Aegis Readiness Assessment Vehicle (ARAV) target effort is managed by MDA BMDS Targets Program and the Naval Surface Warfare Center Port Hueneme Division White Sands (NSWC PHD WS). NSWC PHD WS has unique sounding rocket expertise and access to existing contracts managed by White Sands Missile Range that makes this a beneficial relationship for both parties. MDA BMDS Targets Program provides targets funding via Military Interdepartmental Purchase Orders that NSWC PHD WS expends on its hardware development and engineering contracts. In addition, MDA BMDS Targets Program provides funding to Sandia National Labs in support of the Attitude Control Module (ACM) development effort for the ARAV Group C target. NSWC PHD WS manages the integration of the ACM onto the launch vehicle. The MDA BMDS Test Program (Program Element 0603914C) is responsible for funding all launch services of these targets in support of the IMTP for FY 2015. Beginning in FY 2016 all targets launch service funds to support the IMTP will be transferred into this Program Element (0603915C).

MDA BMDS Targets Program is currently in various stages of planning or execution for procurement of ballistic missile targets by range class: SRBM, MRBM, IRBM, and ICBM. These targets will be procured using a Target Performance Specification to support flight test requirements as identified in the IMTP. Each target class will be solicited, evaluated, and competitively awarded independently in IMTP "need date" priority order.

Within each target class, capabilities are further segregated and designated as a class type. Type 1, Type 2, and Type 3 capabilities are defined as follows:

Type 1: A Type 1 target is the baseline (simple) configuration for the class. A Type 1 target satisfies the minimum target requirements to provide the baseline capability for each target class. The baseline configuration represents the complete vehicle stack-up and includes: 1-n boosters, attitude control system, test object, flight termination system, housekeeping and environmental instrumentation, and telemetry. For example, the basic configuration of an LV-2 target is representative of a Type 1 configuration in the intermediate range class.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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Type 2: A Type 2 target requires more advanced or complex performance capabilities. Type 2 capabilities may be included in the baseline Type 1 configuration or provided as configuration kits that can be added to the baseline configuration. Type 2 kits may include the following: countermeasures and associated deployment capability, enhanced targeting and aim point accuracies, selectable booster and test object dynamics, tailored separation debris, temperature sensors, hit location and miss distance instrumentation, onboard sensors, deployable fly along sensors, and/or lethality payloads. For example, the LV-2 target with countermeasures or additional payloads is representative of a Type 2 configuration in the intermediate range class.

Type 3: A Type 3 target is a unique configuration procured in low unit quantities. Type 3 targets encompass unique threat characteristics or test conditions (i.e. Ground Based Midcourse Defense high velocity engagement scenario) not achievable with a Type 1 or Type 2 configuration.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				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
Consumables - Short Range Ballistic Missiles (SRBM) - 1	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	17.342	10.299		2.616	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 2	MIPR	Naval Surface Warfare Center, Port Hueneme : Port Hueneme, CA	22.889	7.467		25.743	Nov 2015	10.168	Nov 2016	-		10.168	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 3	MIPR	Aviation and Missile Research, Development, and Engineering Center : Huntsville, AL	0.000	0.117		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 4	MIPR	Redstone Test Center : Huntsville, AL	0.000	0.129		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 5	MIPR	Missile and Space Information Center : Huntsville, AL	0.000	0.254		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 6	C/CPAF	Juno Target : TBD	0.000	0.000		2.750	Jul 2016	19.788	Nov 2016	-		19.788	Continuing	Continuing	Continuing
Consumables - Short Range Ballistic Missiles (SRBM) - 7	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	20.965	0.000		0.000		0.000		-		0.000	0	20.965	20.965
Consumables - Short Range Ballistic Missiles (SRBM) - 8	C/CPAF	Orbital Sciences Corporation : Chandler, AZ	4.192	0.000		0.000		0.000		-		0.000	0	4.192	4.192
Consumables - Short Range Ballistic Missiles (SRBM) - 9	C/CPIF	Lockheed Martin Space Systems Company : Courtland, AL	3.282	0.000		0.000		0.000		-		0.000	0	3.282	3.282

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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 0603915C / Ballistic Missile Defense Targets					MT05 / BMDS Targets Program						
Product Development (\$ 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
Consumables - Medium Range Ballistic Missiles (MRBM) - 1	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	329.256	49.911		33.580	Nov 2015	19.133	Nov 2016	-		19.133	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 2	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	77.128	39.283		57.390	Nov 2015	37.355	Nov 2016	-		37.355	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 3	MIPR	Naval Surface Warfare Center, Dahlgren Division : Dahlgren, VA	0.000	0.362		0.119	Nov 2015	0.058	Nov 2016	-		0.058	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 4	FFRDC	Johns Hopkins University/Applied Physics Lab : Baltimore, MD	0.000	0.452		0.000		0.000		-		0.000	0	0.452	0
Consumables - Medium Range Ballistic Missiles (MRBM) - 5	MIPR	White Sands Missile Range : White Sands, NM	0.000	0.016		0.380	Nov 2015	0.184	Nov 2016	-		0.184	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 6	MIPR	Pacific Missile Range Facility : Barking Sands, HI	0.000	0.009		0.208	Nov 2015	0.101	Nov 2016	-		0.101	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 7	MIPR	Space and Missile Defense Command : Huntsville, AL	0.000	0.740		1.078	Nov 2015	0.000		-		0.000	0	1.818	0
Consumables - Medium Range Ballistic Missiles (MRBM) - 8	C/CPAF	MRBM RFP : TBD	0.500	4.492		22.258	Nov 2015	81.792	Nov 2016	-		81.792	Continuing	Continuing	Continuing
Consumables - Medium Range Ballistic Missiles (MRBM) - 9	MIPR	Defense Information Systems Agency : Fort Meade, MD	0.000	0.000		0.000		0.031	Nov 2016	-		0.031	Continuing	Continuing	Continuing
Consumables - Intermediate Range	C/CPAF	Orbital Sciences Corporation : Chandler, AZ	220.947	100.717		92.330	Nov 2015	97.438	Nov 2016	-		97.438	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 0603915C / Ballistic Missile Defense Targets				MT05 / BMDS Targets Program							
Product Development (\$ 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
Ballistic Missiles (IRBM) - 1															
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 2	MIPR	White Sands Missile Range : White Sands, NM	0.000	0.030		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 3	MIPR	US Army Yuma Proving Ground : Yuma, AZ	0.000	0.053		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 4	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	27.417	0.000		0.000		16.598	Nov 2016	-		16.598	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 5	C/CPAF	Lockheed Martin Space Systems Company : United Kingdom	0.000	0.000		0.000		9.390	Nov 2016	-		9.390	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 6	C/CPAF	Countermeasures RFP : TBD	0.000	0.000		0.000		3.709	Nov 2016	-		3.709	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 7	C/CPAF	MBRV-8 Characterization RFP : TBD	0.000	0.000		0.000		4.690	Nov 2016	-		4.690	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 8	MIPR	US Army Garrison - Natick : Natick, MA	0.000	0.000		0.000		0.036	Nov 2016	-		0.036	Continuing	Continuing	Continuing
Consumables - Intermediate Range Ballistic Missiles (IRBM) - 9	C/CPAF	Future MBRV RFP : TBD	0.000	0.000		0.000		10.125	Nov 2016	-		10.125	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				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
Consumables - Intercontinental Ballistic Missiles (ICBM) - 1	C/CPAF	Orbital Sciences Corporation : Chandler, AZ	88.305	43.072		32.335	Nov 2015	26.823	Nov 2016	-		26.823	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 10	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	0.000	0.000		0.000		11.848	Nov 2016	-		11.848	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 11	FFRDC	Massachusetts Institute of Technology, Lincoln Labs : Lexington, MA	0.000	0.000		0.000		11.172	Nov 2016	-		11.172	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 12	C/CPAF	MBRV-X RFP : TBD	0.000	0.000		0.000		9.690	Nov 2016	-		9.690	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 2	C/CPFF	Alliant Techsystems : Magna, UT	0.000	3.688		3.771	Nov 2015	3.801	Nov 2016	-		3.801	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 3	MIPR	Defense Financial and Accounting Service : Indianapolis, IN	0.000	0.000		2.656	Nov 2015	0.000		-		0.000	0	2.656	0
Consumables - Intercontinental Ballistic Missiles (ICBM) - 4	MIPR	Naval Air Weapons Station : China Lake, CA	0.000	0.077		0.448	Nov 2015	0.080	Nov 2016	-		0.080	Continuing	Continuing	Continuing
Consumables - Intercontinental Ballistic Missiles (ICBM) - 5	MIPR	Naval Surface Warfare Center, Dahlgren Division : Dahlgren, VA	0.000	0.000		0.071	Nov 2015	0.000		-		0.000	0	0.071	0
Consumables - Intercontinental Ballistic Missiles (ICBM) - 6	MIPR	Pacific Missile Range Facility : Barking Sands, HI	0.000	0.000		0.107	Nov 2015	0.000		-		0.000	0	0.107	0
Consumables - Intercontinental Ballistic Missiles (ICBM) - 7	MIPR	Redstone Garrison : Huntsville, AL	0.000	0.000		0.040	Nov 2015	0.000		-		0.000	0	0.040	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 0603915C / Ballistic Missile Defense Targets					MT05 / BMDS Targets Program						
Product Development (\$ 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
Consumables - Intercontinental Ballistic Missiles (ICBM) - 8	MIPR	Reagan Test Site : Kwajalein Atoll	0.000	0.000		2.836	Nov 2015	0.000		-		0.000	0	2.836	0
Consumables - Intercontinental Ballistic Missiles (ICBM) - 9	MIPR	US Army Yuma Proving Ground : Yuma, AZ	0.000	0.228		0.000		0.000		-		0.000	0	0.228	0
Consumables - Multi-Class - 1	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	130.943	33.853		38.407	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Multi-Class - 2	C/CPAF	Lockheed Martin Space Systems Company : United Kingdom	13.900	4.289		3.281	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Multi-Class - 3	FFRDC	Massachusetts Institute of Technology, Lincoln Labs : Lexington, MA	8.164	3.800		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Multi-Class - 4	FFRDC	Sandia National Laboratories : Albuquerque, NM	6.774	1.352		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Multi-Class - 5	MIPR	Redstone Test Center : Huntsville, AL	0.000	0.050		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Consumables - Multi-Class - 6	C/CPAF	Associated Objects RFP : TBD	0.000	5.859		17.536	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Program Planning & Operations - Program Planning and Operations - 1	C/CPAF	Targets TEAMS Support : Huntsville, AL	94.192	27.643		30.292	Nov 2015	34.579	Nov 2016	-		34.579	Continuing	Continuing	Continuing
Program Planning & Operations - Program Planning and Operations - 10	MIPR	Missile Defense Agency : Huntsville, AL	62.975	23.510		28.293	Oct 2015	28.688	Oct 2016	-		28.688	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Planning & Operations - Program Planning and Operations - 12	C/FFP	Network Management Resources : Chantilly, VA	0.273	1.003		0.707	Nov 2015	0.866	Nov 2016	-		0.866	Continuing	Continuing	Continuing
Program Planning & Operations - Program Planning and Operations - 6	FFRDC	Johns Hopkins University, Applied Physics Lab : Baltimore, MD	1.210	0.568		0.581	Nov 2015	0.586	Nov 2016	-		0.586	Continuing	Continuing	Continuing
Program Planning & Operations - Program Planning and Operations - 7	MIPR	US Army Aviation & Missile Command : Huntsville, AL	3.265	1.080		0.930	Nov 2015	0.000		-		0.000	0	5.275	0
Program Planning & Operations - Program Planning and Operations - 8	MIPR	Aviation & Missile Research, Dev & Eng Center : Huntsville, AL	3.093	1.393		1.803	Nov 2015	0.000		-		0.000	0	6.289	0
Program Planning & Operations - Program Planning and Operations - 9	MIPR	US Air Force Space & Missile Systems Center (SMC) : Albuquerque, NM	2.241	0.770		0.582	Nov 2015	2.654	Nov 2016	-		2.654	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 1	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	19.595	7.836		8.850	Nov 2015	7.861	Nov 2016	-		7.861	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 11	MIPR	Naval Surface Warfare Center : Crane, IN	3.548	0.258		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 12	MIPR	Redstone Arsenal Garrison : Huntsville, AL	3.142	0.039		0.040	Nov 2015	0.040	Nov 2016	-		0.040	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 16	MIPR	US Property & Fiscal Office for Arizona : Phoenix, AZ	4.664	1.901		0.429	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 17	MIPR	US Army White Sands Missile	0.538	0.000		0.000		0.518	Nov 2016	-		0.518	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				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			
		Range : White Sands, NM													
Resources - Resources/ Logistics - 18	MIPR	Defense Finance & Accounting Service : Indianapolis, IN	1.726	0.684		0.317	Nov 2015	0.323	Nov 2016	-		0.323	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 2	C/CPFF	Alliant Techsystems, Inc. (ATK) : Magna, UT	0.790	0.000		0.000		0.255	Nov 2016	-		0.255	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 20	C/FFP	Wyle Laboratories : Huntsville, AL	0.544	0.362		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 21	MIPR	US Air Force Space & Missile Systems Center (SMC) : Albuquerque, NM	2.897	5.026		9.867	Nov 2015	3.813	Nov 2016	-		3.813	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 23	C/FFP	Venturi Aerospace : Huntsville, AL	0.189	1.926		0.000		0.026	Nov 2016	-		0.026	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 24	C/FFP	TASC, Inc. : Albuquerque, NM	5.600	0.775		0.792	Nov 2015	0.767	Nov 2016	-		0.767	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 25	MIPR	Tooele Army Depot : Tooele, UT	1.122	0.000		0.000		0.049	Nov 2016	-		0.049	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 3	C/FFP	Aerojet Corporation : Albuquerque, NM	0.342	0.248		0.253	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 34	C/CPFF	Inuteq, Corp. : Beltsville, MD	0.000	0.791		0.730	Nov 2015	0.755	Nov 2016	-		0.755	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 35	MIPR	Space and Naval Warfare Systems Command : San Diego, CA	0.000	0.000		0.000		0.022	Nov 2016	-		0.022	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 36	MIPR	Tobyhanna Army Depot : Tobyhanna, PA	0.000	0.000		0.000		1.089	Nov 2016	-		1.089	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 4	C/FFP	Alliant Techsystems, Inc. (ATK) : Magna, UT	5.171	0.203		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				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			
Resources - Resources/ Logistics - 5	MIPR	Aviation & Missile Research, Dev & Eng Center : Huntsville, AL	6.034	1.417		1.448	Nov 2015	0.284	Nov 2016	-		0.284	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 6	MIPR	Hill Air Force Base : Ogden, UT	3.827	0.121		0.000		2.030	Nov 2016	-		2.030	Continuing	Continuing	Continuing
Resources - Resources/ Logistics - 7	MIPR	Missile Defense Agency : Huntsville, AL	5.985	0.918		0.938	Oct 2015	0.197	Oct 2016	-		0.197	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 1	C/CPAF	Lockheed Martin Space Systems Company : Courtland, AL	55.312	15.542		17.042	Nov 2015	17.392	Nov 2016	-		17.392	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 10	FFRDC	Sandia National Laboratories : Albuquerque, NM	3.340	0.509		0.520	Dec 2015	0.549	Dec 2016	-		0.549	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 14	MIPR	Naval Air Warfare Center : Point Mugu, CA	0.772	1.614		1.650	Nov 2015	1.913	Nov 2016	-		1.913	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 15	MIPR	Missile Defense Agency : Huntsville, AL	0.000	0.000		0.000		1.715	Oct 2016	-		1.715	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 2	FFRDC	Aerospace Corporation : El Segundo, CA	8.777	2.779		2.540	Nov 2015	2.632	Nov 2016	-		2.632	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 6	FFRDC	Johns Hopkins University, Applied Physics Lab : Baltimore, MD	1.168	0.765		0.782	Nov 2015	0.798	Nov 2016	-		0.798	Continuing	Continuing	Continuing
Resources - Resources/ Systems Engineering - 7	MIPR	US Air Force Space & Missile Systems Center (SMC) : Albuquerque, NM	0.904	4.091		4.183	Nov 2015	4.871	Nov 2016	-		4.871	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 0603915C / Ballistic Missile Defense Targets				MT05 / BMDS Targets Program							
Product Development (\$ 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
Resources - Resources/ Systems Engineering - 8	MIPR	Aviation & Missile Research, Dev & Eng Center : Huntsville, AL	26.931	8.241		9.093	Nov 2015	9.937	Nov 2016	-		9.937	Continuing	Continuing	Continuing
Flight Test Execution - 1	MIPR	Missile Defense Agency : Huntsville, AL	0.000	0.000		0.382	Oct 2015	0.374	Oct 2016	-		0.374	Continuing	Continuing	Continuing
Flight Test Execution - 10	MIPR	Hickam Field : Pearl Harbor, HI	0.000	0.000		0.205	Nov 2015	0.184	Nov 2016	-		0.184	Continuing	Continuing	Continuing
Flight Test Execution - 11	MIPR	Redstone Army Airfield : Redstone Arsenal, AL	0.000	0.000		0.019	Nov 2015	0.019	Nov 2016	-		0.019	Continuing	Continuing	Continuing
Flight Test Execution - 12	MIPR	Redstone Test Center : Huntsville, AL	0.000	0.000		0.115	Nov 2015	0.111	Nov 2016	-		0.111	Continuing	Continuing	Continuing
Flight Test Execution - 13	C/CPAF	Orbital Sciences Corporation : Chandler, AZ	0.000	0.000		2.488	Nov 2015	2.072	Nov 2016	-		2.072	Continuing	Continuing	Continuing
Flight Test Execution - 14	MIPR	Naval Air Warfare Center : Pt. Mugu, CA	0.000	0.000		0.429	Nov 2015	0.436	Nov 2016	-		0.436	Continuing	Continuing	Continuing
Flight Test Execution - 2	MIPR	Defense Finance and Accounting Services : Indianapolis, IN	0.000	0.000		11.388	Nov 2015	11.052	Nov 2016	-		11.052	Continuing	Continuing	Continuing
Flight Test Execution - 3	MIPR	Pacific Missile Range Facility : Barking Sands, HI	0.000	0.000		11.281	Nov 2015	11.607	Nov 2016	-		11.607	Continuing	Continuing	Continuing
Flight Test Execution - 4	MIPR	Reagan Test Site : Kwajalein Atoll	0.000	0.000		7.124	Nov 2015	6.031	Nov 2016	-		6.031	Continuing	Continuing	Continuing
Flight Test Execution - 5	MIPR	Edwards Air Force Base : Lancaster, CA	0.000	0.000		6.332	Nov 2015	6.102	Nov 2016	-		6.102	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Product Development (\$ in Millions)</b>				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			
Flight Test Execution - 6	MIPR	US Army Yuma Proving Ground : Yuma, AZ	0.000	0.000		0.285	Nov 2015	0.298	Nov 2016	-		0.298	Continuing	Continuing	Continuing
Flight Test Execution - 7	MIPR	Eglin Air Force Base : Eglin AFB, FL	0.000	0.000		0.137	Nov 2015	0.167	Nov 2016	-		0.167	Continuing	Continuing	Continuing
Flight Test Execution - 8	C/CPAF	L3 Communications/ Coleman Aerospace : Orlando, FL	0.000	0.000		1.727	Nov 2015	1.666	Nov 2016	-		1.666	Continuing	Continuing	Continuing
Flight Test Execution - 9	MIPR	Air Force Research Laboratory : Wright Patterson AFB, OH	0.000	0.000		0.475	Nov 2015	0.499	Nov 2016	-		0.499	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,302.171	422.612		504.989		539.837		-		539.837	-	-	-

**Remarks**

N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**

N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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			

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	1,302.171	422.612	504.989	539.837	-	539.837	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets 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
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 11)	▲																											
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 12)	▲																											
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 13)	▲																											
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 1)		▲																										
SRALT (SRBM) Pre-Ship Readiness Review (Ship Set 5)			▲																									
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 3)				▲																								
FMA-1 (SRBM) Pre-Ship Readiness Review (Ship Set 15)				▲																								
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 1)				▲																								
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 2)				▲																								
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 3)				▲																								
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 4)				▲																								
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 5)				▲																								
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)					▲																							
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 3)						△																						
LV-2 Pre-Ship Readiness Review (Ship Set 6)							△																					
ICBM Pre-Ship Readiness Review (Ship Set 1)								△																				
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 4)									△																			
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 1)										△																		
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 4)											△																	



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets 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
ELRALT Pre-Ship Readiness Review (Ship Set 2)																												
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 2)								▲																				
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 2)									▲																			
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 3)										▲																		
ARAV-G (SRBM) Pre-Ship Readiness Review (Ship Set 1)											▲																	
ICBM Pre-Ship Readiness Review (Ship Set 2)												▲																
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 5)													▲															
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 6)														▲														
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 7)															▲													
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 8)																▲												
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 9)																	▲											
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 5)																		▲										
ARAV-G (SRBM) Pre-Ship Readiness Review (Ship Set 2)																			▲									
Juno (SRBM) Pre-Ship Readiness Review (Ship Set 3)																				▲								
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 10)																						▲						
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 11)																							▲					
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 5)																							▲					
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 6)																								▲				
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 1)																									▲			

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets 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
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 12)																		△										
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 13)																	△											
ICBM Pre-Ship Readiness Review (Ship Set 3)																			△									
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 14)																				△								
Juno (SRBM) Pre-Ship Readiness Review (Ship Set 4)																				△								
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 2)																					△							
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 3)																									△			
ICBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)																									△			
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 7)																									△			
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 15)																									△			
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 16)																									△			
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)																										△		

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 11)	1	2015	1	2015
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 12)	1	2015	1	2015
ARAV-B (SRBM) Pre-Ship Readiness Review (Ship Set 13)	1	2015	1	2015
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 1)	2	2015	2	2015
SRALT (SRBM) Pre-Ship Readiness Review (Ship Set 5)	3	2015	3	2015
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 3)	4	2015	4	2015
FMA-1 (SRBM) Pre-Ship Readiness Review (Ship Set 15)	4	2015	4	2015
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 1)	4	2015	4	2015
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 2)	4	2015	4	2015
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 3)	4	2015	4	2015
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 4)	4	2015	4	2015
Terrier Orion (SRBM) Pre-Ship Readiness Review (Ship Set 5)	4	2015	4	2015
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)	1	2016	1	2016
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 3)	2	2016	2	2016
LV-2 Pre-Ship Readiness Review (Ship Set 6)	3	2016	3	2016
ICBM Pre-Ship Readiness Review (Ship Set 1)	4	2016	4	2016
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 4)	4	2016	4	2016
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 1)	4	2016	4	2016
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 4)	1	2017	1	2017
ELRALT Pre-Ship Readiness Review (Ship Set 2)	1	2017	1	2017
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 2)	2	2017	2	2017
MRBM Type 3 Pre-Ship Readiness Review (Ship Set 2)	3	2017	3	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 3)	3	2017	3	2017
ARAV-G (SRBM) Pre-Ship Readiness Review (Ship Set 1)	3	2017	3	2017
ICBM Pre-Ship Readiness Review (Ship Set 2)	4	2017	4	2017
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 5)	4	2017	4	2017
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 6)	2	2018	2	2018
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 7)	2	2018	2	2018
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 8)	4	2018	4	2018
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 9)	4	2018	4	2018
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 5)	4	2018	4	2018
ARAV-G (SRBM) Pre-Ship Readiness Review (Ship Set 2)	4	2018	4	2018
Juno (SRBM) Pre-Ship Readiness Review (Ship Set 3)	4	2018	4	2018
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 10)	2	2019	2	2019
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 11)	2	2019	2	2019
ARAV-TTO-E (SRBM) Pre-Ship Readiness Review (Ship Set 5)	2	2019	2	2019
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 6)	2	2019	2	2019
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 1)	3	2019	3	2019
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 12)	3	2019	3	2019
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 13)	3	2019	3	2019
ICBM Pre-Ship Readiness Review (Ship Set 3)	1	2020	1	2020
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 14)	2	2020	2	2020
Juno (SRBM) Pre-Ship Readiness Review (Ship Set 4)	2	2020	2	2020
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 2)	3	2020	3	2020
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 3)	2	2021	2	2021
ICBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)	2	2021	2	2021
MRBM Type 3/Configuration 2 Pre-Ship Readiness Review (Ship Set 7)	2	2021	2	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MT05 / <i>BMDS Targets Program</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 15)	2	2021	2	2021
IRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 16)	2	2021	2	2021
MRBM Type 1/Type 2 Pre-Ship Readiness Review (Ship Set 4)	3	2021	3	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> 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>	36.372	24.812	22.574	23.739	-	23.739	22.821	21.924	23.353	24.380	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 in Ballistic Missile Defense Targets and in FY 2017, PWS reflects a proportional change as a result of an increase in Ballistic Missile Defense Targets.  
 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
<b>Title:</b> Program Wide Support	24.812	22.574	23.739
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	24.812	22.574	23.739

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various Multi : AL, CO, CA, VA etc.	8.118	11.860		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance (Reqn)	Reqn	Various Multi : AL, CO, CA, VA etc.	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Infrastructure Support (MIPR)	MIPR	Various; Multi : AL, VA	16.484	10.753		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Infrastructure Support (FFP)	C/FFP	Northrop Grumman; Multi : AL, VA	9.460	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various; Multi : AL, CA, CO, VA	1.687	0.525		0.000		0.509	Jul 2017	-		0.509	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi:AL, CA, CO, VA	0.000	0.000		5.560	Nov 2015	8.029	Aug 2017	-		8.029	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	MIPR	Various Multi: : AK, AL, CA, CO, HI, VA	0.623	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations, Sustainment and GPC	Allot	Various, Multi : AL, CO, CA, VA etc	0.000	1.674		1.500	Dec 2015	1.500	Sep 2017	-		1.500	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance SRM	MIPR	Various : Multi: AK, AL, CA, VA	0.000	0.000		15.514	Jan 2016	13.701	Jan 2017	-		13.701	Continuing	Continuing	Continuing
<b>Subtotal</b>			36.372	24.812		22.574		23.739		-		23.739	-	-	-

**Remarks**  
N/A



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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency								<b>Date:</b> February 2016					
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>				<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>					
	<b>Prior Years</b>	<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	36.372	24.812		22.574		23.739		-		23.739	-	-	-

**Remarks**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603915C / <i>Ballistic Missile Defense Targets</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</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	-	0.000	27.225	90.266	-	90.266	149.901	205.787	198.136	201.431	Continuing	Continuing
MD98: <i>Directed Energy Prototype Development</i>	-	0.000	0.000	23.744	-	23.744	46.938	80.900	66.052	60.418	Continuing	Continuing
MD99: <i>Discrimination Sensor Prototype Development</i>	-	0.000	20.467	57.382	-	57.382	69.903	109.286	115.812	127.654	Continuing	Continuing
MT99: <i>Technology Maturation Initiatives Test</i>	-	0.000	2.357	4.408	-	4.408	25.539	4.963	5.918	2.554	0	45.739
MC98: <i>Cyber Operations</i>	-	0.000	0.166	0.168	-	0.168	0.258	0.176	0.179	0.182	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	4.235	4.564	-	4.564	7.263	10.462	10.175	10.623	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The FY 2017 increase reflects funding for directed energy prototype preliminary design completion and long lead material buys and discrimination sensor prototype build completion and aircraft integration.

**A. Mission Description and Budget Item Justification**

Technology Maturation Initiatives further develops technology that is matured beyond the laboratory. Technology Maturation Initiatives builds on the Reaper and Multi Spectral Targeting System-C sensor, missile tracking technology successfully developed under the Discrimination Sensor Technology program element 0603177C, improving accuracy, adding range, and conducting operationally representative airborne sensor tests. This program element also incorporates industry technology breakthroughs to develop and demonstrate low to mid power lasers on a high altitude airborne platform. Together, these advanced components and tests address complex tracking, discrimination, and boost phase kill challenges for the Ballistic Missile Defense System (BMDS) in support of the Strategic Command's Prioritized Capabilities List and address evolving threats to the homeland from the Pacific theatre.

The MDA will develop two prototype airborne platforms, a laser demonstrator to address finding, tracking and engaging boosting missiles at the standoff ranges required for missile defense and an advanced sensor demonstrator for precision tracking and discrimination of lethal objects. The advanced sensor platform utilizes the operationally proven MQ-9 Reaper to provide a viable quick reaction capability once the technology is demonstrated. The MDA will choose a laser platform from industry concepts to address different requirements; high energy laser capable, larger aperture capacity and high altitude operation.

MD98, Directed Energy Prototype Development, develops, integrates and tests laser and beam control systems on a high altitude airborne platform. This airborne platform addresses a broad spectrum of directed energy mission applications while developing a missile defense concept of operations doctrine for incorporating lasers into the BMDS. The MDA's directed energy plan incrementally demonstrates and improves the constituent components required to execute a directed energy kill chain;

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	
<p>acquisition, tracking and lethality. Under the Directed Energy Prototype Development project, the Agency will select from industry concepts to integrate and test a low to mid power laser, nominally 10 to 150 kilowatts, on a high altitude airborne platform. Directed Energy Prototype Development shapes future BMDS acquisition decisions by advancing and documenting the technology readiness levels of emerging and developing technology, while simultaneously assessing the performance and contributions of the prototype systems to the BMDS architecture.</p> <p>The Directed Energy prototype addresses the following BMDS priorities:</p> <ul style="list-style-type: none"><li>- Precisely tracking boosting missiles from launch detection through destruction</li><li>- Cost effectively killing threat missiles in boost phase before they deploy multiple re-entry vehicles or countermeasures</li></ul> <p>MD99, Discrimination Sensor Prototype Development, incrementally develops, integrates, and tests next-generation sensors and detectors on the operationally proven MQ-9 to demonstrate airborne Launch-on-Remote, Engage-on-Remote, discrimination and handover improvements for missile defense. These advanced sensors improve the probability of engagement success for stressing threats, expand the BMD battle space and increase the ability to negate larger raid sizes.</p> <p>The Discrimination Sensor prototype significantly enhances the following BMDS priorities:</p> <ul style="list-style-type: none"><li>- Providing track information with sufficient quality for successful launch-on-remote/engage-on-remote intercepts</li><li>- End-to-end correlation of sensor track and discrimination data</li><li>- Discriminating lethal objects from countermeasures</li><li>- Timely and accurate kill assessment</li></ul> <p>MT99, Technology Maturation Initiatives Test, captures the cost to test the prototype systems developed under the Directed Energy Prototype Development and Discrimination Sensor Prototype Development projects under realistic conditions in conjunction with on-going BMDS testing and through dedicated live fire tests to inform continued prototype testing, full development and limited fielding decisions.</p> <p>MC98, Cyber Operations, sustains the MDA DoD Information Assurance Certification and Accreditation Program and Controls Validation Testing activities for Technology Maturation Initiatives.</p> <p>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.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	0.000	96.300	109.674	-	109.674
Current President's Budget	0.000	27.225	90.266	-	90.266
Total Adjustments	0.000	-69.075	-19.408	-	-19.408
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-69.075			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustment	0.000	0.000	-19.408	-	-19.408

**Change Summary Explanation**

The FY 2017 funding adjustment reflects transfers of test related costs to the BMD Test program element (0603914C), and BMD Targets program element (0603915C).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>				<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD98: <i>Directed Energy Prototype Development</i>	-	0.000	0.000	23.744	-	23.744	46.938	80.900	66.052	60.418	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

MD98, Directed Energy Prototype Development, develops, integrates, and tests the technologies required to demonstrate the complete acquisition, tracking and lethality engagement sequence of a high energy laser system for boost-phase missile defense. The missile defense laser demonstrator combines tracking technology developed under the Discrimination Sensor Technology program element with laser technology developed under the Weapons Technology program element and industry concepts for a cost-effective demonstrator. The demonstrator integrates the lasers, detectors, beam control system, processors, power supplies and thermal management systems into a high altitude airborne platform for missile defense laser applications. The MDA will test the laser platform under realistic conditions in conjunction with on-going BMDS tests.

Depending on the specific industry concept selected, the demonstrator will consist of a 100 watt-class low power surrogate high energy laser, a kw-class tracking laser, and a 10 kilowatt to 150 kilowatt mission laser. A key risk area to cost effective boost phase kill is acquisition, tracking and beam stability at long stand-off ranges. The demonstrator will incrementally verify acquisition and tracking, surrogate high energy laser pointing and stability accuracy, then mission laser effectiveness at extended ranges. This approach informs a missile defense laser concept of operations under realistic BMDS scenarios. The Directed Energy Prototype Development project provides the necessary technology, test data, and operations familiarity to successfully transition to a higher power directed energy weapon capable of destroying a boosting missile before it can deploy countermeasures.

In FY 2017, MDA will begin the design of a missile defense laser demonstrator based on the technology proposed in five Industry defined concepts competitively awarded in FY 2015 under the Weapons Technology program element, 0603178C. The FY 2017 \$23.919 million request funds dual contractors completing systems engineering, component trade studies and aircraft modification designs required for a missile defense laser demonstrator through a Preliminary Design Review in FY 2017. The MDA will then make a selection between these two contractors and complete a Critical Design Review in FY 2018 and BMDS flight tests in FY 2021.

The technology, individually and jointly developed and tested by the MDA, the Air Force and the Defense Advanced Research Projects Agency under the Weapons Technology program element, underpins multiple missile defense laser demonstrator Industry concepts. This missile defense laser demonstrator provides additional collaborative development and test opportunities to investigate laser beam pointing, stability and jitter effects under various altitude and flight conditions.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Directed Energy Prototype Development	0.000	0.000	23.744



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p align="right"><i>Articles:</i></p> <p><i>Description:</i> N/A</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Plans:</b> Award dual contracts through a preliminary design review to conduct the systems engineering and preliminary design necessary to define a missile defense laser demonstrator that integrates the lasers, detectors, beam control system, processors, power supplies and thermal management systems into an airborne platform for missile defense.</p> <ul style="list-style-type: none"> <li>- Analyze and evaluate industry concepts for integrating and testing a multi-kilowatt class laser into an airborne platform for missile defense applications</li> <li>-- Determine the best laser/aircraft combination to cost effectively address the directed energy missile defense mission space</li> <li>-- Award two contracts through a preliminary design review</li> <li>-- Select the best industry concept between the two contracts and award a four year contract to build and test a missile defense laser demonstrator</li> </ul> <p>- Perform the directed energy requirements flow down and engineering analysis for a missile defense laser demonstrator</p> <p>- Define a preliminary directed energy concept of operations for laser equipped high altitude airborne platform participation in Ballistic Missile Defense System tests</p>	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	23.744

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy for MD98, Directed Energy Prototype Development, consists of contracts to industry via the Advanced Technology Innovation Broad Agency Announcement and competitive procurement(s) to develop and demonstrate a missile defense laser demonstrator system in realistic test environments the MDA will leverage Agency, partner subject matter experts and use government model based assessments to inform Better Buying Power philosophy acquisition decisions.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>
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<b>Product Development (\$ in Millions)</b>				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			
Directed Energy Prototype Development - Missile Defense Laser Demonstrator-Preliminary Design A	C/TBD	Contract A (TBD) : TBD	0.000	0.000		0.000		10.527		-		10.527	Continuing	Continuing	Continuing
Directed Energy Prototype Development - Missile Defense Laser Demonstrator-Preliminary Design B	C/TBD	Contract B (TBD) : TBD	0.000	0.000		0.000		10.527		-		10.527	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		21.054		-		21.054	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
Directed Energy Prototype Development - Agency Operations - Civilian Salaries and Travel	Allot	MDA Multi : AL, NM	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Directed Energy Prototype Development - Missile Defense Laser Demonstrator - Performance Analysis	MIPR	MIT LL, Aviation and Missile Research Development and Engineering Center (AMRDEC) : MA, AL	0.000	0.000		0.000		1.200		-		1.200	Continuing	Continuing	Continuing
Directed Energy Prototype Development - Missile Defense Laser Demonstrator - Advisory and Assistance Services	C/CPFF	Various : NM, AL	0.000	0.000		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>
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<b>Support (\$ in Millions)</b>				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			
Directed Energy Prototype Development - Missile Defense Laser Demonstrator – Engineering and Technical Services	MIPR	Defense Technical Information Center, Aerospace : VA, CA	0.000	0.000		0.000		1.490	Oct 2016	-		1.490	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		2.690		-		2.690	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	0.000	23.744	-	23.744	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</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
Missile Defense Laser Demonstrator (MDLD) Contract Award								△																				
MDLD Preliminary Design Review (PDR)											△																	
MDLD Critical Design Review (CDR)												△																
MDLD Ground Test																			△									
MDLD CONUS Flight Test																				△								
Target Acquisition and Tracking Demonstration																							△					
Laser Pointing Demonstration #1																								△				
Laser Pointing Demonstration #2																										△		
Mission Laser Demonstration #1																											△	
Mission Laser Demonstration #2																												△
Laser Concept of Operations																												△

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD98 / <i>Directed Energy Prototype Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Missile Defense Laser Demonstrator (MDLD) Contract Award	1	2017	1	2017
MDLD Preliminary Design Review (PDR)	4	2017	4	2017
MDLD Critical Design Review (CDR)	3	2018	3	2018
MDLD Ground Test	1	2020	1	2020
MDLD CONUS Flight Test	4	2020	4	2020
Target Acquisition and Tracking Demonstration	1	2021	1	2021
Laser Pointing Demonstration #1	2	2021	2	2021
Laser Pointing Demonstration #2	2	2021	2	2021
Mission Laser Demonstration #1	3	2021	3	2021
Mission Laser Demonstration #2	4	2021	4	2021
Laser Concept of Operations	4	2021	4	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</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
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

N/A

**A. Mission Description and Budget Item Justification**

MD99, Discrimination Sensor Prototype Development, builds on the technology developed and demonstrated in the Discrimination Sensor Technology program element 0603177C. This project funds development of an advanced sensor airborne system, using the operationally proven MQ-9 Reaper. Areas of concentration include advanced detectors, infrared sensors, and precision tracking and discrimination algorithms. Discrimination Sensor Prototype Development pursues a cost-effective incremental upgrade philosophy that demonstrates precision track at extended ranges, simple scene discrimination and then complex scene discrimination. The MQ-9 Reaper equipped with an advanced sensor provides the MDA a viable quick reaction capability to augment BMDS radar.

This project develops and tests a high-precision advanced sensor to improve identifying, acquiring, tracking and discriminating incoming ballistic missile threats, specifically addressing U.S. Strategic Command's Prioritized Capabilities List requirements. Discrimination Sensor Prototype Development enhances the BMDS capability to discriminate lethal objects in a threat cluster, and track and hand over the threat object with Aegis Launch-on-Remote and Engage-on-Remote precision. Aegis Launch-on-Remote is the capability that allows Aegis BMD to launch an interceptor before its own radar acquires the threat. Aegis BMD Launch-on-Remote involves Command, Control, Battle Management and Communications providing information about the paths (called tracks) of ballistic missile threats to Aegis BMD from forward based radars. It expands the space where the system can intercept the threat and the defended area. Engage-on-Remote engagement allows the use of off board sensor information to launch and guide the Standard Missile - 3 Block IIA missile to final intercept. The increased kinematic envelope of the Standard Missile - 3 Block IIA, when combined with Engage-on-Remote will expand the battlespace and increase the number of threats engaged over previous baselines.

This project funds development of a next-generation ruggedized airborne processor and the corollary ground and airborne subsystems required for BMDS test. This advanced sensor will operate at the strategic ranges required to augment BMDS radar, improve the BMDS discrimination capability and provide precision track of large raids. These advanced sensor systems have the capacity to track multiple targets simultaneously, substantially reducing the number of sensor assets required for large raids. This project will include advanced sensor integration into a high altitude airborne platform and testing in operationally relevant environments Both a preliminary design review and a critical design review are scheduled for FY 2017, followed by a flight laboratory test and system ground test in FY 2018 and flight testing in FY 2019- FY 2021.

The MDA will also partner with the Services to develop concepts for the cost effective integration of the sensor technology successfully demonstrated under the Discrimination Sensor Technology program element into limited fielding upgrade kits. The concept information will inform a MDA Product Development Decision for

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>
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further development and/or limited fielding decisions. These kits could be installed on MQ-9 aircraft deployed in theater to add missile defense capabilities on short notice.

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Discrimination Sensor Prototype Development</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This project develops an advanced sensor prototype for participation in BMDS tests under operationally relevant conditions and at operationally relevant ranges. The sensors upgrade the proven Multi-Spectral Targeting System (MTS) / MQ-9 Reaper combination demonstrated under the Discrimination Sensor Technology Program Element to perform tracking and discrimination of lethal objects.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Initiate design and development of an advanced sensor for Multi-Spectral Targeting System (MTS)-C / MQ-9 Reaper integration that supports improved Ballistic Missile Defense System (BMDS) discrimination capability</li> <li>-- Begin the preliminary design of an advanced sensor</li> <li>-- Conduct integration and component test of advanced sensor subsystems</li> <li>-- Perform laboratory testing to verify subsystem performance</li> <li>-- Analyze laboratory test data to verify advanced sensor precision track and discrimination capability</li> </ul> <p>- Conduct compact advanced sensor ground tests against targets of opportunity to verify tracking and algorithm performance for BMDS discrimination</p> <p><b>FY 2017 Plans:</b></p> <p>In FY 2017, an increase of \$39.376 million funds MD99, Discrimination Sensor Prototype build, ground test, aircraft integration, and flight qualification.</p> <ul style="list-style-type: none"> <li>- Continue development and test of an advanced sensor equipped Multi-Spectral Targeting System - C (MTS-C) and MQ-9 Reaper prototype system</li> <li>-- Conduct a preliminary design review for the advanced sensor system</li> <li>-- Conduct a critical design review for the advanced sensor system</li> <li>-- Initiate development of the flight qualified payload system</li> <li>-- Upgrade the MTS-C to improve pointing and test in the laboratory</li> <li>-- Develop a new chin mount for the MQ-9 Reaper that increases MTS-C mount rigidity while minimizing weight and drag</li> </ul>	0.000	20.467	57.382
	-	-	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Complete development and ground test of a compact, fully packaged, flight qualifiable advanced sensor for future integration into a high altitude platform			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	20.467	57.382

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy for MD99, Discrimination Sensor Prototype Development consists of a contract(s) to industry via the Advanced Technology Innovation Broad Agency Announcement and competitive procurements and agreements with Federally Funded Research and Development Centers to develop and demonstrate an advanced sensor prototype system in realistic test environments. The MDA will leverage Agency, partner subject matter experts and use government model based assessments to inform Better Buying Power philosophy acquisition decisions.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>
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<b>Product Development (\$ in Millions)</b>				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			
Discrimination Sensor Prototype Development - Advanced Sensor Dev Support	MIPR	Aerospace, MIT/LL : CA, MA	0.000	0.000		0.000		0.936		-		0.936	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Advanced Sensor Development	C/CPFF	General Atomics : CA	0.000	0.000		6.545	Dec 2015	30.954		-		30.954	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Advanced Sensor Performance Analysis Aegis EOR Hardware in the Loop (HWIL)	MIPR	MIT LL, Aviation and Missile Research, Development, and Engineering Center (AMRDEC) : MA, AL	0.000	0.000		0.000		5.800		-		5.800	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Advanced Sensor Performance Analysis Aegis Engage-on-Remote (EOR) Concept Assessment	MIPR	MIT LL : MA	0.000	0.000		0.500	Dec 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Advanced Sensor Prototype Development	MIPR	MIT LL, Aerospace : MA, CA	0.000	0.000		7.400	Dec 2015	2.300		-		2.300	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - EOIR Test	C/CPFF	General Atomics : CA	0.000	0.000		1.043		6.041		-		6.041	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		15.488		46.031		-		46.031	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>
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<b>Support (\$ in Millions)</b>				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			
Discrimination Sensor Prototype Development - Advanced Sensor - Advisory and Assistance Services	C/CPFF	Various : NM, AL	0.000	0.000		0.000		3.103		-		3.103	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Advanced Sensor - Engineering and Technical Services	MIPR	Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Aerospace : AL, CA	0.000	0.000		1.624	Dec 2015	1.371		-		1.371	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Agency Operations - Civilian Salaries and Travel	Allot	MDA Multi : AL, NM	0.000	0.000		0.814		4.608		-		4.608	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Agency Operations - Facility Support	MIPR	377th ABW : NM	0.000	0.000		0.093	Dec 2015	0.111		-		0.111	Continuing	Continuing	Continuing
Discrimination Sensor Prototype Development - Information Management and Technology	C/CPAF	Northrop Grumman : CO	0.000	0.000		2.448		2.158		-		2.158	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		4.979		11.351		-		11.351	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	20.467	57.382	-	57.382	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency							<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>			<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

<b>Remarks</b> N/A									
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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</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
Advanced Sensor Prototype Contract Award							△																					
Advanced Sensor Preliminary Design Review								△																				
Electro Optical Infrared (EO/IR) Launch-on-Remote Track Ex									△																			
FEV-01 (FTM-DST 1) (AEGIS 5.0, Intercept Flight Test)										△																		
Advanced Sensor Critical Design Review											△																	
Advanced Sensor Flight Laboratory Test												△																
Advanced Sensor System Ground Test													△															
Advanced Sensor CONUS Flight Test															△													
Advanced Sensor Launch-on-Remote Test																△												
Advanced Sensor Live Fire Track Ex for FEV-02																	○											
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)																		△										
Advanced Sensor Discrimination																			△									
Advanced Sensor Engage-on-Remote																				△								
Advanced Sensor Kill Assessment Demo																										△		
Compact, Advanced Sensor Tracking Ground Test								△																				
Next-Generation Advanced Sensor Contract Award																	△											
Next-Generation Advanced Sensor PDR																			△									
Next-Generation Advanced Sensor CDR																									△			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD99 / <i>Discrimination Sensor Prototype Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Sensor Prototype Contract Award	3	2016	3	2016
Advanced Sensor Preliminary Design Review	1	2017	1	2017
Electro Optical Infrared (EO/IR) Launch-on-Remote Track Ex	3	2017	3	2017
FEV-01 (FTM-DST 1) (AEGIS 5.0, Intercept Flight Test)	4	2017	4	2017
Advanced Sensor Critical Design Review	3	2017	3	2017
Advanced Sensor Flight Laboratory Test	1	2018	1	2018
Advanced Sensor System Ground Test	3	2018	3	2018
Advanced Sensor CONUS Flight Test	2	2019	2	2019
Advanced Sensor Launch-on-Remote Test	3	2019	3	2019
Advanced Sensor Live Fire Track Ex for FEV-02	4	2019	4	2019
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)	4	2019	4	2019
Advanced Sensor Discrimination	2	2020	2	2020
Advanced Sensor Engage-on-Remote	3	2020	3	2020
Advanced Sensor Kill Assessment Demo	3	2021	3	2021
Compact, Advanced Sensor Tracking Ground Test	4	2016	4	2016
Next-Generation Advanced Sensor Contract Award	2	2019	2	2019
Next-Generation Advanced Sensor PDR	4	2019	4	2019
Next-Generation Advanced Sensor CDR	4	2020	4	2020

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

<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>				<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</i>			
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
MT99: <i>Technology Maturation Initiatives Test</i>	-	0.000	2.357	4.408	-	4.408	25.539	4.963	5.918	2.554	0	45.739
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The MT99, Technology Maturation Initiatives (TMI) Test project funds the management and execution of TMI prototype system participation in BMDS level tests, Hardware-in-the-Loop testing, and performance analysis costs for flight test data. This includes test asset shipment to test ranges, labor, travel, range support and Command Control Battle Management and Communications test support specific to Technology Maturation Initiatives. In FY 2017, all 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, and Ballistic Missile Defense Test, and 0604878C.

In FY 2017, the Technology Maturation Initiatives Test project funds the Advanced Technology specific costs for a dedicated Aegis launch-on-remote airborne sensor test.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Technology Maturation Initiatives Test	0.000	2.357	4.408
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
The \$2.051 million increase from FY 2016 to FY 2017 reflects the difference of cost between an associated operation test in FY 2016 and a dedicated live fire test in FY 2017.			
<b>FY 2016 Plans:</b>			
- Conduct system level hardware-in-the-loop testing in conjunction with Enterprise Sensor Laboratory and Experimental Laboratory for a BMDS level test			
- Shipping, labor, travel, and range support for a BMDS level test			
<b>FY 2017 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Conduct system level hardware-in-the-loop testing in conjunction with Enterprise Sensor Laboratory and Experimental Laboratory for the Aegis live fire test, Flight Experiment Advanced Technology -01 (FEV-01)			
- Shipping, labor, travel, and range support for FEV-01			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	2.357	4.408

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 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 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 of the BMDS models and simulations. This paradigm uses critical factor analysis to drive test design, planning, and execution for accrediting models & simulations, which is used to validate and assess system performance. With this test approach, MDA will establish confidence that the models & simulations 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</i>
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<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
Technology Maturation Initiatives Test - Command Control Battle Management and Communications	Various	Northrop Grumman, Lockheed Martin, Space and Naval Warfare Center, National Air and Space Intelligence Center, Naval Surface Warfare Center Dahlgren Division : CO, CA, OH, VA	0.000	0.000		1.306	Jan 2016	3.264		-		3.264	Continuing	Continuing	Continuing
Technology Maturation Initiatives Test - Pacific Missile Range Facility Test Prep	MIPR	Pacific Missile Range Facility : HI	0.000	0.000		0.122	Mar 2016	0.124		-		0.124	Continuing	Continuing	Continuing
Technology Maturation Initiatives Test - Transportation Costs for Reapers	MIPR	US Air Force : CA	0.000	0.000		0.929	Mar 2016	1.020		-		1.020	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		2.357		4.408		-		4.408	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Missile Defense Agency								<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>				<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	0.000	0.000	2.357		4.408	-		4.408	-	-	-

**Remarks**

N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</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		
Hardware in the Loop (HWIL), Shipping, Travel and Range Support for Pacific Dragon						☆	☆																							
HWIL, Shipping, Travel and Range Support for Flight Experiment Advanced Technology (FEV) - 01									☆	☆	☆	☆																		
HWIL, Shipping, Travel and Range Support for Flight Test Standard Missile 3 (FTM)-32															☆	☆														
HWIL, Shipping, Travel and Range Support for FEV-02															☆	☆	☆	☆												
HWIL, Shipping, Travel and Range Support for Flight Test Ground-Based Interceptor (FTG) -18																			☆	☆										
HWIL, Shipping, Travel and Range Support for FTM - 30																				☆	☆									
HWIL, Shipping, Travel and Range Support for FTM - 38																											☆	☆		
HWIL, Shipping, Travel and Range Support for Flight Test Operational (FTO) - 04																											☆	☆		
HWIL, Shipping, Travel and Range Support for Flight Test THAAD (FTT) - 21																											☆	☆		

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MT99 / <i>Technology Maturation Initiatives Test</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Hardware in the Loop (HWIL), Shipping, Travel and Range Support for Pacific Dragon	2	2016	3	2016
HWIL, Shipping, Travel and Range Support for Flight Experiment Advanced Technology (FEV) - 01	1	2017	4	2017
HWIL, Shipping, Travel and Range Support for Flight Test Standard Missile 3 (FTM)-32	2	2019	3	2019
HWIL, Shipping, Travel and Range Support for FEV-02	1	2019	4	2019
HWIL, Shipping, Travel and Range Support for Flight Test Ground-Based Interceptor (FTG) -18	1	2020	2	2020
HWIL, Shipping, Travel and Range Support for FTM - 30	3	2020	4	2020
HWIL, Shipping, Travel and Range Support for FTM - 38	2	2021	3	2021
HWIL, Shipping, Travel and Range Support for Flight Test Operational (FTO) - 04	2	2021	3	2021
HWIL, Shipping, Travel and Range Support for Flight Test THAAD (FTT) - 21	3	2021	4	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <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
MC98: <i>Cyber Operations</i>	-	0.000	0.166	0.168	-	0.168	0.258	0.176	0.179	0.182	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The increase in FY 2018 reflects the need for Information Assurance Controls Validation Testing recertification every three years.

**A. Mission Description and Budget Item Justification**

MC98, Cyber Operations, sustains the MDA DoD Information Assurance Certification and Accreditation Program and Controls Validation Testing activities, analysis of validation results, risk assessments and reviews of proposed Program Manager/Information Assurance Manager Plans of Action and Milestones for the MDA Discrimination Sensor Technology mission systems. It maintains the Certification and Accreditation data repository, capturing the DoD Information Assurance Certification and Accreditation Program documentation (artifacts, validation results, and Information Assurance Risk Assessment results, and Designated Approving Authority ) accreditation decisions) and Plans of Action and Milestones on all MDA information systems.

This project monitors and tracks Cybersecurity mitigations detailed in Information Technology security Plans of Action and Milestones. Activities include preparation of Certification and Accreditation documentation and accreditation recommendations to the MDA Senior Information Assurance Officer /Certification Authority and Designated Approving Authority. Independent Verification and Validation 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.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Network / System Certification and Accreditation (C and A)	0.000	0.166	0.168
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> N/A			
<b>FY 2016 Plans:</b> The increase in FY 2018 reflects the need for Information Assurance Controls Validation Testing (CVT) recertification every three years.  - Conduct cyber security and information assurance engineering and architecture planning for Technology Maturation Initiatives information technology systems			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <i>Cyber Operations</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Plan and test the information assurance controls for Ballistic Missile Defense System Technology Maturation Initiatives systems</li> <li>- Develop Technology Maturation Initiatives DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages</li> <li>- Conduct Controls Validation Testing (CVT) for Technology Maturation Initiatives mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies</li> <li>- Conduct annual information assurance reviews on the Technology Maturation Initiatives enclaves to assess compliance in implementing and maintaining Information Assurance controls</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct cyber security and information assurance engineering and architecture planning for Technology Maturation Initiatives information technology systems</li> <li>- Plan and test the information assurance controls for Ballistic Missile Defense System Technology Maturation Initiatives systems</li> <li>- Develop Technology Maturation Initiatives DoD Information Assurance Certification and Accreditation Program certification and accreditation packages</li> <li>- Conduct Controls Validation Testing for Technology Maturation Initiatives mission systems and provide Plans of Action and Milestones to mitigate information assurance deficiencies</li> <li>- Conduct annual information assurance reviews on the Technology Maturation Initiatives enclaves to assess compliance in implementing and maintaining Information Assurance controls</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.166	0.168

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	9.999	12.139	17.880	-	17.880	12.599	12.897	13.004	13.221	Continuing	Continuing
• 0603177C: <i>Discrimination Sensor Technology</i>	35.223	28.200	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	61.396	51.153	71.843	-	71.843	69.004	53.745	66.400	67.487	Continuing	Continuing
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603180C: <i>Advanced Research</i>	18.476	17.364	23.433	-	23.433	19.870	20.529	21.131	21.494	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy for MC98, Cyber operations consists of using MDA civilian employees and the existing competitively awarded contractor support services.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <i>Cyber Operations</i>

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <i>Cyber Operations</i>
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<b>Support (\$ in Millions)</b>				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 and A) - Agency Operations - Civilian Salaries and Travel	Allot	Missile Defense Agency : NM	0.000	0.000		0.166	Oct 2015	0.168	Oct 2016	-		0.168	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.166		0.168		-		0.168	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	0.166	0.168	-	0.168	-	-	-

**Remarks**  
N/A



**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <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
Cyber Security Support					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Controls Validation Certification 1																△												
Controls Validation Certification 2																												△

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MC98 / <i>Cyber Operations</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cyber Security Support	1	2016	4	2021
Controls Validation Certification 1	3	2018	3	2018
Controls Validation Certification 2	3	2021	3	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> 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>	-	0.000	4.235	4.564	-	4.564	7.263	10.462	10.175	10.623	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to the Technology Maturation Initiatives Program Element. In FY 2017, PWS reflects a proportional change as a result of an increase in Technology Maturation Initiatives.

**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
<b>Title:</b> Program Wide Support	0.000	4.235	4.564
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide support was redistributed across RDT&E Program Elements with a proportional allocation to the Technology Maturation Initiatives Program Element. - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	4.235	4.564

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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, VA	0.000	0.000		0.000		0.091	Jul 2017	-		0.091	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.000	0.000		4.235		4.473	Aug 2017	-		4.473	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		4.235		4.564		-		4.564	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	4.235	4.564	-	4.564	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604115C / <i>Technology Maturation Initiatives</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</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	-	49.606	137.564	162.012	-	162.012	310.347	76.843	98.874	102.320	Continuing	Continuing
MD96: <i>Long Range Discrim Radar (LRDR)</i>	-	49.606	131.514	150.203	-	150.203	300.338	71.133	94.843	99.080	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	6.050	11.809	-	11.809	10.009	5.710	4.031	3.240	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Beginning in FY 2015, funding was realigned to the Long Range Discrimination Radar (LRDR) Program Element 0604873C, Project MD96, from Ballistic Missile Defense Sensors Program Element 0603884C, Project MD96.

The FY 2017 increase reflects LRDR program transition from the design phase to the production and integration phase and initiation of the purchase of subsystem components and materials.

**A. Mission Description and Budget Item Justification**

The Ballistic Missile Defense (BMD) Vision Study, conducted by MDA with United States Strategic Command (USSTRATCOM), identified the need to provide a Long Range Discrimination Radar (LRDR) to the BMDS to address the need to provide persistent (24 hours a day, 7 days a week, 365 days a year) precision tracking and discrimination capability. The development, integration and fielding of the LRDR will provide an improved persistent midcourse BMDS discrimination capability in the Pacific sensor architecture, optimize employment of the Ground-Based Midcourse Defense (GMD) interceptor inventory, and address evolving threats. In addition the radar will provide larger hit assessment coverage, potentially improving warfighting capability to manage the Ground Based Interceptor (GBI) inventory and improve the capacity of the BMDS.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	50.500	137.564	154.327	-	154.327
Current President's Budget	49.606	137.564	162.012	-	162.012
Total Adjustments	-0.894	0.000	7.685	-	7.685
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.894	0.000			
• Other Adjustment	0.000	0.000	7.685	-	7.685

**Change Summary Explanation**

FY 2017 increase reflects a realignment of funds to the Long Range Discrimination Radar (0604873C) Program Element to address Agency priorities. This PE encompasses LRDR program transition from the design phase to the production and integration phase. During FY 2017, MDA will conduct Critical Design Reviews (CDRs) at the component, subsystem, and system levels. Following a successful system CDR, MDA will order parts based on the approved designs. MDA will begin manufacturing and testing high-volume components and will develop the major software elements. In addition, MDA will prepare site infrastructure for construction and integration activities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)				<b>Project (Number/Name)</b> MD96 / Long Range Discrim Radar (LRDR)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD96: Long Range Discrim Radar (LRDR)	-	49.606	131.514	150.203	-	150.203	300.338	71.133	94.843	99.080	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The BMD Vision Study, conducted by MDA with USSTRATCOM, identified the need to enhance the discrimination capabilities of our sensors and weapon systems. This need was affirmed by the USSTRATCOM's Integrated Air and Missile Defense Prioritized Capabilities List for Program Objective Memorandum FY15. The funds in this project will be utilized by the BMD Sensors Directorate to meet this need through the following activities:

- Development and initial fielding of a Long Range Discrimination Radar (LRDR) by 2020 to provide an improved persistent midcourse Ballistic Missile Defense System (BMDS) discrimination capability in the Pacific sensor architecture and to increase the defensive capacity of the Ground-Based Midcourse Defense (GMD) interceptor inventory and address evolving threats
- System engineering, software development, and testing support for LRDR development and deployment within the Pacific sensor architecture
- Modeling and Simulation (M&S) efforts to include: integration of LRDR digital simulations into the BMDS, M&S architecture, and Verification, Validation, and Accreditation of LRDR models
- In addition, the inherent capabilities of the LRDR will be leveraged to support auxiliary missions, including augmentation of United States Air Force (USAF) Space Surveillance and Space Situational Awareness capabilities

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Long Range Discrimination Radar (LRDR)	49.606	131.514	150.203
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- Completed the LRDR competitive source selection process and awarded the LRDR prime contract to Lockheed Martin, Moorestown for \$784M (Fixed Price Incentive Fee) and initiated post award Integrated Product Teams			
- Obtained approval from the Deputy Secretary of Defense, designating the U.S. Air Force as the Lead Service for the LRDR			
- Supported by system trade studies, selected the Clear Air Force Station (AFS), Alaska as the future site of the LRDR and received concurrence from the USSTRATCOM, USNORTHCOM and USPACOM Commanders pending a Finding of no Significant Impact (FONSI) from the Environmental Assessment			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	<b>Project (Number/Name)</b> MD96 / <i>Long Range Discrim Radar (LRDR)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Completed the Site Selection Study which provided ranked alternatives to decide the preferred location for LRDR on the Clear AFS</li> <li>- Completed the 35% facilities design review for LRDR</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Conduct System Requirements Review (SRR) and perform requirements verification</li> <li>-Conduct radar Contract Integrated Baseline Review (IBR)</li> <li>-Initiate development engineering for radar hardware, software and equipment shelter</li> <li>-Begin preparations for system-level Preliminary Design Review (PDR)</li> <li>-Support completion of Independent Cost Estimate (ICE)</li> <li>-Begin purchase of prototype hardware and long-lead items</li> <li>-Develop requirements and begin modifications to Command, Control, Battle Management, and Communications (C2BMC) systems for LRDR functionality</li> <li>-Develop requirements and initiate purchase of temporary facilities to support site activation</li> <li>-Establish government software Independent Verification and Validation (IV&amp;V) lab</li> <li>-Complete environmental, geotechnical, and other studies for environmental compliance and to inform military construction (MILCON) design effort</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Increase reflects LRDR program transition from the design phase to the production and integration phase. Critical Design Reviews (CDRs) will be conducted and parts will be ordered based on the approved designs. Manufacturing and testing of high-volume components will begin, major software elements will be developed and site infrastructure will be prepared for construction and deployment activities</li> <li>-Conduct system-level Preliminary Design Review</li> <li>-Participate in MILCON 65% Facilities Design Review</li> <li>-Conduct system-level CDR at the component, subsystem and system level and begin preparations for system-level Final Design Review</li> <li>-Initiate manufacture and testing of high-volume components and development of major software elements</li> <li>-Conduct the DBR after PDR and completion of the ICE, in accordance with acquisition standards and program schedule that was briefed to OSD, AT&amp;L in Sep 2015</li> <li>-Procure, assemble, integrate, and test radar and data processing components</li> <li>-Continue modifications to Command, Control, Battle Management, and Communications (C2BMC) systems for LRDR functionality</li> <li>-Integrate software into government software IV&amp;V lab and begin software testing</li> <li>-Continue to develop site activation plans and initiate on-site personnel support services</li> </ul>			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)	<b>Project (Number/Name)</b> MD96 / Long Range Discrim Radar (LRDR)
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-Prepare site infrastructure for construction and integration activities			
-Establish and implement initial physical and electronic security services			
<b>Accomplishments/Planned Programs Subtotals</b>	49.606	131.514	150.203

**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
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563
• 0603884C: <i>SENSORS MILCON</i>	0.000	0.000	166.670	-	166.670	0.000	150.000	0.000	0.000	0	316.670
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 31299903: <i>MILCON PLANNING and DESIGN</i>	58.704	15.000	0.000	-	0.000	6.355	6.384	7.640	7.848	0	101.931

**Remarks**

**D. Acquisition Strategy**

The Long Range Discrimination Radar (LRDR) acquisition strategy was approved on 7 January 2015 which incorporates robust acquisition practices to ensure delivery of a best value solution that meets mission performance requirements and reduces lifecycle costs. A fixed-price incentive contract was awarded to Lockheed Martin Corporation of Moorestown, New Jersey on October 21, 2015 to manage, develop, build and integrate, test, field and sustain the LRDR prime mission equipment. The prime contract included other fixed-price and cost-reimbursable line items and options in order to properly balance acquisition costs and risks. Performance and cost incentives were included to motivate contractor performance. The radar prime contractor will deliver a full technical data package, which will enable the government to effectively and affordably sustain the system. MDA will synchronize the radar development contract efforts with a simultaneous MILCON effort which will be executed through the US Army Corps of Engineers. The LRDR is expected to complete development and initial fielding in 2020 for BMDS integration and testing.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)	<b>Project (Number/Name)</b> MD96 / Long Range Discrim Radar (LRDR)
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<b>Product Development (\$ in Millions)</b>				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			
Long Range Discrimination Radar (LRDR) - Communications Integration	C/TBD	TBD : TBD	0.000	0.000		8.800		4.000	Nov 2016	-		4.000	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - IV&V	MIPR	AMRDEC : Huntsville, AL	0.000	0.000		1.780		3.700	Nov 2016	-		3.700	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Prime Contractor	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	35.500		101.634	Dec 2015	129.753	Nov 2016	-		129.753	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Site Activation & Studies	C/TBD	MDA : AL	0.000	14.106		19.300	Dec 2015	12.750	Nov 2016	-		12.750	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	49.606		131.514		150.203		-		150.203	-	-	-

**Remarks**  
Contract method and performing activity remain TBD until contract award.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	49.606	131.514	150.203	-	150.203	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	<b>Project (Number/Name)</b> MD96 / <i>Long Range Discrim Radar (LRDR)</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
Long Range Discrimination Radar Capability	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)	<b>Project (Number/Name)</b> MD96 / Long Range Discrim Radar (LRDR)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Long Range Discrimination Radar Capability	1	2015	4	2021



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)				<b>Project (Number/Name)</b> MD40 / Program Wide Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: Program Wide Support	-	0.000	6.050	11.809	-	11.809	10.009	5.710	4.031	3.240	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to Long Range Discrimination Radar (LRDR). In FY 2017, PWS reflects a proportional change as a result of an increase to Long Range Discrimination Radar (LRDR).

**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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	0.000	6.050	11.809
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Long Range Discrimination Radar (LRDR) - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	6.050	11.809

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> N/A		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / Long Range Discrimination Radar (LRDR)	<b>Project (Number/Name)</b> MD40 / Program Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, VA, Aust, Japan	0.000	0.000		6.050		6.050	Nov 2016	-		6.050	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.236	Jul 2017	-		0.236	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.000	0.000		0.000		5.523	Jul 2017	-		5.523	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		6.050		11.809		-		11.809	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	6.050	11.809	-	11.809	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604874C <i>I Improved Homeland Defense (HLD) Interceptors</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	-	97.739	278.944	274.148	-	274.148	321.441	479.049	508.198	580.239	Continuing	Continuing
MD97: <i>Improved HD Interceptors</i>	-	97.739	266.676	260.543	-	260.543	306.321	455.080	482.214	549.783	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	12.268	13.605	-	13.605	15.120	23.969	25.984	30.456	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense System (BMDS) provides combatant commanders with a continuously available (24 hours a day, 7 days a week, 365 days a year) capability to defend the Homeland against limited Intercontinental Ballistic Missile (ICBM) attacks.

MD97 Improved Homeland Defense Interceptors Program Element includes development of the GMD Redesigned Kill Vehicle (RKV), a modified tactical GBI booster (Configuration 3, or C3) to enhance survivability and expand homeland defense capabilities against emerging threats, and Ground Systems improvements.

The RKV effort will address the following three needs: 1) design to the evolving threat for increased performance; 2) improve reliability, availability, maintainability, testability, and producibility; 3) and increase in-flight communications to improve use of off-board sensors information and provide software improvements to support the Post-Intercept Assessment (PIA) capability. The Post-Intercept Assessment (PIA) capability will allow the warfighter to know whether engagements were successful, modify firing doctrine as needed, and determine whether or not to re-engage. Implementation of PIA could reduce the number of GBIs required to defeat a threat. The booster improvements will include a modification of the 3-Stage configuration that incorporates enhanced lightning protection, power transient protection, and survivability enhancements. This configuration will also carry forward the 2-stage mode capability currently being developed for the existing operational fleet.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604874C <i>I Improved Homeland Defense (HLD) Interceptors</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	99.500	278.944	279.565	-	279.565
Current President's Budget	97.739	278.944	274.148	-	274.148
Total Adjustments	-1.761	0.000	-5.417	-	-5.417
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.761	0.000			
• Other Adjustment	0.000	0.000	-5.417	-	-5.417

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors				<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD97: Improved HD Interceptors	-	97.739	266.676	260.543	-	260.543	306.321	455.080	482.214	549.783	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The Improved Homeland Defense Interceptor project will address four aspects of the evolving ICBM threat to the United States: quantity, launch timeline, intercept opportunity, and complexity (use of countermeasures). The Redesigned Kill Vehicle (RKV) will be designed to utilize the enhanced capabilities being developed in the Long Range Discriminating Radar (LRDR) and Discrimination programs. The redesign will improve performance to meet emerging threats and will improve the operational capacity of the GMD weapon system. The RKV will be built with a modular, open architecture and designed with common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The design for growth allows future upgradability. The Configuration 3 integrated boost vehicle will incorporate enhanced lightning protection, power transient protection, and survivability enhancements. The All-Up Round (AUR) development strategy is to develop, test, and field the C3 integrated boost vehicle and 2-or 3-stage flight mode for all boost vehicle configurations. The AUR development also integrates the RKV with three different 3-stage boost vehicle configurations: C1, C2, and C3. The Post-Intercept Assessment (PIA) capability will allow the warfighter to know whether engagements were successful, modify firing doctrine as needed, and determine whether or not to re-engage. Implementation of PIA could reduce the number of GBIs required to defeat a threat. The goal of all of these efforts is to develop and field an integrated set of capabilities to improve Homeland Defense Interceptors reliability, lethality, and discrimination to defeat future threats. Initially, RKV fielding will involve recapping fielded Capability Enhancement (CE) I equipped Ground Based Interceptors (GBI). Eventually, the RKV and C3 All Up Round will replace the current CE I and II GBI fleet.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Improved Homeland Defense (HLD) Interceptor Development	87.878	253.385	247.124
<b>Articles:</b>	-	-	-
<b>Description:</b> HLD development objectives include: redesigning the GMD kill vehicle, implementing tactical booster modifications, and upgrading the GMD Ground Systems. The RKV will be built with a modular, open architecture and designed with common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The design for growth allows future upgradability. The Configuration 3 integrated boost vehicle will incorporate enhanced lightning protection, power transient protection, and survivability enhancements. The All-Up Round (AUR) development strategy is to develop, test, and field the C3 integrated boost vehicle and 2-or 3-stage flight mode for all boost vehicle configurations. The AUR approach also integrates the RKV with three different 3-stage boost vehicle configurations: C1, C2, and C3. Post-Intercept Assessment capability will allow the warfighter to know whether engagements were successful and modify firing doctrine as needed to account for the outcome. PIA			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>implementation will potentially reduce the number of GBIs required to defeat a threat. The goal of all of these efforts is to develop and field an integrated set of capabilities to improve the reliability, lethality, and discrimination to defeat future threats.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Completed Market Analysis and Material Solution Analysis</li> <li>-Initiated Task Instructions to enable Industry Team development of RKV hardware, to include definition of requirements and engineering design activities</li> <li>-Conducted trade studies to inform decisions related to RKV technical solution</li> <li>-Initiated long-lead material purchases to support design verification testing</li> <li>-Initiated RKV Component Reliability Program to support and eliminate known risks and identify reliability improvements</li> <li>-Initiated activities related to development and integration of RKV with GMD Ground Systems communications</li> <li>-Established the Government RKV Development Laboratory (RDL) with initial capability to assess software maturity using modeling and simulation and software-in-the-loop testing</li> <li>-Initiated material purchases for hardware-in-the-loop capability at RDL</li> <li>-Initiated objective evidence documentation and analysis to support a 1QFY16 System Requirements Review (SRR)</li> <li>-Initiated activities to support a system-level Preliminary Design Review (PDR) and a system-level Critical Design Review (CDR)</li> <li>-Developed the RKV Acquisition Strategy and obtained Under Secretary of Defense (AT&amp;L) approval</li> <li>-Initiated requirements development, engineering analysis, capability integration, and performance verification for RKV development</li> <li>-Initiated Technical Direction Agent activities to obtain the technical expertise and program execution experience required to provide independent assessment/analysis, objective advice on defensive weapon system technical issues and product development challenges facing in the GMD and RKV Program</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Complete objective evidence documentation and analysis to support a 1QFY16 System Requirements Review (SRR)</li> <li>-Complete SRR</li> <li>-Continue to provide Task Instructions to enable Industry Team development of RKV hardware</li> <li>-Continue material purchases in support of development activities, design verification testing and initial flight testing</li> <li>-Continue material purchases in support of hardware-in-the-loop capability at the RKV Development Laboratory (RDL)</li> <li>-Initiate component-level SRRs and Preliminary Design Reviews (PDRs) in support of system-level PDR and a system-level Critical Design Review (CDR)</li> <li>-Initiate development of special tooling and other special test equipment</li> <li>-Complete component and system PDRs and order remaining long lead hardware for Design Verification Testing</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Initiate Electromagnetic Environmental Effects (E3) testing, thermal testing, vibration and shock environments testing and Highly Accelerated Lifecycle Testing as part of the Design Verification Testing program</p> <p>-Continue requirements development, engineering analysis, capability integration, and performance verification for RKV development</p> <p>-Initiate modeling and simulation development and integration to assess component and system performance in support of annual technical assessments</p> <p><b>FY 2017 Plans:</b></p> <p>-Continue long lead material purchases for qualification and flight test articles in order to support early testing and evaluation to ensure RKV meets reliability, producibility, modularity and performance requirements</p> <p>-Initiate testing and development efforts associated with the RKV design to include module design verification, qualification, and survivability tests, integrated kill vehicle qualification tests, and BMDS ground tests</p> <p>-Continue development of kill vehicle algorithms and software, and conduct software independent verification and validation testing at contractor and government facilities</p> <p>-Continue development, conduct design reviews, and begin acquisition of qualified long lead items for the integrated 3-Stage boost vehicle, Configuration 3 (C3) that incorporates enhanced lightning protection; power transient protection, survivability enhancements, and a system selectable 2-stage mode capability for integration into the operational fleet</p> <p>-Initiate the Post-Intercept Assessment (PIA) capability, which will allow the warfighter to know whether engagements were successful, modify firing doctrine as needed, and determine whether or not to re-engage. Implementation of PIA could reduce the number of GBIs required to defeat a threat</p> <p>-Continue All Up Round (AUR) development and build two flight test units to support the testing and fielding of RKV and C3 equipped interceptors</p> <p>-Continue requirements development, engineering analysis, capability integration, and performance verification for RKV development</p> <p>-Continue modeling and simulation development and integration to assess component and system performance in support of annual technical assessments</p>				
<b>Title:</b> Program Operations		9.861	13.291	13.419
		<b>Articles:</b>	-	-
<p><b>Description:</b> Program Operations provides for integrated program management of the Improved Homeland Defense Interceptor efforts. Included in this effort are program and business management, program administration, technical and testing oversight, verification of hardware and software development, quality / safety / mission assurance, integrated logistics support, and government manpower and infrastructure to develop, test and sustain the RKV.</p> <p><b>FY 2015 Accomplishments:</b></p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>-Conducted technical and business management support, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities, to ensure the program met cost, schedule, and performance goals</li> <li>-Ensured Ground-based Midcourse Defense (GMD) RKV program compliance with internal and external direction, policies, and regulations to deliver critical capability via a consistent and disciplined process</li> <li>-Provided a Mission Assurance and Manufacturing Engineering Program to include quality, configuration management, manufacturing, engineering, and safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</li> <li>-Updated RKV Acquisition Strategy and submitted the plan for approval by the Under Secretary of Defense(AT&amp;L)</li> <li>-Initiated development of a system Work Breakdown Structure</li> <li>-Developed a draft Statement of Work in support of future contract definitization</li> <li>-Developed a Contract Line Item Number structure in support of future contract definitization</li> <li>-Identified and defined Contract Data Requirements List in support of future contract definitization</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Perform technical and business management support, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities to ensure the program meets cost, schedule, and performance goals</li> <li>-Ensure Ground-based Midcourse Defense (GMD) RKV program compliance with internal and external direction, policies, and regulations to deliver critical capability via a consistent and disciplined process</li> <li>-Provide a Mission Assurance and Manufacturing Engineering Program to include quality, configuration management, manufacturing, engineering, and safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs</li> <li>-Complete development of a system Work Breakdown Structure</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Provide technical and business management support, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities, to ensure the program meets cost, schedule, and performance goals</li> <li>-Ensure Ground-based Midcourse Defense (GMD) RKV program compliance with internal and external direction, policies, and regulations to deliver critical capability via a consistent and disciplined process</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Provide a Mission Assurance and Manufacturing Engineering Program to include quality, configuration management, manufacturing, engineering, and safety in all phases of the system life cycle, throughout the supply chain, and at all levels of assembly emphasizing high yield rates which minimize test and rework costs			
<b>Accomplishments/Planned Programs Subtotals</b>	97.739	266.676	260.543

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603294C: <i>Common Kill Vehicle Technology</i>	24.836	61.753	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0604887C: <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	78.463	64.618	56.481	-	56.481	86.709	76.205	74.776	87.415	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

MDA is executing an acquisition strategy to develop an integrated Redesigned Kill Vehicle (RKV) with a Cross-Industry team design solution. This concept includes potential production sources from industry and provides a consolidated product that includes the collective knowledge of and leverages capabilities from the industry leaders in kill vehicle design and development. The industry teaming method incorporates the most viable technical approaches from each contractor and allows for combination of resources to shorten the learning curve and reduce the time needed to develop and begin initial production. This strategy allows for industry to provide the best value and best design solution for the MDA while setting the conditions for future competition of production. The development phase is followed by initial production and then a competitive full rate production phase. The competitive production phase encompasses the purchase, production, and the integration of the proven components demonstrated in the development phase and provides competitive benefits to the Government. This strategy allows for industry to provide the best value and best design solution for the MDA while setting the conditions for future competition of production. The Government, as the design authority, retains responsibility for the execution of the program cost, schedule, and the technical performance of the RKV to meet requirements levied on the contractor. The Government has implemented a rigorous systems engineering process to ensure that the design and development efforts meet requirements. The MDA goal is to field the initial production RKVs to recap existing CE-I GBIs and support follow-on BMDS test events by FY2020. This acquisition strategy is documented in the RKV Acquisition Plan signed by the Defense Acquisition Executive in October 2015.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>

<b><u>E. Performance Metrics</u></b> N/A
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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Missile Defense Agency** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors	<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors
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<b>Support (\$ in Millions)</b>				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 Operations - Contract Support Services	C/CPFF	Various AL/AK/ : CA/CO/VA	0.000	4.510		6.787	Oct 2015	6.141	Oct 2016	-		6.141	Continuing	Continuing	Continuing
Program Operations - FFRDC Support	MIPR	MIT : LL AL	0.000	1.138		1.448	Nov 2015	1.501	Nov 2016	-		1.501	Continuing	Continuing	Continuing
Program Operations - Government Civilian Salaries	MIPR	MDA : AL/VA	0.000	1.714		2.525	Oct 2015	3.363	Oct 2016	-		3.363	Continuing	Continuing	Continuing
Program Operations - Information Management & Technology Ops	C/CPAF	Northrop Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	0.552		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Operations - Other Government Agencies	MIPR	Various AL/VA : FL/CO	0.000	1.767		2.331	Oct 2015	2.043	Oct 2016	-		2.043	Continuing	Continuing	Continuing
Program Operations - Travel	MIPR	MDA : AL/VA	0.000	0.180		0.200	Oct 2015	0.371	Oct 2016	-		0.371	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	9.861		13.291		13.419		-		13.419	-	-	-

**Remarks**  
N/A

<b>Product Development (\$ in Millions)</b>				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			
Improved Homeland Defense (HLD) Interceptor Development - Configuration 3 Booster Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		0.000		20.802	Nov 2016	-		20.802	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - PRIME	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	5.505		0.000		0.000		-		0.000	0	5.505	0

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors	<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors
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<b>Product Development (\$ in Millions)</b>				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			
Concept Definition and Program Planning															
Improved Homeland Defense (HLD) Interceptor Development - PRIME RKV Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	51.714		237.431	Nov 2015	199.783	Nov 2016	-		199.783	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - Post-Intercept Assessment	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		0.000		7.650	Nov 2016	-		7.650	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - RKV Development Lab and System Support	MIPR	AMRDEC : Redstone Arsenal, AL	0.000	15.050		15.954	Nov 2015	18.889	Nov 2016	-		18.889	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - RKV Requirements Development	C/Various	Fifth Gait Technologies Inc, CA / Modern Technologies Solutions Inc, AL : Boeing, AL	0.000	4.535		0.000		0.000		-		0.000	0	4.535	0
Improved Homeland Defense (HLD) Interceptor Development - Technical Direction Agent	MIPR	AL/CA/GA/MA : MD/ NM/UT/VA	0.000	11.074		0.000		0.000		-		0.000	0	11.074	0
<b>Subtotal</b>			0.000	87.878		253.385		247.124		-		247.124	-	-	-

**Remarks**  
N/A



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors	<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	0.000	97.739	266.676	260.543	-	260.543	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors	<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors
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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
System Requirements Review																												
Preliminary Design Review (PDR)					★																							
Key Component Critical Design Review (CDR)								☆				☆																
Critical Design Review (CDR)												☆																
Complete Qualification Test																△												
GM CTV-03 (GM, Non-Intercept Flight Test)																△												
FTG-17 (DT/OT) (GM, Intercept Flight Test)																				△								
FTG-18 (GM, Intercept Flight Test)																								△				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Requirements Review	1	2016	1	2016
Preliminary Design Review (PDR)	4	2016	4	2016
Key Component Critical Design Review (CDR)	2	2017	2	2017
Critical Design Review (CDR)	4	2017	4	2017
Complete Qualification Test	2	2018	2	2018
GM CTV-03 (GM, Non-Intercept Flight Test)	3	2018	3	2018
FTG-17 (DT/OT) (GM, Intercept Flight Test)	3	2019	3	2019
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors				<b>Project (Number/Name)</b> MD40 / Program Wide Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: Program Wide Support	-	0.000	12.268	13.605	-	13.605	15.120	23.969	25.984	30.456	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to Improved Homeland Defense (HLD) Interceptors. In FY 2017, PWS reflects a proportional change as a result an increase in Improved Homeland Defense (HLD) Interceptors.

**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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	0.000	12.268	13.605
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
- FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b>			
- Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Homeland Defense (HLD) Interceptors			
- See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b>			
- See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	12.268	13.605

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> N/A		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors	<b>Project (Number/Name)</b> MD40 / Program Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various : Multi: AL, VA	0.000	0.000		4.944		4.889	Mar 2017	-		4.889	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, VA	0.000	0.000		0.000		0.262	Jul 2017	-		0.262	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	Various : MDA Multi: AL, CO, CA, VA,	0.000	0.000		2.182		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.000	0.000		5.142		8.454	Jul 2017	-		8.454	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		12.268		13.605		-		13.605	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	12.268	13.605	-	13.605	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment 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	-	109.394	26.225	63.444	-	63.444	69.959	79.497	72.950	59.271	Continuing	Continuing
MT07: <i>THAAD Test</i>	-	109.394	25.072	60.577	-	60.577	66.569	75.456	69.204	56.145	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	1.153	2.867	-	2.867	3.390	4.041	3.746	3.126	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

FY 2017 Terminal High Altitude Area Defense (THAAD) Test funding increased from FY 2016 due to the scheduled execution of one THAAD flight test in FY2017, compared with no flight tests executed in FY 2016.

**A. Mission Description and Budget Item Justification**

THAAD System Test conducts Ballistic Missile Defense System (BMDS) Flight Tests and Ground Tests with other BMDS elements in accordance with the BMDS Integrated Master Test Plan (IMTP). THAAD System Test coordinates with Operational Test Agencies, conducts flight test operations, performs post-flight test reporting, and performs data distribution and data storage at Pacific Missile Range Facility and the Reagan Test Site.

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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	111.366	26.225	74.400	-	74.400
Current President's Budget	109.394	26.225	63.444	-	63.444
Total Adjustments	-1.972	0.000	-10.956	-	-10.956
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.972	0.000			
• Other Adjustment	0.000	0.000	-10.956	-	-10.956

**Change Summary Explanation**

The reduction in FY 2017 from the previous President's Budget reflects updated estimates for the execution of Flight Test THAAD-15 (FTT-15).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>				<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT07: <i>THAAD Test</i>	-	109.394	25.072	60.577	-	60.577	66.569	75.456	69.204	56.145	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

FY 2017 THAAD Test funding increased from FY 2016 because THAAD is executing one flight test in FY 2017, compared to no flight tests executed in FY 2016.

**A. Mission Description and Budget Item Justification**

THAAD System Test conducts BMDS Flight Tests and Ground Tests with other BMDS elements (including BMDS Command, Control, Battle Management, and Communication, PATRIOT, and Aegis) in accordance with the BMDS IMTP. THAAD System Test coordinates with Operational Test Agencies, conducts flight test operations, performs post-flight test reporting, and performs data distribution and data storage at Pacific Missile Range Facility and the Reagan Test Site.

THAAD Flight Test Execution includes mission planning, pre-flight integration testing, conduct of readiness reviews, test asset transportation, flight test execution and data collection, post flight test reporting and data distribution.

Ground Test Execution includes mission planning, BMDS test integration, conduct of readiness reviews, ground test execution and data collection, and post-test reporting and data distribution.

Resources include sustainment and maintenance of test equipment and facilities. It provides maintenance, repair, and fueling of THAAD Battery assets utilized in testing.

Wargames & Exercises supports Combatant Commanders with modeling and simulations and subject matter expertise during exercise events.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Flight Test Execution	92.286	16.058	52.020
<b>Articles:</b>	-	-	-
<b>Description:</b> THAAD Flight Test Execution includes mission planning, pre-flight integration testing, conduct of readiness reviews, test asset transportation, flight test execution and data collection, post flight test reporting and data distribution.			
<b>FY 2015 Accomplishments:</b>			
- Conducted flight test planning, range interface, coordination with Operational Test Agencies (OTAs) and execution of flight test operations at Wake Island for Flight Test Operational-02 Event 2a(FTO-02 E2a) (BMDS Operational Flight Test) to further demonstrate, in an operational scenario, THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with BMDS Command, Control, Battle Management, and Communications (C2BMC) and forward-based Army Navy / Transportable Radar Surveillance (AN/TPY-2) while engaging a Short Range Ballistic Missile.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>

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

	FY 2015	FY 2016	FY 2017
<p>- FTO-02 E2 was characterized as a “no test” due to a target extraction deployment malfunction. The test was re-planned as FTO-02 E2a.</p> <p>- Conducted flight test planning, range interface, coordination with Operational Test Agencies (OTAs) for Flight Test THAAD-18 (FTT-18) to demonstrate THAAD’s ability to intercept an Intermediate Range Ballistic Missile (IRBM) target using the THAAD radar, launcher, fire control and communications, Interceptor closed-loop operations, and engagement functions. However, FTT-18 was delayed for execution to first quarter FY 2016 because Flight Test Operational-02 Event 1 (FTO-02 E1) was a “no test” due to a target extraction failure that prevented target ignition.</p> <p><b>FY 2016 Plans:</b></p> <p>- Reduction in flight test cost from FY 2015 to FY 2016 is due to the scheduled execution of two THAAD flight tests in FY 2015, compared with no flight tests scheduled for execution in FY 2016. In FY 2015 THAAD scheduled to execute FTO-02 (BMDS Operational Flight Test) and FTT-18. In FY 2016, THAAD was not scheduled to conduct any flight tests and plans to complete post-mission analysis work for FTO-02 E2a, which was conducted first quarter FY 2016, and initiate test planning activities for FTT-15.</p> <p>- Complete FTO-02 E2a post-test reporting and data distribution to provide data for analysis and integration into Ballistic Missile Defense System (BMDS) Modeling and Simulation. FY 2016 funds are needed to finalize post flight test activities as FTO-02 E2a was executed in first quarter FY 2016.</p> <p>- Complete planning for FTT-18, a THAAD flight test 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 FY17/18 timeframe.</p> <p>- Initiate pre-mission planning for Flight Test THAAD-15 (FTT-15), to include long lead activities like range safety and weapon system performance analysis. FY 2016 funds are requested because long lead planning activities are required to begin approximately 12 months prior to a flight test event and FTT-15 is scheduled for third quarter FY 2017.</p> <p><b>FY 2017 Plans:</b></p> <p>- The increase in flight test cost from FY 2016 to FY 2017 is due to the scheduled execution of one THAAD flight test in FY 2017, compared with no flight tests initially planned for FY 2016. In FY 2017 THAAD plans to execute Flight Test THAAD-15 (FTT-15).</p> <p>- Conduct flight test planning, range interface, coordination with Operational Test Agencies (OTAs) and execution of flight test operations for Flight Test THAAD-15 (FTT-15) to demonstrate THAAD’s ability to intercept an Medium Range Ballistic Missile (MRBM) target using the THAAD radar, launcher, fire control and communications, Interceptor closed-loop operations, and engagement functions. MDA is currently assessing various test range locations for opportunities to reduce test costs. Additionally, FTT-15 will be the first developmental test of THAAD against a complex target scene. The results will inform additional THAAD development against associated objects.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>- Initiate pre-mission planning for Flight Test Operational-03 Event 2 (FTO-03 E2), to include long lead activities such as range safety and weapon system performance analysis. FY 2017 funds are requested because long lead planning activities are required to begin approximately 12 months prior to the FTO-03 E2 flight test event scheduled for fourth quarter FY 2018.</p> <p><b>Title:</b> Ground Test Execution</p> <p><b>Description:</b> Ground Test Execution includes mission planning, BMDS test integration, conduct of readiness reviews, ground test execution and data collection, post-test reporting and data distribution.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued THAAD participation in Missile Defense Agency (MDA) Ground Test operational scenario events (GT-04 and GT-06 campaigns) to ensure THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with Command, Control, Battle Management, and Communications (C2BMC) and forward-based Army Navy Transportable Radar Surveillance and Control (AN/TPY-2)</li> <li>- Provided pre-mission planning, pre- and post-mission analysis, reporting support, and execution to BMDS Ground Test campaigns.</li> <li>- Continued performance assessments to evaluate system performance and interoperability within the integrated Ballistic Missile Defense System (BMDS).</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue THAAD participation in Missile Defense Agency (MDA) Ground Test operational scenario events (GT-06 and GT-07 campaigns) to ensure THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with Command, Control, Battle Management, and Communications (C2BMC) and forward-based Army Navy Transportable Radar Surveillance and Control (AN/TPY-2).</li> <li>- Provide pre-mission planning, pre- and post-mission analysis, reporting support, and execution to BMDS Ground Test campaigns.</li> <li>- Continue performance assessments to evaluate system performance and interoperability within the integrated Ballistic Missile Defense System (BMDS).</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue THAAD participation in MDA Ground Test operational scenario events (GT-07 campaign) to ensure THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with C2BMC and AN/TPY-2.</li> <li>- Provide pre-mission planning, pre- and post-mission analysis, reporting support, and execution to BMDS Ground Test campaigns.</li> </ul>		4.917	5.106	5.192
		<b>Articles:</b> -	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Continue performance assessments to evaluate system performance and interoperability within the integrated BMDS.				
<b>Title:</b> Resources		11.814	3.471	2.920
		<b>Articles:</b>	-	-
<b>Description:</b> Resources include sustainment and maintenance of test labs and facilities. It provides maintenance, repair, and fueling of THAAD Battery assets utilized in testing.				
<b>FY 2015 Accomplishments:</b>				
<ul style="list-style-type: none"> <li>- Provided data management, facilities operations, and post-test reporting in support of BMDS Tests to ensure data collection and readiness for mission execution.</li> <li>- Provided on-site range support for Terminal High Altitude Area Defense (THAAD) maintenance, repair, and fueling to ensure readiness of the THAAD test assets.</li> <li>- Continued performance assessments to evaluate system performance and interoperability within the integrated Ballistic Missile Defense System (BMDS).</li> <li>- Supported FTO-02 Event 2 System pre-mission test and Leap Second changes for the THAAD Weapon System, and provided data to address changes implemented in the THAAD Build 2.2.1 Debris Mitigation Capability to support an OTA assessment.</li> </ul>				
<b>FY 2016 Plans:</b>				
<ul style="list-style-type: none"> <li>- Reduction from FY 2015 to FY 2016 due to the completion of improvements to the operations facilities and infrastructure required for continued support of BMD System Tests.</li> <li>- Provide data management, facilities operations, and post-test reporting in support of Ballistic Missile Defense System (BMDS) System Tests to ensure data collection and readiness for mission execution.</li> <li>- Provide on-site range support for Terminal High Altitude Area Defense (THAAD) maintenance, repair, and fueling to ensure readiness of the THAAD test assets.</li> <li>- Continue performance assessments to evaluate system performance and interoperability within the integrated Ballistic Missile Defense System (BMDS).</li> </ul>				
<b>FY 2017 Plans:</b>				
<ul style="list-style-type: none"> <li>- The decrease in Resources cost from FY 2016 to FY 2017 is due to the reallocation of funding into the War Games and Exercises accomplishment area to better align the funding with the effort</li> <li>- Provide on-site range support for THAAD maintenance, repair, and pre-mission analysis to ensure THAAD test asset readiness</li> <li>- Provide data management, facilities operations, and post-test reporting in support of BMDS tests to ensure data collection and readiness for mission execution</li> <li>- Continue Performance Assessments to evaluate system performance and interoperability within the integrated BMDS</li> </ul>				
<b>Title:</b> Wargames and Exercises		0.377	0.437	0.445

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p align="right"><i>Articles:</i></p> <p><b>Description:</b> See planned accomplishments</p> <p><b>FY 2015 Accomplishments:</b> -Provided support to the various Combatant Commands (COCOM's) with model and simulations and subject matter expertise during the exercise events. Continued to assist in the development / refinement of Tactics, Techniques, and Procedures (TTP's) as well as Pre-Planned Responses (PPR's) to incorporate in further exercises, ground, and flight test events. Demonstrated THAAD capability and limitations to the warfighter community in the Integrated and Missile Defense (IAMD) environment.</p> <p><b>FY 2016 Plans:</b> - The increase in War Games and Exercises cost from FY 2015 to FY 2016 is due to the reallocation of funding from Resources to better align the funding with the effort -Provide support to the various COCOM's with model and simulations and subject matter expertise during the exercise events. Continue to assist in the development/refining of Tactics, Techniques, and Procedures (TTP's) as well as Pre-Planned Responses (PPR's) to incorporate in further exercises, ground, and flight test events. Demonstrate THAAD capability and limitations to the warfighter community in the Integrated and Missile Defense (IAMD) environment</p> <p><b>FY 2017 Plans:</b> - Support CCMDs with model and simulations and subject matter expertise during exercise events. Continue to assist in developing/refining Tactics, Techniques, and Procedures and Pre-Planned Responses to incorporate in future events. Demonstrate THAAD capability and limitations to the warfighter community in the Integrated and Missile Defense (IAMD) environment</p>	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	109.394	25.072	60.577

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0208866C: O&M	402.462	424.069	446.975	-	446.975	470.884	496.702	533.236	541.432	0	3,315.760
• 0208866C: MD07: THAAD Procurement	449.824	464.067	362.605	-	362.605	330.002	317.414	313.631	0.000	3,289.952	5,527.495
• 0603881C: Ballistic Missile Defense Terminal Defense Segment	161.298	212.230	206.834	-	206.834	231.105	197.018	250.227	260.613	Continuing	Continuing
<b>Remarks</b>											

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>

**D. Acquisition Strategy**

THAAD awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development (ACD) contract for the continuation of THAAD 2.0 development and test as described and approved in the MDA Integrated Master Test Plan. The discrete task orders allow management and tracking of Development work.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Flight Test Execution - Execution, Support and Planning	MIPR	MDA / AMRDEC / Wake Island / RTS : AL / CO / HI / Wake Island / Kwaj	0.000	58.806		4.156	Oct 2015	31.759	Oct 2016	-		31.759	Continuing	Continuing	Continuing
Flight Test Execution - Planning, Analysis, and Execution	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	0.000	33.480		11.902	Oct 2015	20.261	Oct 2016	-		20.261	Continuing	Continuing	Continuing
Ground Test Execution - BMDS Ground Test Support	MIPR	US Army AMRDEC : Huntsville, AL	0.000	4.917		5.106	Oct 2015	5.192	Oct 2016	-		5.192	Continuing	Continuing	Continuing
Resources - MDA Test IT Program Support	C/CPAF	Northrup Grumman : AL, AK, CA, CO, HI, NM, VA	0.000	2.830		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Resources - MDA Test Program Support	MIPR	MDA : AL / CO / VA	0.000	2.351		0.393		0.000		-		0.000	Continuing	Continuing	Continuing
Resources - Test and Range Infrastructure	MIPR	US Army AMRDEC / White Sands Missile Range / Lincoln Labs : Huntsville, AL / White Sands, NM / MA	0.000	6.633		3.078	Oct 2015	2.920	Oct 2016	-		2.920	Continuing	Continuing	Continuing
Wargames and Exercises - Wargames and Exercises	MIPR	MDA / Space and Missile Defense Command : Huntsville, AL	0.000	0.377		0.437	Oct 2015	0.445	Oct 2016	-		0.445	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	109.394		25.072		60.577		-		60.577	-	-	-

**Remarks**

- Reduction in flight test cost from FY 2015 to FY 2016 is due to the scheduled execution of two THAAD flight tests in FY 2015, compared with no flight tests scheduled for execution in FY 2016. In FY 2015 THAAD scheduled to execute FTO-02 (BMDS Operational Flight Test) and FTT-18. In FY 2016, THAAD was not scheduled to conduct any flight tests and plans to complete post-mission analysis work for FTO-02 E2a, which was conducted first quarter FY 2016, and initiate test planning activities for FTT-15.

-Increases in R-3 Cost Category Items related to Flight Test Execution from FY 2016 to FY 2017 are due to no flight test being executed in FY 2016. In FY 2017 THAAD plans to execute Flight Test THAAD-15 (FTT-15) and initiate test planning activities for Flight Test Operational-03 Event 2 (FTO-03 E2).



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</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			

-Reductions in FY 2016 R-3 Cost Category Items for Resources from FY 2015 to FY 2016 due to the completion of improvements to the operations facilities and infrastructure required for continued support of BMD System Tests.

-Award dates are shown as October as they are the continuation of task orders or MIPRs from previous FYs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	109.394	25.072	60.577	-	60.577	-	-	-

**Remarks**

N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>

Significant Event Complete ▲      Milestone Decision Complete ★      Element Test Complete ◆      System Level Test Complete ●      Complete Activity Planned Activity ✦  
 Significant Event Planned △      Milestone Decision Planned ☆      Element Test Planned ◇      System Level Test Planned ○

	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
GTI-06 Part 1 (BMDS Ground Test)			✦																									
FTT-18 (TH, Intercept Flight Test)										△																		
FTO-02 E2a (OTA, Intercept Flight Test)				✦	✦																							
GTI-06 Part 2 (BMDS Ground Test)								✦																				
GTI-ISR ( 16) (BMDS Ground Test)								✦																				
FTT-15 (TH, Intercept Flight Test)										△																		
GTI-07a (BMDS Ground Test)										✦																		
GTD-07a (BMDS Ground Test)											✦																	
GTX-07b (BMDS Ground Test)												✦																
GTI-07b (BMDS Ground Test)													✦	✦														
FTO-03 E2 (OTA, Intercept Flight Test)															△													
GTD-07b Part 1 (BMDS Ground Test)															✦													
GTI-ISR (18) (BMDS Ground Test)															△													
GTD-07b Part 2 (BMDS Ground Test)																✦												
GTX-08 Part 1 (BMDS Ground Test)																	✦											
FTT-19 (TH, Intercept Flight Test)																		△										
GTX-08 Part 2 (BMDS Ground Test)																			✦									
FTT-16 (TH, Intercept Flight Test)																					△							
GTI-08 (BMDS Ground Test)																						✦	✦					
GTD-08 Part 1 (BMDS Ground Test)																							✦					
GTD-08 Part 2 (BMDS Ground Test)																								✦				
FTT-21 (TH, Intercept Flight Test)																										△		
GTX-09 (BMDS Ground Test)																											✦	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GTI-06 Part 1 (BMDS Ground Test)	3	2015	3	2015
FTT-18 (TH, Intercept Flight Test)	3	2017	3	2017
FT0-02 E2a (OTA, Intercept Flight Test)	4	2015	1	2016
GTI-06 Part 2 (BMDS Ground Test)	3	2016	3	2016
GTI-ISR ( 16) (BMDS Ground Test)	3	2016	3	2016
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
GTX-07b (BMDS Ground Test)	1	2018	1	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
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
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
GTX-08 Part 1 (BMDS Ground Test)	3	2019	3	2019
FTT-19 (TH, Intercept Flight Test)	4	2019	4	2019
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	2020
FTT-16 (TH, Intercept Flight Test)	3	2020	3	2020
GTI-08 (BMDS Ground Test)	3	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
FTT-21 (TH, Intercept Flight Test)	4	2021	4	2021

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency			<b>Date:</b> February 2016	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> 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>	-	0.000	1.153	2.867	-	2.867	3.390	4.041	3.746	3.126	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to the Ballistic Missile Defense Terminal Defense Segment Test. In FY 2017, PWS reflects a proportional change as a result an increase in Ballistic Missile Defense Terminal Defense Segment Test.

**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
<b>Title:</b> Program Wide Support	0.000	1.153	2.867
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments were captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Ballistic Missile Defense Terminal Defense Segment Test - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	1.153	2.867

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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, VA, Aust, Japan	0.000	0.000		0.725		0.057	Jul 2017	-		0.057	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support International and Materiel and Readiness	MIPR	Various : Multi: AL, VA, Aust, Japan	0.000	0.000		0.428		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.000	0.000		0.000		2.810	Aug 2017	-		2.810	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		1.153		2.867		-		2.867	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	1.153	2.867	-	2.867	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD 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	-	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
MT09: <i>AEGIS BMD Test</i>	-	88.041	76.043	90.953	-	90.953	121.531	86.811	83.687	93.328	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	2.425	4.059	-	4.059	6.189	4.650	4.530	5.197	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Increase from FY 2016 to FY 2017 is due to two additional flight tests consistent with the Integrated Master Test Plan (IMTP).

**A. Mission Description and Budget Item Justification**

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies, and to increase this capability by delivering evolutionary improvements as part of the BMDS upgrades. The Aegis BMD element of the BMDS capitalizes upon and evolves from the existing United States Navy Aegis Weapons System (AWS) and Standard Missile (SM) infrastructures. Aegis BMD provides a forward-deployable, mobile capability to detect and track Ballistic Missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBMs), Medium-Range Ballistic Missiles (MRBMs), and Intermediate-Range Ballistic Missiles (IRBMs) in the midcourse phase of flight and shorter range missiles in the terminal phase of flight. Aegis BMD also provides a Long Range Surveillance and Track (LRS&T) capability to the BMDS. Upgrades to both the Aegis BMD Weapon System and the SM-3 configuration enable Aegis BMD to provide effective, supportable defensive capability against longer range, more sophisticated threats and an enduring Aegis Ashore defensive capability.

Proving Missile Defense:

- Working with the Services' Agency level BMDS Operational Test Agency (OTA) Team, with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has developed a test program to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.
- As part of the Agency's rigorous test program, System Pre-Flight predictions provide confidence in test execution by predicting element performance and exercising element interfaces. System Post-Flight Reconstruction replicates the BMDS configuration and actual environmental conditions and target dynamics observed in flight to anchor modeling and simulation models and results.
- The IMTP is event-oriented and extends until the collection of all identified data is completed to ensure adequate test investments.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	89.628	55.148	89.861	-	89.861
Current President's Budget	88.041	78.468	95.012	-	95.012
Total Adjustments	-1.587	23.320	5.151	-	5.151
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	23.320			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.587	0.000			
• Other Adjustment	0.000	0.000	5.151	-	5.151

**Change Summary Explanation**

Increase from FY 2016 to FY 2017 is due to additional flight tests consistent with the Integrated Master Test Plan (IMTP)

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>				<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT09: <i>AEGIS BMD Test</i>	-	88.041	76.043	90.953	-	90.953	121.531	86.811	83.687	93.328	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Increase from FY 2016 to FY 2017 is due to additional flight tests consistent with the IMTP

Budget Accomplishments are structured for direct traceability to the IMTP and efficient management of testing execution efforts. Test funding falls under the following accomplishments: Aegis BMD Flight Test Execution, Aegis BMD Ground Test Execution, Aegis BMD Test Resources, and Engineering & Analysis.

**A. Mission Description and Budget Item Justification**

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies, and to increase this capability by delivering evolutionary improvements as part of the BMDS upgrades. The FY 2017 Aegis BMD Test Program will concentrate on critical IMTP flight tests that support the Navy and European Phased Adaptive Approach (EPAA). Aegis BMD will concentrate on Aegis BL 9.C2 and SM-3 Block IIA testing in FY 2017. The SM-3 Block IIA Program is a cooperative development program with the Japanese and subject to International Agreements.

**Proving Missile Defense:**

- Working with the Navy Integrated Warfare System (IWS) Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has developed a test program to improve missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable

- As part of MDA's rigorous test program, System Pre-Flight predictions provide confidence in test execution by predicting element performance and exercising element interfaces. System Post-Flight Reconstruction replicates the Ballistic Missile Defense System configuration and actual environmental conditions and target dynamics observed in flight to anchor modeling and simulation results

- The IMTP is event-oriented and extends until the collection of all identified data is completed to ensure adequate test investments

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Aegis BMD Flight Test Execution	22.842	27.320	38.962
<b>Articles:</b>	-	-	-
<b>Description:</b> Aegis BMD Flight Test Program performs comprehensive testing of Aegis BMD components and their interoperability with the BMDS using accredited Modeling & Simulation (M&S) that provides the evidence required for the MDA and Combatant Commanders to transition the capability to the Operational Capacity Baseline. All flight testing is reflected in the R4 and IMTP.			
<b>FY 2015 Accomplishments:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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- Continued to conduct Aegis BMD-specific analysis during pre and post-mission analysis phases.

- Continued to conduct Post Flight Analysis for FY 2015 Aegis flight test missions.

- Prepared for and conduct BMDS Flight events as reflected in the IMTP and the Exhibit R-4 schedule.

- Participated in BMD special technology experiments.

- Performed operational flight testing of the integrated BMDS as defined in phase II of the EPAA to support deployment to Europe by the end of CY 2015.

- Performed operational flight test demonstrating a validation of coordinated BMD engagement capabilities between multiple Aegis BMD Ships.

- 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.

- 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.

- Began test planning for FY 2016 Aegis flight test missions: prepared target, developed models and simulations, and readied the range for test.

**FY 2016 Plans:**  
Increase from FY 2015 to FY 2016 is in support of flight tests scheduled in the IMTP to include Standard Missile 3 (SM-3) Control Test Vehicle (CTV) 01 and CTV 02

- Prepare for and conduct BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule

- Collect Aegis BMD data for Modeling and Simulation anchoring used in comprehensive flight testing

- Conduct Aegis BMD specific analysis during pre- and post-mission analysis phases to confirm pre-mission predictions of mission success and validate post-test results

- Conduct test milestone reviews to ensure readiness for test execution and accomplishment of test objectives

**FY 2017 Plans:**  
Increase from FY 2016 to FY 2017 is in support of flight tests scheduled in the IMTP to include FTM-24 (BMD5.0 CU DT/OT) and FTM-29(BMD 5.1 DT/OT).

- Prepare for and conduct BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule

- Collect Aegis BMD data for Modeling and Simulation anchoring used in comprehensive flight testing

- Conduct Aegis BMD specific analysis during pre- and post-mission analysis phases to confirm pre-mission predictions of mission success and validate post-test results

<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<p>- Conduct test milestone reviews to ensure readiness for test execution and accomplishment of test objectives</p> <p><b>Title:</b> Aegis BMD Ground Test Execution</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Aegis BMD Ground Test Program performs comprehensive testing of Aegis BMD Components and their interoperability with the BMDS using accredited M&amp;S that provides the evidence required for the MDA and Combatant Commanders to transition the capability to the Operational Capacity Baseline. More specifically, ground testing is used to collect data for Aegis BMD characterization and assessment, flight test risk reduction, and exploration of scenarios where flight testing is either impracticable or impossible.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Prepared for and conducted BMDS Ground Test events as reflected in the IMTP and the Exhibit R-4 schedule.</li> <li>- Performed ground testing of all BMDS elements planned for deployment in EPAA Phase II to verify their operation capability on an integrated architecture.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Participate in BMDS Ground Tests in accordance with the MDA's IMTP to collect data for Aegis BMD characterization and assessment, flight test risk reduction, and exploration of scenarios where flight testing is either impracticable or impossible.</li> <li>- Conduct planning to ensure BMDS Test Site (BTS) capabilities support Aegis BMD testing, exercise flight test, and demonstration requirements. This includes upgrades to the ground testing labs to ensure compliance with operational and test baselines.</li> <li>- Manage the complex transition and proliferation of Command, Control, Computer, Communications &amp; Intelligence (C4I) systems and Aegis BMD baselines to ensure interoperability with CCMD systems.</li> <li>- Develop BTS upgrade plan to support test execution in order to validate the results of the testing.</li> <li>- Participate in System Level Ground Testing as an element of the layered BMDS to collect data for Aegis BMD characterization and assessment and exploration of scenarios where flight testing is either impracticable or impossible.</li> </ul> <p>New accomplishment developed to align within new MT09 restructure for traceability to the IMTP:</p> <ul style="list-style-type: none"> <li>- Funding previously captured in Project MT09, BMDS Level Testing and Project MT09, Aegis Ballistic Missile Defense (BMD) Testing</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>The increase in funding from FY 2016 to FY 2017 is due to more complex ground tests which lead up to the EPAA Phase III declaration as reflected in the R-4 and the IMTP.</p> <ul style="list-style-type: none"> <li>- Participate in BMD System Ground Tests to include pre-mission analysis, mission execution, and post-mission analysis</li> </ul>	<p>14.784</p> <p align="center">-</p>	<p>6.116</p> <p align="center">-</p>	<p>11.594</p> <p align="center">-</p>

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>- Continue planning to ensure BMDS Test Site (BTS) capabilities support Aegis BMD testing, exercises, flight tests, and demonstration requirements. This includes upgrades to the ground testing labs to ensure compliance with operational and test baselines</li> <li>- Continue testing of Navy C4I systems and Aegis BMD baselines to ensure BMDS interoperability</li> <li>- Continue to participate in System Level Ground Testing as an element of the layered BMDS to collect data for Aegis BMD characterization and assessment and exploration of scenarios where flight testing is either impracticable or impossible</li> <li>- Continue operation support of Hardware-In-the-Loop (HWIL) Modeling &amp; Simulation for Element ground testing</li> <li>- Prepare and conduct a Hardware Ground Test of cooled gas Attitude Control System (ACS)</li> </ul>			
<p><b>Title:</b> Aegis BMD Test Resources</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This effort provides resources to conduct ground and flight testing to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Conducted post-test analysis for all flight testing conducted in FY 2014 for Aegis BMD missions to validate results</li> <li>- Prepared for and conducted BMDS flight events as reflected in the IMTP and the Exhibit R-4 schedule in accordance with Congressional and Presidential guidance.</li> <li>- Provided Test and Evaluation (T&amp;E) infrastructure support for Aegis BMD Test Missions as reflected in the MDA's IMTP to collect truth data for post-event analysis.</li> <li>- Executed the Aegis BMD mission as applied to a layered BMDS Defense to ensure a technical capability and interoperability.</li> <li>- Collected Aegis BMD data for M&amp;S anchoring used in comprehensive ground testing.</li> <li>- Exercised tactical communications as they support the BMDS Mission to ensure interoperability with the BMDS and CCMD systems.</li> <li>- Ensured that technical capabilities existed as part of the overall MDA BMDS mission.</li> <li>- Conducted Aegis BMD-specific analysis during pre- and post-mission analysis phases to solidify pre-mission expectations of mission success and validate test results.</li> <li>- Participated in BMDS Special Technology experiments and demonstrations to expand the capabilities of the Aegis BMD to use a diverse set of inputs.</li> <li>- Initiated test planning for FY 2016 Aegis BMD flight test mission to include preparation of targets, development of M&amp;S, and preparation of the range to ensure all missions are executable and apply to the technical program objectives.</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>- Provide T&amp;E infrastructure support for Aegis BMD Test Missions as reflected in the MDA IMTP to collect truth data for post-event analysis.</li> </ul>	37.953 -	30.247 -	28.491 -



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>		<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Execute the Aegis BMD mission as applied to a layered BMDS to ensure a technical capability and interoperability.</li> <li>- Collect Aegis BMD data for M&amp;S anchoring used in comprehensive ground testing.</li> <li>- Exercise tactical communications as they support the BMDS Mission to ensure interoperability with the BMDS and CCMD systems.</li> <li>- Participate as part of the overall MDA BMDS mission to ensure a technical capability exists.</li> <li>- Conduct Aegis BMD-specific analysis during pre- and post-mission analysis phases to solidify pre-mission expectations of mission success and validate test results.</li> <li>- Begin test planning for FY 2017 Aegis BMD flight test mission to include preparation of targets, development of M&amp;S, and preparation of the range to ensure all missions are executable and apply to the technical program objectives.</li> <li>- Conduct post-test analysis for all flight testing conducted in FY 2015 for Aegis BMD missions to validate results</li> <li>- Prepare for and conduct BMDS flight events as reflected in the IMTP and the Exhibit R-4 schedule in accordance with Congressional and Presidential guidance.</li> <li>- Participate in BMDS Special Technology experiments and demonstrations to expand the capabilities of the Aegis BMD to use a diverse set of inputs.</li> </ul> <p>New accomplishment developed to align within new MT09 restructure for traceability to IMTP:</p> <ul style="list-style-type: none"> <li>- Funding previously captured in Project MT09, BMDS Level Testing and Project MT09, Aegis Ballistic Missile Defense (BMD) Testing</li> </ul> <p><b>FY 2017 Plans:</b></p> <p>The decrease in funding from FY 2016 to FY 2017 is due to realignment and consolidation of core test functions.</p> <ul style="list-style-type: none"> <li>- Provide Core Test and Evaluation support for Aegis BMD test and evaluation missions and laboratories, field activities, range support activities, analysis activities, and shipboard and land-based test site test teams</li> <li>- Provide T&amp;E infrastructure support for Aegis BMD Test Missions as reflected in the IMTP to collect truth data for post-event analysis</li> <li>- Conduct core Element M&amp;S validation and accreditation activities</li> <li>- Exercise tactical communications during testing to ensure interoperability with the BMDS and CCMD systems</li> <li>- Continue core test planning for FY 2017 and FY 2018 Aegis BMD test missions to include assessment of target requirements, development of M&amp;S, and preparation of the range to ensure all missions are executable and apply to the technical program objectives</li> <li>- Develop and execute risk-reduction activities to minimize or mitigate shipboard and missile test and programs risks</li> <li>- Develop and execute data collection plans and supporting instrumentation requirements</li> </ul>				
<b>Title:</b> Engineering & Analysis	12.462	12.360		11.906
<b>Articles:</b>	-	-		-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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**Description:** The Engineering and Analysis effort provides engineering support for planning and execution of BMDS ground and flight test events, including test architectures, objectives, and assessment criteria, and modeling and simulation pre- and post-test analysis support.

***FY 2015 Accomplishments:***

Provide engineering support for planning, execution, and analysis of the test events listed in the Integrated Master Test Plan (IMTP):

- Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests.
- Track Critical Engagement Condition (CEC) and Empirical Measurement Events (EME) data requirements and sufficiency.
- Participate in major test reviews.
- 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.
- 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.

***FY 2016 Plans:***

- Design test architectures, and generate appropriate scenarios.
- Define test objectives and evaluation criteria for all System level test events to anchor Models and Simulations (M&S) and address data collection requirements.
- Participate in major test reviews, analysis team meetings, and mission planning events.
- Utilize models and simulations (M&S) to perform pre-test assessments and post-test reviews, and utilize analysis results to refine and update M&S parameters.
- 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 provide capability upgrades to test analysis tools (e.g., Modular Analysis and Reporting Suite (MARS)) in concert with the BMDS evolution 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.
- Develop and provide infrastructure, software, and associated MDA/IA compliance for the Rapid Scenario Prototype (RASP) capability.

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Develop and establish hardware-in-the-loop (HWIL) M&S integration test cases (pre/post mission).			
<b><i>FY 2017 Plans:</i></b> Provide engineering support for planning, execution, and analysis of the test events listed in the IMTP: - Design test architecture, define target requirements, and generate appropriate scenarios for ground and flight tests - Lead test requirements and analysis reviews, and participate in major test reviews, analysis team meetings, and mission planning events - Utilize models and simulations (M&S) for pre-test assessment and post-test review; update M&S with flight and ground test data - Provide Systems Engineering and Integration (SE&I) 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 - Develop and document long-range BMDS IMTP planning and integration strategies related to overarching BMDS analysis product integration - 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) - Integrate non-MDA element models and simulations for participation in IMTP events - 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 - Integrate, test, functionally qualify, and deliver end-to-end BMDS simulations supporting ground test missions			
<b>Accomplishments/Planned Programs Subtotals</b>	88.041	76.043	90.953

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
• 0604881C: <i>AEGIS SM-3 Block IIA Co-Development</i>	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961

**Remarks**

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

<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>	<b>Project (Number/Name)</b>
0400 / 4	PE 0604878C / <i>Aegis BMD Test</i>	MT09 / <i>AEGIS BMD Test</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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MT09 / AEGIS BMD Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 - Techrep	MIPR	Tucson : AZ	0.000	0.120		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 -Aegis Techrep	MIPR	Moorestown : NJ	0.000	0.145		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09 -JHU/APL	SS/CPFF	JHU/APL : Columbia MD	0.000	2.196		2.998		5.062	Dec 2016	-		5.062	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09- Corona	MIPR	NSWC Corona : CA	0.000	2.215		0.950		1.588	Nov 2016	-		1.588	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-DMEA	MIPR	DMEA : McClellan, CA	0.000	0.000		0.000		0.819	Oct 2016	-		0.819	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-DOI	MIPR	Department of Interior : HI	0.000	1.058		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-L3 Communications	C/CPFF	L3 Communications : Waco, TX	0.000	0.000		0.000		3.276	Apr 2017	-		3.276	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-MARAD	MIPR	MARAD : HI	0.000	4.301		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-MDA	MIPR	MDA : VA	0.000	0.860		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MT09 / AEGIS BMD Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NAWC/AD	MIPR	NAWC/AD-PHX Air : Pax River, MD	0.000	1.058		1.000		2.085	Apr 2017	-		2.085	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NAWC/PM	MIPR	NAWC/PM : Pt. Mugu, CA	0.000	0.350		1.800		7.197	Oct 2016	-		7.197	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NRL	MIPR	Naval Research Lab : Washington, DC	0.000	0.000		0.000		0.794	Apr 2017	-		0.794	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NSWC DD	MIPR	NSWC Dahlgren : Dahlgren, VA	0.000	0.400		1.131		1.291	Dec 2016	-		1.291	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-NSWCCR	MIPR	NSWC Carderock : Potomac, MD	0.000	0.000		0.000		0.893	Jan 2017	-		0.893	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	0.000	3.083		1.852		3.574	Oct 2016	-		3.574	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-PMRF	MIPR	PMRF Barking Sands : Kauai, HI	0.000	0.990		4.025		6.155	Oct 2016	-		6.155	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-SSCPAC	MIPR	SPAWAR : San Diego, CA	0.000	1.277		0.000		1.837	Nov 2016	-		1.837	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-Variou	MIPR	Various : HI, VA, CA, MA, NC	0.000	4.789		6.024		3.572	Oct 2016	-		3.572	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MT09 / AEGIS BMD Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Aegis BMD Flight Test Execution - Aegis BMD Flight Test Execution - MT09-Xontech	C/CPFF	Xontech : Colorado Spring, CO	0.000	0.000		0.000		0.819	Mar 2017	-		0.819	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Flight Test Execution	SS/CPFF	Lockheed Martin : NJ	0.000	0.000		1.140	Apr 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Flight Test Execution - Flight Test Execution - RMS	SS/CPFF	Raytheon : AZ	0.000	0.000		6.400		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - ATK	MIPR	ATK : Elkton MD	0.000	0.000		0.000		2.005		-		2.005	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - CORONA	MIPR	NSWC Corona : CA	0.000	0.800		0.650	Nov 2015	0.750	Nov 2016	-		0.750	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - JHU/APL	MIPR	JHU/APL : MD	0.000	0.500		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - LM	MIPR	Lockheed Martin : Moorestown, NJ	0.000	7.624		2.697	Nov 2015	3.652	Oct 2016	-		3.652	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - MDA	MIPR	MDA : Arlington, VA	0.000	0.000		0.000		0.780	Dec 2016	-		0.780	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	0.000	0.400		0.603	Nov 2015	0.750	Nov 2016	-		0.750	Continuing	Continuing	Continuing
Aegis BMD Ground Test Execution - Aegis BMD Ground Test Execution - MT09 - SSCPAC	MIPR	SPAWAR : San Diego, CA	0.000	5.460		2.166	Nov 2015	3.657	Oct 2016	-		3.657	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MT09 / AEGIS BMD Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - APL	SS/CPFF	JHU/APL : Columbia MD	0.000	14.567		10.917	Nov 2015	9.091	Oct 2016	-		9.091	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - Aegis	MIPR	Aegis BMD : VA	0.000	0.745		0.000		1.200	Dec 2016	-		1.200	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - CORONA	MIPR	NSWC Corona : CA	0.000	2.771		4.675	Nov 2015	2.700	Oct 2016	-		2.700	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - MIT/LL	MIPR	MIT/LL : MA	0.000	0.760		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - NAVSEA	MIPR	NAVSEA : VA	0.000	0.000		0.000		0.200	Jan 2017	-		0.200	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - NAWC/PM	MIPR	NAWC/PM : Pt. Mugu, CA	0.000	0.550		0.650	Nov 2015	0.700	Oct 2016	-		0.700	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - NSWCCD	MIPR	NSWC Dahlgren : Dahlgren, VA	0.000	5.957		3.300	Nov 2015	3.500	Nov 2016	-		3.500	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - Northrop Grumman	MIPR	Northrop Grumman : CA	0.000	1.350		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - PHD	MIPR	NSWC PHD : Pt. Hueneme, CA	0.000	4.000		5.050	Nov 2015	5.500	Oct 2016	-		5.500	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MT09 / AEGIS BMD Test
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<b>Test and Evaluation (\$ in Millions)</b>				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
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - PMRF	MIPR	PMRF Barking Sands : Kauai, HI	0.000	0.430		0.700	Nov 2015	1.000	Jan 2017	-		1.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - SEG	MIPR	SEG : MD	0.000	0.815		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - SSCPAC	MIPR	SPAWAR : San Diego, CA	0.000	2.265		1.700	Nov 2015	1.600	Oct 2016	-		1.600	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources - MT09 - Various	MIPR	Various : HI, VA, CA, MA	0.000	3.048		3.255	Nov 2015	3.000	Apr 2017	-		3.000	Continuing	Continuing	Continuing
Aegis BMD Test Resources - Aegis BMD Test Resources- MT09 - Raytheon	SS/CPAF	Raytheon : Tucson,AZ	0.000	0.695		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - Engineering Support	C/CPAF	Northrop Grumman : AL, CO	0.000	1.526		1.561	Nov 2015	1.851	Nov 2016	-		1.851	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - FFRDC/UARC	MIPR	Various : AL, CO, VA	0.000	6.257		4.266	Nov 2015	3.182	Nov 2016	-		3.182	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - Industry	C/CPAF	Boeing : AL	0.000	1.079		0.702	Nov 2015	0.716	Nov 2016	-		0.716	Continuing	Continuing	Continuing
Engineering & Analysis - Engineering & Analysis - Engineering & Analysis - OGA	MIPR	AMRDEC : AL	0.000	3.600		5.831	Nov 2015	6.157	Nov 2016	-		6.157	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</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			
<b>Subtotal</b>			0.000	88.041		76.043		90.953		-		90.953	-	-	-

**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
<b>Project Cost Totals</b>	0.000	88.041	76.043	90.953	-	90.953	-	-	-

**Remarks**  
N/A



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</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
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)				▲																								
ASD-15 (Intercept Flight Test)				+																								
AA CTV-02 (FTO-02 E1a CTV) AEGIS AA, Intercept Only Flight Test)				▲																								
GTD-06 Part 1 (BMDS Ground Test)				+																								
GTI-06 Part 3 (BMDS Ground Test)				+																								
MMW E4 (AEGIS 5.0, Intercept Flight Test)				▲																								
MMW E3 (AEGIS 5.0, Intercept Flight Test)				▲																								
MMW E2 (AEGIS 5.0, Intercept Flight Test)				▲																								
MMW E1 (AEGIS 5.0, Intercept Flight Test)				▲																								
GTI-06 Part 1 (BMDS Ground Test)				+																								
Warfighter TP 04e (BMDS Ground Test)				+																								
FTX-19 (AEGIS 4 .0.2, Target Only Flight Test)			▲																									
FTM-25 (AEGIS 5.0, Intercept Flight Test)	+																											
SFTM-01 (AEGIS 5.1, Intercept Flight Test)								△																				
GM CTV-02 Plus (GM, Intercept Flight Test)								△																				
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)				▲																								
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)																											△	

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GTX-09 (BMDS Ground Test)	4	2021	4	2021
FTM-38 (AEGIS 5.0, Intercept Flight Test)	3	2021	3	2021
FTM-37 (IOT&E) (AEGIS 5.1, Intercept Flight Test)	3	2021	3	2021
Warfighter TP 08 (BMDS Ground Test)	2	2021	3	2021
GTD-08 Part 2 (BMDS Ground Test)	1	2021	1	2021
GTD-08 Part 1 (BMDS Ground Test)	4	2020	4	2020
FTM-30 (AEGIS 5. 1, Intercept Flight Test)	4	2020	4	2020
GTI-08 (BMDS Ground Test)	3	2020	4	2020
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	2020
FTM-35 (AEGIS 5.1, Intercept Flight Test)	4	2019	4	2019
FTX-23 (AEGIS 5.1, Target Only Flight Test)	4	2019	4	2019
GTX-08 Part 1 (BMDS Ground Test)	3	2019	3	2019
Warfighter TP 07b (BMDS Ground Test)	3	2019	3	2019
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
GTI-ISR (18) (BMDS Ground Test)	1	2019	1	2019
GTD-07b Part 1 (BMDS Ground Test)	1	2019	1	2019
GTI-07b (BMDS Ground Test)	3	2018	4	2018
GTX-07b (BMDS Ground Test)	1	2018	1	2018
Warfighter TP 07a (BMDS Ground Test)	1	2018	1	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
GTD-07a (BMDS Ground Test)	4	2017	4	2017
FTM-24 (AEGIS 5.0, Intercept Flight Test)	4	2017	4	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MT09 / <i>AEGIS BMD Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Warfighter TP 06 (BMDS Ground Test)	2	2017	2	2017
GTD-06 Part 2 (BMDS Ground Test)	4	2016	4	2016
GTI-ISR ( 16) (BMDS Ground Test)	3	2016	3	2016
GTI-06 Part 2 (BMDS Ground Test)	3	2016	3	2016
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	2	2017	2	2017
SM CTV-02 (AEGIS 3.6.1, Intercept Only Flight Test)	2	2016	2	2016
SM CTV-01 (AEGIS 3.6.1, Intercept Only Flight Test)	2	2016	2	2016
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)	1	2016	1	2016
ASD-15 (Intercept Flight Test)	1	2016	1	2016
AA CTV-02 (FTO-02 E1a CTV) AEGIS AA, Intercept Only Flight Test)	1	2016	1	2016
GTD-06 Part 1 (BMDS Ground Test)	1	2016	1	2016
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
MMW E4 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
MMW E3 (AEGIS 5.0, Intercept Flight Test)	4	2015	4	2015
MMW E2 (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 1 (BMDS Ground Test)	3	2015	3	2015
Warfighter TP 04e (BMDS Ground Test)	3	2015	3	2015
FTX-19 (AEGIS 4 .0.2, Target Only Flight Test)	2	2015	2	2015
FTM-25 (AEGIS 5.0, Intercept Flight Test)	1	2015	1	2015
SFTM-01 (AEGIS 5.1, Intercept Flight Test)	4	2016	4	2016
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)	3	2015	3	2015
FEV-02 (FTM-DST 2) (AEGIS 5.0, Intercept Flight Test)	4	2019	4	2019

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>				<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program Wide Support</i>	-	0.000	2.425	4.059	-	4.059	6.189	4.650	4.530	5.197	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to Aegis BMD Test. In FY 2017, PWS reflects a proportional change as a result an increase in Aegis BMD Test.

**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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	0.000	2.425	4.059
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Aegis BMD Test - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	2.425	4.059

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / Aegis BMD Test	<b>Project (Number/Name)</b> MD40 / Program Wide Support
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<b>Support (\$ in Millions)</b>				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, VA	0.000	0.000		0.000		0.081	Jul 2017	-		0.081	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	Various : MDA Multi: AL, CO, CA, VA,	0.000	0.000		2.425		2.414	Nov 2016	-		2.414	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (FFP)	C/FFP	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		1.563	Jun 2017	-		1.563	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPR)	MIPR	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.001	Dec 2016	-		0.001	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		2.425		4.059		-		4.059	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	2.425	4.059	-	4.059	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604878C / <i>Aegis BMD Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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Schedule Details

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

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor 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	-	60.048	83.597	83.250	-	83.250	87.346	100.132	100.073	86.937	Continuing	Continuing
MT11: <i>BMDS Radars Test</i>	-	60.048	79.782	78.430	-	78.430	82.876	94.753	94.691	82.095	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	3.815	4.820	-	4.820	4.470	5.379	5.382	4.842	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Beginning in FY15, funding was realigned to the Ballistic Missile Defense Sensors Test Program Element 0604879C, Project MT11, from Ballistic Missile Defense Sensors Program Element 0603884C, Project MT11.

**A. Mission Description and Budget Item Justification**

MDA Sensors executes a robust test program that includes flight and ground tests to support both strategic and regional BMDS capabilities against medium- and long-range threats. The Sensors elements of the Ballistic Missile Defense System (BMDS) Integrated Master Test Plan (IMTP) are intended to demonstrate the integrated missile defense capabilities under development to ensure the capabilities delivered to the Warfighter are operationally effective, suitable, and survivable. The Sensors Test Program Element specifically includes the planning, execution, and analysis of flight and ground tests and the associated infrastructure.

The Sensors test program (FY 2016-2018) supports EPAA Phase III Robust Long Range Ballistic Missile (IRBM) Defense, Enhanced Homeland Defense, Mid-term discrimination improvements and supports the IMTP for Operational Test and Evaluation of the regional and strategic BMDS architecture that will be fielded at the end of Calendar Year 2018 (CY 2018). Refer to R-4 for specific test events.

The Sensors test program (FY 2019-2021) will support Long Range Discrimination Radar (LRDR) integration into BMDS, GMD Redesigned Kill Vehicle (RKV), Far-term / Mid-term discrimination improvements and the IMTP for Operational Test and Evaluation of the theater/regional and strategic BMDS architecture that will be fielded at the end of Calendar Year 2021 (CY 2021). Refer to R-4 for specific test events.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	71.309	86.764	104.271	-	104.271
Current President's Budget	60.048	83.597	83.250	-	83.250
Total Adjustments	-11.261	-3.167	-21.021	-	-21.021
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-3.167			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-9.999	0.000			
• SBIR/STTR Transfer	-1.262	0.000			
• Other Adjustment	0.000	0.000	-21.021	-	-21.021

**Change Summary Explanation**

FY 2017 decrease reflects a schedule change to align with the Integrated Master Test Plan (IMTP).

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars 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
MT11: <i>BMDS Radars Test</i>	-	60.048	79.782	78.430	-	78.430	82.876	94.753	94.691	82.095	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**  
The MT11 R-4/4A depicts only test events for which Sensors participation is planned. For a full listing of Ballistic Missile Defense System (BMDS) test events, see the R-4/4A in the BMDS Test and Evaluation Program Element (0603914C).

**A. Mission Description and Budget Item Justification**

Activities in this project include:  
 -Planning, analysis, and execution of BMDS flight test events, including pre- and post-test ground testing, such as Digital and Hardware-in-the-Loop (HWIL) Pre-Mission Tests (PMTs) and Post-Flight Reconstruction (PFR)  
 -Planning, analysis, and execution of BMDS system ground tests  
 -Test infrastructure funding, including HWIL labs and program management required to operate and maintain a flight and ground test capability

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

	FY 2015	FY 2016	FY 2017
<p><b>Title:</b> Flight Test Execution</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> -Plan and execute Sensors participation in BMDS Flight Tests in accordance with the BMDS Integrated Master Test Plan (IMTP)</p> <p><b>FY 2017 Plans:</b> -Plan and execute Sensors participation in BMDS Flight Tests in accordance with the BMDS Integrated Master Test Plan (IMTP)</p>	0.000 -	34.351 -	32.834 -
<p><b>Title:</b> Ground Test Execution</p> <p style="text-align: right;"><b>Articles:</b></p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b></p>	0.000 -	24.592 -	27.686 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
N/A				
<b>FY 2016 Plans:</b> -Plan and execute Sensors participation in BMDS Ground Tests in accordance with the BMDS Integrated Master Test Plan (IMTP)				
<b>FY 2017 Plans:</b> -Plan and execute Sensors participation in BMDS Ground Tests in accordance with the BMDS Integrated Master Test Plan (IMTP)				
<b>Title:</b> Test Resources		0.000	20.839	17.910
		<b>Articles:</b> -	-	-
<b>Description:</b> N/A				
<b>FY 2015 Accomplishments:</b> N/A				
<b>FY 2016 Plans:</b> - Transferred from Element Test and Infrastructure accomplishment in FY 2016 -Continue to configure and maintain Sensors HWILs for use in Ground Test Execution (BMDS and element developmental testing) -Continue to configure and maintain Sensors HWILs for use in BMDS Flight Tests Execution Pre-Mission Testing -Continue to support evolving Single Stimulation Framework (SSF) (software upgrades) integration into the BMDS HWIL Ground Test Execution and Flight Test Execution Infrastructure				
<b>FY 2017 Plans:</b> -Decrease in FY 2017 due to reductions in Sensors HWILs for element developmental testing and reductions in support to evolving SSS/OSF integration into the BMDS HWIL Ground Test Execution infrastructure -Continue to configure and maintain Sensors HWILs for use in Ground Test Execution (BMDS and element developmental testing) -Continue to configure and maintain Sensors HWILs for use in BMDS Flight Tests Execution Pre-Mission Testing -Continue to support evolving Single Stimulation Framework (SSF)/Objective Stimulation Framework (OSF) (software upgrades) integration into the BMDS HWIL Ground Test Execution and Flight Test Execution Infrastructure				
<b>Title:</b> Ballistic Missile Defense System (BMDS) Level Testing		45.573	0.000	0.000
		<b>Articles:</b> -	-	-
<b>Description:</b> N/A				
<b>FY 2015 Accomplishments:</b>				



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Planned for successful execution Sensors participation in BMDS Ground Tests in accordance with the BMDS Integrated Master Test Plan (IMTP): GTD-04e Part 2, GTI-06 Part 1, GTI-06 Part 2, GTD-06 Part 1a, GTI-06 P3, GTI-ISR 16</p> <p>-Planned for successful executed Sensors participation in BMDS Flight Tests in accordance with the BMDS IMTP: FTO-02 E1, FTO-02 E1a, FTO-02 E2, FTO-02 E2a, FTX-21, GM CTV-02+. FTT-18 was planned for execution in 1Q FY 2016. 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.</p> <p><b>FY 2016 Plans:</b> -FY 2016 Plans transferred to Flight Test Execution accomplishments and Ground Test Execution accomplishments</p> <p><b>FY 2017 Plans:</b> -FY 2017 Plans transferred to Flight Test Execution accomplishments and Ground Test Execution accomplishments</p>			
<p><b>Title:</b> Element Test and Infrastructure</p> <p><b>Description:</b> N/A</p> <p><b>FY 2015 Accomplishments:</b> -Configured and maintained Sensors HWILs for use in BMDS Ground Tests and element-level ground tests: GTI-06 Part 1, GTI-06 Part 2, GTI-06 Part 3, GTI-ISR 16, Enterprise Cyber Range Environment (ECRE) Cyber Testing - Configured and maintained Sensors HWILs for use in BMDS Flight Tests System Pre-Mission Testing: FTO-02 E1, FTO-02 E1a, FTO-02 E2, GM CTV-02+ - Supported evolving Single Stimulation Framework (SSF)/Objective Simulation Framework (OSF) (software upgrades) integration into the BMDS HWIL Ground Test Infrastructure</p> <p><b>FY 2016 Plans:</b> -FY 2016 plans transferred to Test Resources accomplishment</p> <p><b>FY 2017 Plans:</b> -FY 2017 plans transferred to Test Resources accomplishment</p>	14.475	0.000	0.000
<b>Articles:</b>	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	60.048	79.782	78.430

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2017</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
			<b>Base</b>	<b>OCO</b>	<b>Total</b>						
• 0603179C: <i>Advanced C4ISR</i>	13.061	9.876	3.626	-	3.626	0.000	0.000	0.000	0.000	0	26.563

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0603898C: <i>Ballistic Missile Defense Joint Warfighter Support</i>	44.220	47.898	47.776	-	47.776	49.621	50.564	53.151	54.042	Continuing	Continuing
• 0603904C: <i>Missile Defense Integration and Operations Center (MDIOC)</i>	53.972	47.939	54.750	-	54.750	53.894	55.524	58.100	59.029	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	64.610	71.266	68.787	-	68.787	73.329	70.423	85.881	74.189	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0604873C: <i>Long Range Discrimination Radar (LRDR)</i>	49.606	137.564	162.012	-	162.012	310.347	76.843	98.874	102.320	Continuing	Continuing
• 13999903: <i>Planning and Design, Defense Wide</i>	38.704	0.000	8.233	-	8.233	8.397	8.525	8.822	0.000	Continuing	Continuing
• D1400634: <i>Upgrade Early Warning Radar (UEWR), Clear AFS, AK</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	0

**Remarks**

**D. Acquisition Strategy**

Test & Evaluation projects use multiple existing development contracts depending on the system(s) involved in the testing.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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			
Flight Test Execution - AN/TPY-2 & SBX FT	SS/CPFF	Raytheon : MA	0.000	0.000		21.426	Nov 2015	12.260	Nov 2016	-		12.260	Continuing	Continuing	Continuing
Flight Test Execution - FT Security, Site Activation & Deployments	Various	Various : HI, CO, AL	0.000	0.000		10.559	Nov 2015	10.202	Nov 2016	-		10.202	Continuing	Continuing	Continuing
Flight Test Execution - UEWR/CD FT	C/FPIF	deciBel : AL	0.000	0.000		2.366	Nov 2015	10.372	Nov 2016	-		10.372	Continuing	Continuing	Continuing
Ground Test Execution - AN/TPY-2 & SBX GT	SS/CPFF	Raytheon : MA	0.000	0.000		12.507	Nov 2015	13.714	Nov 2016	-		13.714	Continuing	Continuing	Continuing
Ground Test Execution - UEWR/CD GT	C/FPIF	deciBel : AL	0.000	0.000		12.085	Nov 2015	13.972	Nov 2016	-		13.972	Continuing	Continuing	Continuing
Test Resources - AN/TPY-2 & SBX SSF Integration & Infrastructure, Sys Test Lab	SS/CPFF	Raytheon : MA	0.000	0.000		16.190	Nov 2015	14.121	Nov 2016	-		14.121	Continuing	Continuing	Continuing
Test Resources - UEWR SSF Integration & Infrastructure, Sys Test Lab	C/FPIF	deciBel : AL	0.000	0.000		4.649	Nov 2015	3.789	Nov 2016	-		3.789	Continuing	Continuing	Continuing
Ballistic Missile Defense System (BMDS) Level Testing - AN/TPY-2 & SBX FT & GT	SS/CPAF	Raytheon : MA	0.000	38.974		0.000		0.000		-		0.000	0	38.974	0

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2015</b>		<b>FY 2016</b>		<b>FY 2017 Base</b>		<b>FY 2017 OCO</b>		<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Ballistic Missile Defense System (BMDS) Level Testing - UEWR/CD FT & GT	C/FPIF	deciBel : MA/AL	0.000	6.599		0.000		0.000		-		0.000	0	6.599	0
Element Test and Infrastructure - TPY-2 & SBX SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Raytheon : MA	0.000	10.461		0.000		0.000		-		0.000	0	10.461	0
Element Test and Infrastructure - UEWR SSF Integration & Infrastructure, Sys Test Lab	C/CPIF	Raytheon, deciBel : AL/MA	0.000	4.014		0.000		0.000		-		0.000	0	4.014	0
<b>Subtotal</b>			0.000	60.048		79.782		78.430		-		78.430	-	-	-

**Remarks**  
N/A

	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	0.000	60.048	79.782	78.430	-	78.430	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</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-20 (AEGIS 5.0, Target Only Flight Test)	▲																											
GTI-06 Part 1 (BMDS Ground Test)			✦																									
GTI-06 Part 3 (BMDS Ground Test)				✦																								
GTD-06 Part 1 (BMDS Ground Test)					✦																							
GM CTV-02 Plus (GM, Intercept Flight Test)					△																							
FTX-21 (AEG IS SBT, Target Only Flight Test)								✦																				
GTI-06 Part 2 (BMDS Ground Test)								✦																				
GTI-ISR ( 16) (BMDS Ground Test)								✦																				
GTD-06 Part 2 (BMDS Ground Test)									✦																			
FTG-15 (GM, Intercept Flight Test)									△																			
Israeli Cooperative Intercept Flight Test - FY 2017										✦	✦	✦	✦															
FTT-18 (TH, Intercept Flight Test)												△																
FTT-15 (TH, Intercept Flight Test)												△																
GTI-07a (BMDS Ground Test)												✦																
GTD-07a (BMDS Ground Test)													✦															
FTG-11 (IOT&E) (GM, Intercept Flight Test)													△															
FTM-29 (AEGIS 5.1, Intercept Flight Test)													△															
GTX-07b (BMDS Ground Test)													✦															
GTI-07b (BMDS Ground Test)														✦														
FTO-03 E2 (OTA, Intercept Flight Test)															△													
GTD-07b Part 1 (BMDS Ground Test)															✦													
GTI-ISR (18) (BMDS Ground Test)															△													
GTD-07b Part 2 (BMDS Ground Test)																✦												
GTX-08 Part 1 (BMDS Ground Test)																	✦											
FTX-22 (SN, Target Only Flight Test)																		△										
FTT-19 (TH, Intercept Flight Test)																			△									
FTM-35 (AEGIS 5.1, Intercept Flight Test)																				△								
GTX-08 Part 2 (BMDS Ground Test)																					✦							
FTG-18 (GM, Intercept Flight Test)																						△						
FTT-16 (TH, Intercept Flight Test)																							△					
FTX-25 (SN, Target Only Flight Test)																								△				
GTI-08 (BMDS Ground Test)																									✦	✦		

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</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				
GTD-08 Part 1 (BMDS Ground Test)																																
GTD-08 Part 2 (BMDS Ground Test)																																
FTX-26 (SN, Target Only Flight Test)																																
FTO-04 (OTA, Intercept Flight Test)																																
FTT-21 (TH, Intercept Flight Test)																																
GTX-09 (BMDS Ground Test)																																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FTX-20 (AEGIS 5.0, Target Only Flight Test)	1	2015	1	2015
GTI-06 Part 1 (BMDS Ground Test)	3	2015	3	2015
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
GTD-06 Part 1 (BMDS Ground Test)	1	2016	1	2016
GM CTV-02 Plus (GM, Intercept 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
GTD-06 Part 2 (BMDS Ground Test)	4	2016	4	2016
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
Israeli Cooperative Intercept Flight Test - FY 2017	1	2017	4	2017
FTT-18 (TH, Intercept Flight Test)	3	2017	3	2017
FTT-15 (TH, Intercept Flight Test)	3	2017	3	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
FTM-29 (AEGIS 5.1, Intercept Flight Test)	1	2018	1	2018
GTX-07b (BMDS Ground Test)	1	2018	1	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
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

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MT11 / <i>BMDS Radars Test</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	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
FTM-35 (AEGIS 5.1, Intercept Flight Test)	4	2019	4	2019
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	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
GTD-08 Part 1 (BMDS Ground Test)	4	2020	4	2020
GTD-08 Part 2 (BMDS Ground Test)	1	2021	1	2021
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FTO-04 (OTA, 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> 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>	-	0.000	3.815	4.820	-	4.820	4.470	5.379	5.382	4.842	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) was proportionately allocated to Ballistic Missile Defense Sensor Test. In FY 2017, the PWS increase is a result of proportional reallocations based on a pro-rata basis of the adjusted RDT&E profile.

**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
<b>Title:</b> Program Wide Support	0.000	3.815	4.820
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Ballistic Missile Defense Sensor Test - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	3.815	4.820

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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, VA	0.000	0.000		0.000		0.096	Jul 2017	-		0.096	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	MIPR	Various : Multi: AL, VA	0.000	0.000		3.815		4.724	Aug 2017	-		4.724	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		3.815		4.820		-		4.820	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	3.815	4.820	-	4.820	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604879C / <i>Ballistic Missile Defense Sensor Test</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</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	958.906	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing
MD68: <i>AEGIS Ashore</i>	926.253	94.943	33.432	41.548	-	41.548	27.637	18.280	20.200	20.504	Continuing	Continuing
MT68: <i>Aegis Ashore Test</i>	3.571	20.473	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	24.044
MD40: <i>Program-Wide Support</i>	29.082	5.997	1.538	1.745	-	1.745	1.408	0.979	1.094	1.142	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Increase from FY 2016 to FY 2017 is due to an increase in the Navy's Destroyer Modernization efforts for the Pacific Missile Range Facility and a one time shipment of the Aegis Weapon System to Poland as second destination transportation via the military transportation system for which costs were previously captured in 0208866C MD73.

**A. Mission Description and Budget Item Justification**

This program supports the development of a land-based Standard Missile-3 (SM-3) capability, hereafter referred to as Aegis Ashore. On 17 September 2009, the President announced an overarching plan to provide regional missile defense to U.S. deployed forces, allies and partners in Europe called the European Phased Adaptive Approach (EPAA). The EPAA policy specifically defines a timeline to deploy a mix of afloat and land-based BMD capabilities. Aegis Ashore represents one of these land-based capabilities. The U.S. can also build on current efforts to pursue Phased Adaptive Approaches (PAAs) in the Asia Pacific and the Middle East regions. The PAA tailors U.S. BMD capabilities to specific theater needs to enhance integrated regional missile defenses to protect defended assets against medium, intermediate, and ultimately intercontinental range ballistic missiles.

Phase II of EPAA (2015): Deploys the first Aegis Ashore site in Romania, and deploys the SM-3 Block IB on land at the Aegis Ashore site and at sea on multi-mission Aegis ships with BMD capability.

Phase III of EPAA (2018): Deploys the second Aegis Ashore site in Poland and introduces the SM-3 Block IIA to improve performance against medium and intermediate range ballistic threats, and extend coverage to the majority of Europe. This is being executed out of 0208866C MD73.

Aegis Ashore is a key component of EPAA Phases II and III and will provide Aegis BMD capability against short and medium range ballistic missiles in an ashore configuration. Aegis Ashore will provide sophisticated engagement strategies and can adapt to threat updates while also being deployed/redeployed worldwide where needed to provide persistent coverage for the Geographic Combatant Commanders. To facilitate Navy training and logistical support, it will be similar to the Aegis At-Sea BMD capability inherent in the DDG-113 series of the Arleigh Burke Class Destroyers. Aegis Ashore re-hosts the required BMD components of a Navy Destroyer, including: SPY Radar; Vertical Launch System, Computing Infrastructure; Command Control; Communications; Computers and Intelligence (C4I) Systems; and Operator Consoles.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>
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MDA will continue to use RDT&E funds to modernize the Aegis Ashore Missile Defense Test Complex AAMDTC in Hawaii and develop and test Aegis Ashore capability improvements there for implementation at operational sites.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	123.444	34.970	40.787	-	40.787
Current President's Budget	121.413	34.970	43.293	-	43.293
Total Adjustments	-2.031	0.000	2.506	-	2.506
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.028	0.000			
• SBIR/STTR Transfer	-2.059	0.000			
• Other Adjustment	0.000	0.000	2.506	-	2.506

**Change Summary Explanation**

- FY 2015 decrease reflects the realignment of Department of Defense priorities
- FY 2017 increase reflects realignment of Department of Defense priorities and the one time shipment of the Aegis Weapon System to Poland as second destination transportation via the military transportation system. Costs previously captured in 0208866C, MD73.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)				<b>Project (Number/Name)</b> MD68 / AEGIS Ashore			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD68: AEGIS Ashore	926.253	94.943	33.432	41.548	-	41.548	27.637	18.280	20.200	20.504	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Increase from FY 2016 to FY 2017 is due to:

- Increase in the Navy's Destroyer Modernization efforts for the Pacific Missile Range Facility
- One time shipment of the Aegis Weapon System to Poland as second destination transportation via the military transportation system. Costs previously captured in 0208866C MD73

**A. Mission Description and Budget Item Justification**

Deployed sites, referred to as an Aegis Ashore Missile Defense System (AAMDS), will be modified to support future computer program and missile variants in step with Navy's destroyer modernization plan. MDA is responsible for maintaining and modernizing the test center at the Pacific Missile Range Facility (PMRF), while the Navy is responsible for maintaining and modernizing all deployed Aegis Ashore sites. The initial AAMDS deployed to Romania in 2015 employing Aegis BMD 5.0 CU (Capabilities Upgrade) and SM-3 Block IB. A second AAMDS deploys to Poland in 2018. These sites provide an Aegis Ashore exo-atmospheric defense against short to medium and intermediate range ballistic missile threats in the later stages of flight. If the threat dictates, additional systems can be purchased and deployed globally.

Research and Development efforts include: required modifications to adapt the Aegis Weapon System for land based use, modernization in pace with Navy's destroyer modernization plan, development and test Aegis Ashore capability improvements at the Aegis Ashore Missile Defense Test Complex (AAMDTC) in Hawaii, and modifications as required to enhance co-existence with Broadband Wireless Access systems in the European theater.

In support of EPAA Phase III, Aegis Ashore integrates the Aegis BMD 5.1 and Standard Missile (SM-3) Block IIA capabilities into the Aegis Ashore sites. MDA is responsible for any upgrade to BMD capability, BMD specific mission equipment and integration with existing BMDS nodes for all Aegis Ashore sites.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Aegis Weapon System Development	78.234	17.455	23.184
<b>Articles:</b>	-	-	-
<b>Description:</b> This effort maintains and modernizes the test center in Hawaii. It also develops and tests Aegis Ashore capability improvements prior to implementation at operational sites, and supports SPY-1 radar and Broadband Wireless Access (BWA) coexistence efforts at Aegis Ashore sites.			
<b>FY 2015 Accomplishments:</b>			
- Completed installation of Deckhouse in Romania			
- Completed integration and test of Aegis Ashore Weapons System in Romania			
- Completed installation of Launchers in Romania			

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Continued preparing Aegis Ashore system for Navy acceptance</li> <li>- Continued construction of Aegis Ashore Missile Defense System Complex at Romania</li> <li>- Maintained the AAMDTC in Pacific Missile Range Facility</li> </ul> <p><b>FY 2016 Plans:</b> Decrease in funding from FY 2015 to FY 2016 is due to the completion of Aegis Ashore fielding in Romania. Future Aegis Ashore sites transition to Procurement as the life cycle of the program continues to evolve.</p> <ul style="list-style-type: none"> <li>- Continue to research SPY-1 and Broadband Wireless Access system co-existence in the European Theater</li> <li>- Develop and implement required modifications to enhance co-existence of these systems</li> <li>- Developmental support to maintain the Romania AAMDS Weapon Systems</li> <li>- Maintain the Aegis Ashore Missile Defense Test Complex in Pacific Missile Range Facility</li> <li>- Modernize the AAMDTC Weapons System, C4I, VLS, and other equipment to align with the U.S Navy's destroyer modernization plan and ensure the test site configuration is ready to support BMDS testing</li> </ul> <p><b>FY 2017 Plans:</b> Increase from FY 2016 to FY 2017 is due to alignment with additional Navy Destroyer Modernization efforts.</p> <ul style="list-style-type: none"> <li>- Provide system engineering and evaluation of the U.S Navy's Technical Instruction-16 (TI-16) technology refresh and follow-on modernization efforts concurrent to the U.S Navy's release of their Technical Data Package</li> <li>- Determine the minimum hardware refresh of element components and spares that are projected to be removed from production to ensure the test capability at PMRF remains current with U.S Navy's Destroyer modernization efforts</li> <li>- Provide system engineering, technical, and logistics support for the AAMDS facility and tactical elements to ensure appropriate system adaptation, readiness, availability, and effectiveness</li> <li>- Maintain the Aegis Ashore Missile Defense Test Complex at the Pacific Missile Range Facility</li> <li>- Develop Aegis Ashore tactics, techniques, and procedures</li> <li>- Comply with applicable Core Standards, system requirements, regulations, and specifications</li> </ul>			
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<b>Title:</b> Site Activation	16.709	15.977	18.364
<b>Articles:</b>	-	-	-

**Description:** This effort includes site design, environmental studies, unexploded ordnance clearing, spectrum analysis studies, temporary facilities, utilities, administrative communications equipment and services, infrastructure modifications, generator and commercial power, leased vehicles, material handling equipment, generator fuel, supplies, barriers, guard shacks, temporary lighting, transportation of materials and equipment, translators, and emerging requirements as site activation progresses and until sites are transferred to the Navy.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MD68 / <i>AEGIS Ashore</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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***FY 2015 Accomplishments:***

- Continued site activation for Aegis Ashore site in Romania to include temporary site activation facility maintenance, base operating support, utilities, fuel, administrative communications, and on-site material handling equipment and services
- Transported the Aegis Weapon System and associated equipment to Romania
- Initiated phase 2 of a commercial power extension project to provide commercial power to the Romania Aegis Ashore site.
- Continued engineering studies for Aegis Ashore site in Poland
- Completed preconstruction efforts for Aegis Ashore/Poland to include Facility Design, Environmental Baseline Survey, UXO Time Critical Removal Actions, and development of the request for proposal for the construction contract
- Developed plans, designs, and Ready to Advertise (RTA) package for temporary site activation facilities, utilities, administrative communications, base operating support services to include on-site material handling equipment
- Provided construction monitoring and oversight during Aegis Ashore/Romania MILCON construction project, including support to Aegis Weapon System installation and checkout and Navy system certification (DEMO INSURV)
- Collaborated/coordinated HEMP verification testing being conducted by DTRA for Aegis Ashore/Romania
- Provided post construction award technical services for Aegis Ashore/Romania and facilitated facility change proposals and construction modifications for Aegis Ashore/Poland

***FY 2016 Plans:***

- Complete Romania Aegis Ashore site activation and demobilize temporary facilities and equipment
- Close out all site activation activities for Romania
- Continue site activation for Aegis Ashore site in Poland to include temporary site activation facilities, base operating support, utilities, administrative communications, on-site material handling equipment services, and equipment installation
- Design, purchase, and install an integrated electronic security system for Poland Aegis Ashore site security

***FY 2017 Plans:***

Increase from FY 2016 to FY 2017 is to transport the Aegis Weapon System to Poland

- Continue site activation for Aegis Ashore site in Poland to include base operating support, utilities, administrative communications, site laydown preparation, and on-site material handling equipment services
- Provide fuel for facility commissioning activities
- Ship the Aegis Weapon System and associated equipment to Poland as second destination transportation via the military transportation system
- Continue to provide Defense Threat Reduction Agency (DTRA) support to ensure High-Altitude Electromagnetic Pulse (HEMP) validation and verification testing is completed
- Provide on-call unexploded ordnance technical support to ensure unexpected items do not affect site work and construction schedule


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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
- Provide post-award technical services (structural, mechanical, and electrical) to ensure quality standards and construction schedule are met			
- Provide technical support to facilitate processing facility change proposals and construction modifications			
<b>Accomplishments/Planned Programs Subtotals</b>	94.943	33.432	41.548

**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
• 0208866C: <i>PROCUREMENT</i>	1,757.170	1,489.203	988.503	-	988.503	1,390.673	1,499.493	1,617.970	1,781.795	0	10,524.807
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0604878C: <i>Aegis BMD Test</i>	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604881C: <i>AEGIS SM-3 Block IIA Co-Development</i>	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	537.961

**Remarks**

**D. Acquisition Strategy**

Aegis Ashore awarded a contract for an Aegis Ashore Engineering Agent (AAEA). The AAEA is responsible for the design, development, integration and test of the Aegis Weapons System capability into a reconstitutable deckhouse. The AAEA will also support Aegis Ashore deployment to Romania and Poland.

Competition is the intended Acquisition Strategy for Aegis Ashore Poland.

The Global Deployment (GD) program office is utilizing Naval Facilities Engineering Command (NAVFAC) and U. S. Corps of Engineers Europe District (Core of Engineers North Atlantic Union) CENAU to award and administer contracts for base operating support, commercial power, temporary site activation facilities, and integrated electronic security systems for Romania and Poland sites.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>Product Development (\$ in Millions)</b>				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			
Aegis Weapon System Development - AWS Development -Lockheed Martin-MD68	Various	Lockheed Martin : Moorestown, NJ, NAVSEA, and BAE	777.605	37.950		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-Aegis Techrep-MD68	MIPR	Aegis Techrep : Moorestown, NJ	1.545	2.681		2.012	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-COE Europe-MD68	MIPR	COE Europe : APO	0.000	3.338		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-DOI- MD68	MIPR	Dept. of Interior : Boise,ID	0.541	1.343		0.500	Nov 2015	0.500	May 2017	-		0.500	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NAVFAC-MD68	MIPR	NAVFAC : HI	0.000	2.410		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NAVSEA-MD68	MIPR	NAVSEA-LM/BAE, SPAWAR, NSWC CD : San Diego, CA; Baltimore, MD; Minneapolis, MN	0.000	3.934		1.500	Nov 2015	1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NSWC Carderock-MD68	MIPR	NSWC Carderock : MD	0.000	3.512		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NSWC Crane-MD68	MIPR	NSWC Crane : Crane, IN	1.216	1.194		0.000		2.980	Nov 2016	-		2.980	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-NSWC DD-MD68	MIPR	NSWC Dahlgren : Dahlgren, VA	43.683	2.070		3.000	Nov 2015	3.000	Nov 2016	-		3.000	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>Product Development (\$ in Millions)</b>				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			
Aegis Weapon System Development - AWS Development-NSWC PHD-MD68	MIPR	NSWC PHD : Port Hueneme, CA	18.565	4.203		1.000	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-PEO C4I-MD68	MIPR	PEO C4I : San Diego,CA	0.000	9.311		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-PMRF - MD68	MIPR	PMRF : Hawaii	6.654	1.558		5.874	Nov 2015	5.704	Nov 2016	-		5.704	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-SSC LANT-MD68	MIPR	SSC Lant : VA	0.000	0.529		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-SSC PAC-MD68	MIPR	SSC PAC : San Diego,CA	39.333	0.779		3.000	Nov 2015	5.500	Nov 2016	-		5.500	Continuing	Continuing	Continuing
Aegis Weapon System Development - AWS Development-Variou-MD68	MIPR	Various-MDA : AL,VA,CA	0.000	3.422		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Aegis Weapon System Development - MD68 - D	MIPR	MDA : Arlington, VA	1.076	0.000		0.569	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - DTRA support to construction in Romania and Poland	MIPR	DTRA : Ft. Belvoir, VA	0.350	0.000		0.000		0.315	Oct 2016	-		0.315	Continuing	Continuing	Continuing
Site Activation - Poland Admin Communication	MIPR	Northrop Grumman : Poland	0.000	0.000		1.300		0.778	Nov 2016	-		0.778	Continuing	Continuing	Continuing
Site Activation - Poland Base Operating Support and Commercial Power Contract Development	MIPR	NAVFAC : Poland	0.064	0.000		3.100		3.321	Dec 2016	-		3.321	Continuing	Continuing	Continuing

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>Product Development (\$ in Millions)</b>				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			
Site Activation - Poland IESS	MIPR	CENAU : Poland	0.000	0.000		4.881		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Poland Temp Facilities Design & Contract Development	MIPR	USACE : Huntsville, AL	0.350	0.000		4.058		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Romania Admin Communications	MIPR	DISA, Scott AFB, : IL	0.513	0.000		0.013		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Romania Base Support Services	MIPR	NAVFAC : Poland	6.445	0.000		0.600		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Romania Integrated Electronic Security System - MD68	MIPR	USACE : Huntsville, AL	3.655	0.000		0.900		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Romania Temp Facilities	MIPR	CENAU : Romania	0.049	0.000		1.125		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Site Activation - MD68	MIPR	Various : Various	24.609	16.709		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Site Activation - Site Activation - Transportation of Aegis Weapon System	MIPR	SDDC : Scotts AFB, IL	0.000	0.000		0.000		4.629	Jan 2017	-		4.629	Continuing	Continuing	Continuing
Site Activation - Site Activation- Poland Admin Communications	MIPR	DISA : Scott AFB, IL	0.000	0.000		0.000		0.075	Nov 2016	-		0.075	Continuing	Continuing	Continuing
Site Activation - Site Activation- Poland Material Handling Services	MIPR	NAVFAC : Naples, Italy	0.000	0.000		0.000		6.060	Nov 2016	-		6.060	Continuing	Continuing	Continuing
Site Activation - Site Activation- Poland Site Laydown	MIPR	NAVFAC : Naples, Italy	0.000	0.000		0.000		0.541	Dec 2016	-		0.541	Continuing	Continuing	Continuing
Site Activation - USACE in-house support in Poland	MIPR	CEHNC : Huntsville, AL	0.000	0.000		0.000		0.700	Oct 2016	-		0.700	Continuing	Continuing	Continuing
Site Activation - USACE support in Poland	MIPR	CENAU : Poland	0.000	0.000		0.000		1.945	Oct 2016	-		1.945	Continuing	Continuing	Continuing
<b>Subtotal</b>			926.253	94.943		33.432		41.548		-		41.548	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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<b>Product Development (\$ in Millions)</b>				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			

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
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	R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 4	PE 0604880C / Land Based SM-3 (LBSM3)				MD68 / AEGIS Ashore				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	926.253	94.943	33.432	41.548	-	41.548	-	-	-

**Remarks**  
 Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, MIPRs, and civilian salaries on the R-3.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD68 / AEGIS Ashore
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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
AAMDTC Upgrades																												
AA ALO 4 (AAMDSC in Romania)		△															☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
AAMDTC Upgrades FTO-03					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆												

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MD68 / <i>AEGIS Ashore</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AAMDTC Upgrades	1	2019	4	2021
AA AL0 4 (AAMDSC in Romania)	2	2015	2	2015
AAMDTC Upgrades FTO-03	2	2016	3	2018

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)				<b>Project (Number/Name)</b> MT68 / Aegis Ashore Test			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT68: <i>Aegis Ashore Test</i>	3.571	20.473	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	24.044
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Aegis Ashore specific testing which will be funded under 0604878C is required beginning in FY 2018 for EPAA Phase III Poland.

**A. Mission Description and Budget Item Justification**

Prepare for and conduct Ballistic Missile Defense System Flight and Ground Test events as reflected in the Integrated Master Test Plan and the Exhibit R-4 schedule.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing	20.473	0.000	0.000
<b>Articles:</b>	-	-	-
<b>Description:</b> See Description below.			
<b>FY 2015 Accomplishments:</b> - Prepared for and conducted Ballistic Missile Defense System Flight and Ground Test events as reflected in the Integrated Master Test Plan and the Exhibit R-4 schedule.			
<b>FY 2016 Plans:</b> No further testing required.			
<b>FY 2017 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	20.473	0.000	0.000

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0604878C: <i>Aegis BMD Test</i>	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

N/A

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

<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>	<b>Project (Number/Name)</b>
0400 / 4	PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	MT68 / <i>Aegis Ashore Test</i>

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MT68 / Aegis Ashore Test
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-	-	-	-	-	-	-	-	-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-ASI-MT68	C/CPFF	Analytical Services Inc : Huntsville,AL	0.000	0.422		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-DOI-MT68	MIPR	Department of Interior : HI	0.000	2.750		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-JHU/APL-MT68	C/CPFF	JHU/APL : MD	0.000	2.118		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing -	C/CPAF	L3 Communications : Waco, TX	0.000	1.282		0.000		0.000		-		0.000	0	1.282	0

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MT68 / Aegis Ashore Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Aegis Ashore Test-L3 Communications- MT68															
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-MDA-MT68	MIPR	MDA : VA	0.000	0.604		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-MIT/LL-MT68	MIPR	MIT/LL : MA	0.000	0.464		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-NAWC PM-MT68	MIPR	NAWC/ PM : Pt. Mugu, CA	1.575	1.700		0.000		0.000		-		0.000	0	3.275	0
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-NSWC Corona-MT68	MIPR	NSWC Corona : CA	0.000	0.731		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-NSWC Dahlgren-MT68	MIPR	NSWC Dahlgren : VA	0.000	0.549		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-NSWC PHD-MT68	MIPR	NSWC/ PHD : Pt. Heuneme, CA	0.000	0.515		0.000		0.000		-		0.000	0	0.515	0
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-Northrop Grumman-MT68	C/CPAF	Northrop Grumman Space & Mission Systems : Colorado Springs, CO	0.000	0.142		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MT68 / Aegis Ashore Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-PMRF-MT68	MIPR	PMRF: Barking Sands : Kauai, HI	1.996	3.180		0.000		0.000		-		0.000	0	5.176	0
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-SPAWAR-MT68	MIPR	SPAWAR : San Diego, CA	0.000	0.700		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-Variou-MT68	MIPR	Various : VA, MD, CA, DC, MA, AL	0.000	3.977		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Conduct Aegis Ashore Ballistic Missile Defense (BMD) Testing - Aegis Ashore Test-WSMR-MT68	MIPR	WSMR : HI	0.000	1.339		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			3.571	20.473		0.000		0.000		-		0.000	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	3.571	20.473	0.000	0.000	-	0.000	-	-	-



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MT68 / <i>Aegis Ashore Test</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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<b>Remarks</b> N/A									
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**Exhibit R-4, RDT&E Schedule Profile: PB 2017 Missile Defense Agency** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MT68 / <i>Aegis Ashore Test</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	
FTO-02 E1a (OTA, Intercept Flight Test)				+	+																								

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MT68 / <i>Aegis Ashore Test</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FT0-02 E1a (OTA, Intercept Flight Test)	4	2015	1	2016

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)				<b>Project (Number/Name)</b> MD40 / Program-Wide Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	29.082	5.997	1.538	1.745	-	1.745	1.408	0.979	1.094	1.142	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning in FY 2016, Program Wide Support (PWS) reflects a proportional decrease as a result of changes to Land Based SM-3. In FY 2017, PWS reflects a proportional change as a result an increase in Land Based SM-3.  
 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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	5.997	1.538	1.745
<b>Articles:</b>	-	-	-
<b>Description:</b> See Description below.			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	5.997	1.538	1.745

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

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 4	PE 0604880C / Land Based SM-3 (LBSM3)	MD40 / Program-Wide Support

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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<b>Support (\$ in Millions)</b>				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 Facilities and Maintenance (MIPR)	MIPR	Various; Multi : AL, CA, CO, VA	10.114	0.910		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Facilities and Maintenance (Reqn)	Reqn	Various; Multi : AL, CA, CO, VA	4.383	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various: Multi : AL, CA, CO, VA	1.580	0.358		0.000		0.035	Jul 2017	-		0.035	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, CA, CO, VA	12.484	4.729		1.538		1.710	Aug 2017	-		1.710	9.005	29.466	0
Program Wide Support - Agency Operations and Support, International, and Materiel and Readiness	MIPR	Department of State; : Washington, DC, Japan, Australia	0.181	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - FFRDC/UARC	C/CPAF	Various : Multi:AL,VA	0.340	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			29.082	5.997		1.538		1.745		-		1.745	-	-	-

**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
<b>Project Cost Totals</b>	29.082	5.997	1.538	1.745	-	1.745	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / Land Based SM-3 (LBSM3)	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604880C / <i>Land Based SM-3 (LBSM3)</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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Schedule Details

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



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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / <i>AEGIS SM-3 Block IIA Co-Development</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	1,790.691	259.278	172.645	106.038	-	106.038	0.000	0.000	0.000	0.000	0	2,328.652
MD09: <i>SM-3 Block IIA Co-Development</i>	1,738.427	236.565	139.866	91.071	-	91.071	0.000	0.000	0.000	0.000	0	2,205.929
MT09: <i>SM-3 Block IIA Co-Development Test</i>	1.897	7.468	25.186	12.208	-	12.208	0.000	0.000	0.000	0.000	0	46.759
MD40: <i>Program-Wide Support</i>	50.367	15.245	7.593	2.759	-	2.759	0.000	0.000	0.000	0.000	0	75.964

**Program MDAP/MAIS Code:** 362

**Note**

Decrease from FY 2016 to FY 2017 is attributable to the conclusion of the SM-3 Block IIA design and technology development efforts as well as a decrease in test events as reflected in the Integrated Master Test Plan (IMTP).

**A. Mission Description and Budget Item Justification**

The Aegis BMD mission is to deliver an enduring, operationally effective and supportable BMD capability to defend the nation, deployed forces, friends and allies and to increase this capability by delivering evolutionary improvements as part of BMDS upgrades. Aegis BMD provides a forward-deployable, mobile capability to detect and track ballistic missiles of all ranges, and the ability to destroy Short-Range Ballistic Missiles (SRBM), Medium-Range Ballistic Missiles (MRBM), and Intermediate-Range Ballistic Missiles (IRBM) in the midcourse phase of flight. Upgrades to both the Aegis BMD Weapon System and the Standard Missile-3 (SM-3) configuration enable Aegis BMD to provide effective, supportable defensive capability against longer range, more sophisticated threats and an enduring Aegis Ashore defensive capability.

Beginning in 2006, Aegis BMD and the Japanese Ministry of Defense (JMOD) have undertaken an SM-3 Cooperative Development (SCD) Project. The objective of the SCD project is the development and initial at-sea flight test of the SM-3 Block IIA missile. The U.S. and Japan will bear equitable burden to complete the project, as documented in the U.S./Japan Memorandum of Understanding (MOU) SCD Annex. Each nation will fund the full extent of its participation in the project. No funds are transferred between the U.S. and Japan under the MOU.

The SM-3 Block IIA provides important improvements over SM-3 Block IB capability, including increased velocity and range provided by a 21-inch diameter rocket motor propulsion stack, and more than doubled seeker sensitivity and more than tripled divert capability incorporated in an advanced kinetic warhead. New component technologies include, but are not limited to: lightweight nosecone, advanced kinetic warhead, 21-inch second stage rocket motor, and 21-inch third stage rocket motor. The effort includes risk reduction for key components and supports EPAA Phase III.

Working with the Services' Operational Test Agencies (OTA) and with the support of the Director of Operational Test and Evaluation (DOT&E), MDA developed a test program to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the War-fighter are operationally effective, suitable, and survivable.

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / <i>AEGIS SM-3 Block IIA Co-Development</i>
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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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	263.695	172.645	66.828	-	66.828
Current President's Budget	259.278	172.645	106.038	-	106.038
Total Adjustments	-4.417	0.000	39.210	-	39.210
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.019	0.000			
• SBIR/STTR Transfer	-4.398	0.000			
• Other Adjustment	0.000	0.000	39.210	-	39.210

**Change Summary Explanation**

FY 2015 decrease reflects realignment of Department of Defense priorities.

FY 2017 increase reflects additional missile software build and qualification for SFTM-02 to complete program. Funding was realigned from 0208866C MD09 Aegis BMD Procurement.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development				<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD09: SM-3 Block IIA Co-Development	1,738.427	236.565	139.866	91.071	-	91.071	0.000	0.000	0.000	0.000	0	2,205.929
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Decrease from FY 2016 to FY 2017 is attributable to the conclusion of the SM-3 Block IIA design and technology development efforts.

**A. Mission Description and Budget Item Justification**

The objective of the SCD project is the development and initial at-sea flight test of the SM-3 Block IIA, and preparation for subsequent production decisions. The U.S. and Japan have a mutual interest in the evolutionary development of improvements to the SM-3. The SM-3 Block IIA will increase the area that can be defended by Aegis BMD and increase the probability of kill against a larger threat set. It will leverage enhanced capability provided by BMDS sensor upgrades.

Technology improvements planned for the SM-3 Block IIA include an increase in velocity and range provided by a 21-inch diameter rocket motor propulsion stack, and more than doubled seeker sensitivity and more than tripled divert capability incorporated in an advanced kinetic warhead. Key component technologies to be developed include, but are not limited to: lightweight nosecone, advanced kinetic warhead, 21-inch second stage rocket motor, and 21-inch third stage rocket motor. Technology risk reduction will be conducted.

The Scope of Work of the SCD project is defined in three phases:

Phase I took the program through System Design Review (SDR) in FY 2009. Aegis BMD executed risk reduction efforts for the Propulsion, Nosecone, Seeker, Divert Attitude Control System (DACS) development efforts, and test plans. Phase 1 also included requirements definition for the SM-3 Block IIA

Phase II encompassed the work from SDR through the Critical Design Review (CDR) in FY 2014. Aegis BMD refined requirements and defined the performance allocation and component configuration for the development of the SM-3 Block IIA. The U.S. and Japan designed, fabricated, tested, and evaluated the SM-3 Block IIA sections per the agreed work-share agreement.

Phase III extends from CDR to the completion of the SCD flight test program as defined in the Agreement. This phase defines developmental cost share agreements between the United States and the Government of Japan, completes component engineering and integration, executes cooperative flight tests, and continues discussions on production and maintenance options. Phase III is planned to complete in FY2017.

The SCD project will:

- Develop and integrate components for the SM-3 Block IIA into an All Up Round (AUR). Japan's work share includes 21 inch 2nd and 3rd stage components and the 21 inch nosecone. The U.S. workshare includes the advanced kinetic warhead, advanced seeker, large diameter divert and attitude control system, and lightweight VLS canister.
- Integrate the SM-3 Block IIA Vertical Launch System (VLS) with Aegis ship systems.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p><b>Title:</b> SM-3 Block IIA Cooperative Development (SCD)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> This activity develops the SM-3 Block IIA which will increase the area that can be defended by Aegis Ballistic Missile Defense (BMD) and increase the probability of kill against a larger threat set. It will leverage enhanced capability provided by Ballistic Missile Defense System (BMDS) sensor upgrades.</p> <p><b>FY 2015 Accomplishments:</b>                      SM-3 Blk IIA Development:                      - Conducted PFRT Guidance Section Test                      - Conducted G-Switch Qualification                      - Delivered HAT-1 TDACS to Dahlgren                      - Performed SEP Nut Qualification                      - Performed G-Switch Flight Termination System (FTS) Qualification                      - Conducted Throttleable Divert and Attitude Control System (TDACS) live cast of QUAL-2, SFTM-1 and SFTM-2                      - Conducted Tunnel testing for Strake Qualification                      - Certified Flight Termination Receivers (FTRs)                      - Delivered TDACS DVT asset to NTS for Environmental Testing                      - Performed TDACS Nozzle Cover Ejection Test                      - Received CTV-2 unit from Aerojet                      - Manufactured CTV-2 Avionics Suite for Flight Certification Testing                      - Conducted Guidance Unit Flight Test Cert Testing                      - Conducted CTV-1 with positive Telemetry data                      - Conducted Throttleable Divert Attitude Control System (TDACS) Design Verification Test                      - Initiated SM-3 IIA AUR Huntsville I&amp;T Process Proofing                      - Delivered Inert Operational Missile to Combat Systems Engineering Development Site (CSEDS)                      - Prepared and conducted TDACS qualification Testing                      - Manufactured TDACS Insensitive Munitions Fast Cook-off Units                      - Delivered Throttleable Divert and Attitude Control System (TDACS), Guidance Section (GS), and Kinetic Warhead (KW) Guidance Unit in support of BMDS Flight Test event                      - Prepared for and supported BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule</p> <p>Vertical Launch System (VLS) Canister:                      - Conducted Mk 29 Mod 0 Canister In-Process Review</p>	236.565	139.866	91.071
	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Prepared for and conducted Insensitive Munitions testing</li> <li>- Prepared for and conducted Packaging, Handling, Storage &amp; Transportation testing</li> <li>- Prepared for and supported BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule</li> </ul> <p><b>FY 2016 Plans:</b> Decrease from FY 2015 is attributable to the conclusion of the design and technology development efforts associated with a maturing program.</p> <p>SM-3 Block IIA Development:</p> <ul style="list-style-type: none"> <li>- Complete Software Functional Qualification testing to ensure successful flight test intercepts</li> <li>- Complete Integration &amp; Test Proofing to ensure proper implementation of manufacturing processes of the SM-3 Block IIA missile</li> <li>- Continue qualification and testing of the Throttleable Divert and Attitude Control System (TDACS) in support of pending flight test to ensure missile components meet performance and manufacturing requirements</li> <li>- Complete Kinetic Warhead (KW) Qualification testing to ensure missile components meet performance and manufacturing requirements</li> <li>- Complete Guidance Section (GS) Qualification to ensure missile components meet performance and manufacturing requirements</li> <li>- Complete Kinetic Warhead (KW) and Guidance Section (GS) Post Near Miss Shock Performance Testing that provides data for missile hazard classification</li> <li>- Deliver TDACS, GS, and KW Guidance Unit in support of BMDS Flight Test event</li> <li>- Prepare for and conduct BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule</li> </ul> <p>Vertical Launch System (VLS) Canister:</p> <ul style="list-style-type: none"> <li>- Complete Insensitive Munitions testing</li> <li>- Complete Packaging, Handling, Storage &amp; Transportation testing to allow for missile transportation</li> <li>- Prepare for and conduct BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule</li> </ul> <p><b>FY 2017 Plans:</b> Decrease in funding from FY 2016 to FY 2017 is due to SM-3 Block IIA Co-Development completion.</p> <ul style="list-style-type: none"> <li>- Complete Co-development of the SM-3 Block IIA</li> <li>- Prepare for and support BMDS Flight Test events as reflected in the IMTP and the Exhibit R-4 schedule</li> <li>- Complete SFTM-02 missile software build and qualification</li> <li>- Build and deliver SFTM-02 flight test All Up Round (AUR)</li> <li>- Implement SM-3 Block IIA Seeker Guidance Section Evaluation Lab (GSEL) photon injection capability</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Complete SM-3 Block IIA performance verification report			
- Develop and deliver lightweight VLS canisters in support of SCD testing events			
<b>Accomplishments/Planned Programs Subtotals</b>	236.565	139.866	91.071

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The SM-3 Cooperative Development program for the SM-3 Block IIA missile will utilize a performance-based approach that ties program decision milestones to the performance of development prototypes, as well as Propulsion Test Vehicle and Controlled Test Vehicle flight test article performance. Acquisition of hardware, software modifications and required services will occur in conjunction with contractual and tasking efforts to U.S. Navy work and events, and as defined by signed agreements between the Governments of the United States and Japan.

Competition will be used to purchase any products or services, when appropriate.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development
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<b>Product Development (\$ in Millions)</b>				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			
SM-3 Block IIA Cooperative Development (SCD) - MD09 - D	MIPR	MDA : Arlington, VA	0.000	5.084		5.547	Nov 2015	0.000		-		0.000	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Canister - MD09	MIPR	BAE : MD	49.856	7.946		3.130	Nov 2015	1.500	Nov 2016	-		1.500	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09	SS/CPAF	RAYTHEON : AZ	1,530.920	192.595		112.640	Nov 2015	80.921	Nov 2016	-		80.921	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - 20117135426611	MIPR	NSWC/DD/VA : VA	32.116	7.023		4.985	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - 20117135426613	C/CPFF	JHU/APL : MD	87.119	17.184		8.788	Nov 2015	5.000	Nov 2016	-		5.000	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - 20117135426614	MIPR	MIT/LL : MA	7.857	0.000		0.388	Nov 2015	0.250	Nov 2016	-		0.250	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development
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<b>Product Development (\$ in Millions)</b>				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
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - 20117135426616	MIPR	NSWC/PHD : CA	9.085	1.258		0.412	Nov 2015	0.300	Nov 2016	-		0.300	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - 20117135426619	MIPR	NSWC IH : MD	8.442	0.000		0.240	Nov 2015	0.130	Nov 2016	-		0.130	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 - Crane	MIPR	NSWC/Crane : IN	2.048	0.958		0.355	Nov 2015	0.150	Nov 2016	-		0.150	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MD09 CL	MIPR	NAWC/CL : CA	3.025	1.572		0.466	Nov 2015	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Mission Assurance - MD09	MIPR	NSWC/CO : CA	0.976	0.000		0.145	Nov 2015	0.020	Nov 2016	-		0.020	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA	MIPR	NSWC Carderock : MD	0.000	0.225		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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development
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<b>Product Development (\$ in Millions)</b>				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			
Cooperative Development (SCD) - SM-3 Block IIA Development-MD09															
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD) - Testing & Evaluation - MD09	MIPR	Various : CA, VA, MD	5.825	2.221		2.449	Nov 2015	0.500	Nov 2016	-		0.500	Continuing	Continuing	Continuing
SM-3 Block IIA Cooperative Development (SCD) - SM-3 Block IIA Cooperative Development (SCD)- Mission Assurance- MD09	MIPR	NSWC/DD/VA : Dahlgren, VA	1.158	0.499		0.321	Nov 2015	0.100	Nov 2016	-		0.100	Continuing	Continuing	Continuing
<b>Subtotal</b>			1,738.427	236.565		139.866		91.071		-		91.071	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development
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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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	1,738.427	236.565	139.866	91.071	-	91.071	-	-	-

**Remarks**  
Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, MIPRs, and civilian salaries on the R-3.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development

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				
MD09 SM-3 Block IIA Co-Development	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦																				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD09 / SM-3 Block IIA Co-Development

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD09 SM-3 Block IIA Co-Development	1	2015	4	2017

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development			<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test				
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MT09: SM-3 Block IIA Co-Development Test	1.897	7.468	25.186	12.208	-	12.208	0.000	0.000	0.000	0.000	0	46.759
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
Decrease from FY 2016 to FY 2017 is due to decreased test events in accordance with the IMTP.

**A. Mission Description and Budget Item Justification**

Working with the Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has developed a test program to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.

The Integrated Master Test Plan (IMTP) is event-oriented and extends until the collection of all identified data is completed to ensure adequate test investments. The bottom line is that MDA is focused on conducting meaningful ballistic missile testing that demonstrates the capabilities of the BMDS.

The MDA and the Japanese Ministry of Defense conduct the SCD Project for the development and initial flight test of the SM-3 Block IIA in accordance with the jointly signed SCD Annex. The Joint signed SCD Program Schedule (dated October 2013) includes the following test events:

- \* Restrained Firing - COMPLETE
- \* Propulsion Test Vehicle - 1 (PTV-1) - COMPLETE FY 2014
- \* Controlled Test Vehicle - 1 (CTV-1) - COMPLETE FY 2015
- \* Controlled Test Vehicle - 2 (CTV-2) (Planned for Q1 FY16)
- \* SCD FTM - 1 (SFTM-01) (Planned for FY16)
- \* SCD FTM - 2 (SFTM-02) (Planned for FY17)

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> SM-3 Co-Development Flight Test Execution	7.468	25.186	12.208
<b>Articles:</b>	-	-	-
<b>Description:</b> This activity conducts ground and flight testing using the Aegis BMD 5.1 system to improve confidence in missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.			
<b>FY 2015 Accomplishments:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Prepared for and conducted Ballistic Missile Defense System Flight and Ground Test events as reflected in the IMTP the Exhibit R-4 schedule.			
<b>FY 2016 Plans:</b> The increase from FY 2015 to FY 2016 is due to the first scheduled flight test (SFTM-01) for the SM-3 Block IIA Co-Development program being conducted in third quarter FY 2016 and SFTM-02 being conducted in first quarter FY 2017.			
-Begin test planning for FY 2016 Aegis flight test missions: develop models and simulations, and ready the range for test. -Conduct Aegis BMD-specific analysis during pre and post-mission analysis phases. -Prepare for and conduct Ballistic Missile Defense System Flight and Ground Test events as reflected in the Integrated Master Test Plan and the Exhibit R-4 schedule.			
<b>FY 2017 Plans:</b> The decrease in funding from FY 2016 to FY 2017 is due to decreased number of test in FY 2017.			
- Conduct flight test program (SFTM-02)to meet the Aegis and SM-3 Block IIA components of the EPAA Phase III architecture - Complete Aegis BMD-specific analysis during post mission phase.			
<b>Accomplishments/Planned Programs Subtotals</b>	7.468	25.186	12.208

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	260.347	228.392	230.077	-	230.077	144.893	141.815	171.644	158.421	Continuing	Continuing
• 0603890C: <i>BMD Enabling Programs</i>	395.927	404.780	401.594	-	401.594	404.993	409.481	427.603	434.868	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	761.646	830.647	959.066	-	959.066	841.738	700.596	592.940	528.744	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	420.516	429.853	439.617	-	439.617	413.198	432.763	454.601	462.065	Continuing	Continuing
• 0604878C: <i>Aegis BMD Test</i>	88.041	78.468	95.012	-	95.012	127.720	91.461	88.217	98.525	Continuing	Continuing
• 0604880C: <i>Land Based SM-3 (LBSM3)</i>	121.413	34.970	43.293	-	43.293	29.045	19.259	21.294	21.646	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test
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<b>Product Development (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
SM-3 Co-Development Flight Test Execution - SM-3 Block IIA Cooperative Development (SCD) - SM-3 Blk IIA Development - MT09	SS/CPAF	Raytheon : Tucson, AZ	0.200	0.000		0.000		0.350	Oct 2016	-		0.350	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09	MIPR	NSWC PHD : San Diego, CA	0.625	0.954		6.982	Nov 2015	0.700	Oct 2016	-		0.700	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development	MIPR	NSWC/DD/VA : Dahlgren, VA	0.247	0.505		3.589	Nov 2015	0.700	Nov 2016	-		0.700	Continuing	Continuing	Continuing



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09 - 2012628435314															
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09 - 20126284353142	C/CPFF	JHU : APL MD	0.200	0.000		7.485	Nov 2015	1.800	Oct 2016	-		1.800	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09 - 20126284353143	MIPR	NAWC : Pt. Mugu CA	0.500	2.530		3.663	Nov 2015	2.000	Nov 2016	-		2.000	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09 PMRF	MIPR	PMRF Barking Sands : Kauai, HI	0.025	0.000		2.559	Nov 2015	2.105	Oct 2016	-		2.105	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Development (SCD) Testing & Evaluation - MT09-Variou	MIPR	Various : HI, VA, CA, MA	0.100	0.603		0.018	Nov 2015	3.210	Nov 2016	-		3.210	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA	MIPR	NSWC : IH MD	0.000	0.000		0.890	Nov 2015	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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Development (SCD) Testing & Evaluation-MT09 - 20126284353146															
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing (SCD) testing & Evaluation-MT09-D	Various	MT09-D : MT09-D	0.000	0.162		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing - SM-3 Blk IIA Test & Evaluation-MT09 L3 Comm	MIPR	L3 Communications : TX	0.000	1.339		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing -SM-3 Blk IIA Development (SCD) Testing & Evaluation-MT09 MDA	MIPR	MDA : VA	0.000	0.600		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing- SM-3 Blk IIA Development (SCD) Testing & Evaluation-MT09 Corona	MIPR	NSWC Corona : CA	0.000	0.775		0.000		0.560	Oct 2016	-		0.560	Continuing	Continuing	Continuing
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing- SM-3 Blk IIA Development (SCD) Testing & Evaluation-MT09 NAWC AD	MIPR	NAWC AD : Pax River, MD	0.000	0.000		0.000		0.223	Nov 2016	-		0.223	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test
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<b>Test and Evaluation (\$ in Millions)</b>				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			
SM-3 Co-Development Flight Test Execution - SM-3 Co-Development Testing- SM-3 Blk IIA Development (SCD) Testing & Evaluation-MT09 SSC PAC	MIPR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.560	Oct 2016	-		0.560	Continuing	Continuing	Continuing
<b>Subtotal</b>			1.897	7.468		25.186		12.208		-		12.208	-	-	-

**Remarks**  
N/A

<b>Management Services (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

**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
<b>Project Cost Totals</b>	1.897	7.468	25.186	12.208	-	12.208	-	-	-

**Remarks**  
N/A

**UNCLASSIFIED**

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test
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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
SFTM-02 (AEGIS 5.1, Intercept Flight Test)																												
SFTM-01 (AEGIS 5.1, Intercept Flight Test)								△																				
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)			▲																									
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)				▲																								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MT09 / SM-3 Block IIA Co-Development Test

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SFTM-02 (AEGIS 5.1, Intercept Flight Test)	2	2017	2	2017
SFTM-01 (AEGIS 5.1, Intercept Flight Test)	4	2016	4	2016
SCD CTV-01 (AEGIS SCD, Interceptor Only Flight Test)	3	2015	3	2015
SCD CTV-02 (AEGIS SCD, Intercept Only Flight Test)	1	2016	1	2016

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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>	50.367	15.245	7.593	2.759	-	2.759	0.000	0.000	0.000	0.000	0	75.964
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2016 and in FY 2017, Program Wide Support reflects proportional changes as a result of a decrease to SM-3 Block IIA Co-Development. 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
<b>Title:</b> Program Wide Support	15.245	7.593	2.759
<b>Articles:</b>	-	-	-
<b>Description:</b> See Description below.			
<b>FY 2015 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2016 Plans:</b> See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	15.245	7.593	2.759

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / <i>AEGIS SM-3 Block IIA Co-Development</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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<b>Support (\$ in Millions)</b>				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 less than CA less than CO less than VA	4.338	2.097		0.000		0.055	Jul 2017	-		0.055	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services	MIPR	Defense Manpower Data Center : AL, CA, CO, VA	0.009	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Service	C/CPFF	Various : Multi: AL, CA, CO, VA	0.000	11.258		0.000		2.704	Jul 2017	-		2.704	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/Various	Various; Multi : AL, CO, VA	44.237	0.000		7.593	Mar 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi: AL, CA, CO, VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Facilities and Maintenance	MIPR	Various: Multi : AK, AL, CA, VA	1.783	1.890		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			50.367	15.245		7.593		2.759		-		2.759	-	-	-

**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
<b>Project Cost Totals</b>	50.367	15.245	7.593	2.759	-	2.759	-	-	-

**Remarks**  
N/A



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD40 / Program-Wide Support
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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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604881C / AEGIS SM-3 Block IIA Co-Development	<b>Project (Number/Name)</b> MD40 / Program-Wide Support

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2015	4	2017

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment 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	-	78.463	64.618	56.481	-	56.481	86.709	76.205	74.776	87.415	Continuing	Continuing
MT08: <i>Midcourse Test</i>	-	78.463	61.777	53.192	-	53.192	83.069	72.723	70.935	82.805	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	0.000	2.841	3.289	-	3.289	3.640	3.482	3.841	4.610	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Decrease from FY 2016 to FY 2017 is due to the Integrated Master Test Plan changes.

**A. Mission Description and Budget Item Justification**

Ballistic Missile Defense Midcourse Defense Segment Test provides the Ground-based Midcourse Defense (GMD) program with an enhanced test program that includes flight and ground testing of GMD functionality to demonstrate Enhanced Homeland Defense capabilities against long-range threats. The GMD elements of the BMDS Integrated Master Test Plan (IMTP) are intended to demonstrate the integrated missile defense capabilities under development and ensure the capabilities delivered to the Warfighter are operationally effective, suitable, and survivable.

MT08 Midcourse Test consists of four accomplishment areas: Resources, Flight Test Execution, Ground Test Execution, and Program Operations. Resources consist of the support and framework required to successfully conduct both flight and ground testing. Flight Test Execution and Ground Test Execution accomplishments consist of the execution of the individual tests. Program Operations provides for government management of the Ground-based Midcourse Defense (GMD) Test program.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	79.877	64.618	73.485	-	73.485
Current President's Budget	78.463	64.618	56.481	-	56.481
Total Adjustments	-1.414	0.000	-17.004	-	-17.004
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.414	0.000			
• Other Adjustment	0.000	0.000	-17.004	-	-17.004

**Change Summary Explanation**

The FY 2017 adjustment reflects a realignment of Department of Defense priorities.

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse 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
MT08: <i>Midcourse Test</i>	-	78.463	61.777	53.192	-	53.192	83.069	72.723	70.935	82.805	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

Midcourse Test provides the Ground-based Midcourse Defense (GMD) program with an enhanced test program that includes flight and ground testing GMD functionality to demonstrate Enhanced Homeland Defense capabilities against long-range threats. The GMD elements of the Integrated Master Test Plan (IMTP) are intended to demonstrate the integrated missile defense capabilities under development and ensure the capabilities delivered to the Warfighter are operationally effective, suitable, and survivable.

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

	FY 2015	FY 2016	FY 2017
<b>Title:</b> Resources	16.187	16.552	14.196
<b>Articles:</b>	-	-	-
<b>Description:</b> Provides support associated with day-to-day operations of the flight and ground test programs to include engineering support for ground test planning, execution, and post-event reconstruction.			
<b>FY 2015 Accomplishments:</b>			
-Provided test infrastructure and coordination of flight test range support from Vandenberg Air Force Base, California for all range activities, engineering, operators and GBI transportation, including preparation for the first GBI salvo flight test			
-Provided Ballistic Missile Defense System (BMDS) flight and ground test execution situational awareness through the use of the Missile Defense Agency Integration and Operations Center (MDIOC) housing flight, ground and operational controlled assets of the GMD system from Colorado Springs, CO			
-Supported pre- and post-flight test mission communications to include fulfillment of requirements and data analysis			
-Provided System Test Lab support to the engineering, accreditation, operations and maintenance of Flight and Ground Test Programs			
-Supported risk reduction testing through the use of the Prime Consolidated Integration Lab designed for engineering and integration activities leading up to scheduled flight tests and supported by appropriate analysts, environments and equipment			
-Initiated salvo range infrastructure upgrades at Vandenberg Air Force Base, California in preparation for the Flight Test Ground-based Midcourse Defense-11 (FTG-11)			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Provided engineering support for planning and execution of the test events, including test architecture, objectives and assessment criteria, target requirements, M&amp;S for pre-test assessment and post-test review, and develop and establish hardware-in-the-loop (HWIL) M&amp;S integration test cases</p> <p><b>FY 2016 Plans:</b></p> <p>-Provide test infrastructure and coordination of flight test range support from Vandenberg Air Force Base, California for all range activities, engineering, operators and GBI transportation, including preparation for the first GBI salvo flight test</p> <p>-Provide BMDS flight and ground test execution situational awareness through the use of the MDIOC housing flight, ground and operational controlled assets of the GMD system from Colorado Springs, CO</p> <p>-Support pre- and post-flight test mission communications to include fulfillment of requirements and data analysis</p> <p>-Provide System Test Lab support to the engineering, accreditation, operations and maintenance of Flight and Ground Test Programs</p> <p>-Support risk reduction testing through the use of the Prime Consolidated Integration Lab designed for engineering and integration activities leading up to scheduled flight tests and supported by appropriate analysts, environments and equipment</p> <p>-Continue salvo range infrastructure upgrades at Vandenberg Air Force Base, California in preparation for the Flight Test Ground-based Midcourse Defense-11 (FTG-11)</p> <p>-Provide engineering support for planning and execution of the test events, including test architecture, objectives and assessment criteria, target requirements, M&amp;S for pre-test assessment and post-test review, and develop and establish hardware-in-the-loop (HWIL) M&amp;S integration test cases</p> <p><b>FY 2017 Plans:</b></p> <p>-Decrease from FY 2016 to FY 2017 is due to the Integrated Master Test Plan changes</p> <p>-Provide test infrastructure and coordination of flight test range support from Vandenberg Air Force Base, CA for all range activities, engineering, operators and GBI transportation, including preparation for the first GBI salvo flight test</p> <p>-Provide BMDS flight and ground test execution situational awareness through the use of the MDA Integration and Operations Center (MDIOC) housing flight, ground and operational controlled assets of the GMD system located in Colorado Springs, CO</p> <p>-Support pre- and post-flight test mission communications to include fulfillment of requirements and data analysis</p> <p>-Provide System Test Lab support to the engineering, accreditation, operations and maintenance of facilities supporting the Flight and Ground Test Programs</p> <p>-Support risk reduction testing through the use of the Prime Consolidated Integration Lab designed for engineering and integration activities leading up to scheduled flight tests and supported by appropriate analysts, environments and equipment</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Complete salvo range infrastructure upgrades at Vandenberg Air Force Base, California in preparation for the Flight Test Ground-based Midcourse Defense-11 (FTG-11)				
<b>Title:</b> Flight Test Execution		53.888	39.450	19.104
		<b>Articles:</b>	-	-
<p><b>Description:</b> Flight tests demonstrate the capabilities and/or phenomenology that cannot be adequately tested or obtained during ground testing. Flight tests also provide opportunities to test actual hardware and to demonstrate Ballistic Missile Defense System (BMDS) Element interoperability under operationally realistic conditions.</p> <p><b>FY 2015 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>-Continued planning for Ground-based Midcourse Defense Control Test Vehicle-02+ (CTV-02+), a 3-stage Capability Enhancement II (CE-II) non intercept engagement using a GBI launched from Vandenberg Air Force Base, California against an intermediate-range ballistic missile (IRBM)air-launched target with associated objects--Collected Critical Engagement Conditions (CEC) / Empirical Measurement Events (EME) data that validates Models and Simulations (M&amp;S)</li> <li>-Initiated planning for Flight Test Ground-based Midcourse Defense-15 (FTG-15), a 3-stage Configuration 2 with Consolidated Booster Avionics Upgrade (C2/CBAU) intercept using a GBI launched from Vandenberg Air Force Base, California against a target with associated objects, launched from Reagan Test Site (RTS)</li> </ul> <p><b>FY 2016 Plans:</b></p> <ul style="list-style-type: none"> <li>-Conduct Flight Test Ground-based Midcourse Defense GM CTV-02+, a 3-stage Capability Enhancement II (CE-II) non-intercept engagement using a GBI launched from Vandenberg Air Force Base, California against an air launched IRBM with associated objects</li> <li>-Continue planning for Flight Test Ground-based Midcourse Defense-15 (FTG-15), a 3-stage C2/CBAU intercept engagement using a GBI launched from Vandenberg Air Force Base, California against an ICBM target with associated objects, launched from Reagan Test Site (RTS)</li> <li>--Collect Critical Engagement Conditions (CEC) / Empirical Measurement Events (EME) data that validates Models and Simulations (M&amp;S)</li> <li>-Initiate planning for Flight Test Ground-based Midcourse Defense-11 (FTG-11), a 3-stage CE-I and 3-stage CE-II Salvo intercept using GBIs launched from Vandenberg Air Force Base, California against a target with associated objects, launched from Reagan Test Site (RTS)</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>-Decrease from FY 2016 to FY 2017 is due to the Integrated Master Test Plan flight test changes.</li> </ul>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Conduct Flight Test Ground-based Midcourse Defense-15 (FTG-15), a 3-stage C2/CBAU intercept engagement using a GBI launched from Vandenberg Air Force Base, California against an ICBM target with associated objects, launched from Reagan Test Site (RTS)</p> <p>--Collect Critical Engagement Conditions (CEC) / Empirical Measurement Events (EME) data that validates Models and Simulations (M&amp;S)</p> <p>-Continue planning for Flight Test Ground-based Midcourse Defense-11 (FTG-11), a 3-stage CE-I and 3-stage CE-II Salvo intercept using GBIs launched from Vandenberg Air Force Base, California against a target with associated objects, launched from Reagan Test Site (RTS)</p>			
<p><b>Title:</b> Ground Test Execution</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Ground tests demonstrate and validate Warfighter tactics, techniques, and procedures. Ground tests are executed both in the Hardware-in-the-loop (HWIL) lab and in the field. HWIL lab tests integrate and assess Ballistic Missile Defense System (BMDS) system- level performance based on new element capabilities. Ground tests in the field use existing fielded element assets and tactical communication networks, to integrate, assess and demonstrate the element capabilities.</p> <p><b>FY 2015 Accomplishments:</b></p> <p>-Completed execution of BMDS Ground Test-04 test campaign to assess BMDS capabilities with integration of additional BMDS sensors</p> <p>-Continued to support planning and build-up activities of BMDS Ground Test-06 test campaign to assess BMDS capabilities with integration of additional BMDS assets including Ft. Drum, NY In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT), and the Space-Based Infrared System (SBIRS) Increment 2 Change, and demonstrate GMD Fire Control (GFC) 6B3 capabilities using a lab based Hardware-in-the-Loop (HWIL) Configuration during Ground Test Integrated -06 (GTI-06)</p> <p>-Supported planning of BMDS Ground Test Distributed-06 (GTD-06) test campaign to assess BMDS capabilities and the mission functionality of the Ground-based Midcourse Defense (GMD) Fire Control (GFC) version 6B3 BMDS capabilities using fielded assets and long haul communications networks</p> <p><b>FY 2016 Plans:</b></p> <p>-Complete execution of BMDS Ground Test-06 test campaign to assess BMDS capabilities with integration of additional BMDS assets (Ft. Drum, NY In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT), and the Space-Based Infrared System (SBIRS) Increment 2 Change), and demonstrate GMD Fire Control (GFC) 6B3 capabilities using a lab based Hardware-in-the-Loop (HWIL) Configuration during Ground Test Integrated -06 (GTI-06)</p> <p>-Complete execution of BMDS Ground Test Distributed-06 (GTD-06) test campaign to assess BMDS capabilities and the mission functionality of the Ground-based Midcourse Defense (GMD) Fire Control (GFC) version 6B3 BMDS capabilities using fielded assets and long haul communications networks</p>	8.388 -	5.775 -	6.386 -



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>-Support early integration of BMDS Ground Test-07 (GT-07) in support of reducing risk associated with Command, Control, Battle Management Communications (C2BMC) (Spiral 8.2-1 and BMDS Overhead Persistent Infrared Architecture 5.1) and Ground System 6B3.2</p> <p>-Support planning of BMDS Ground Test-07 test campaign (GTI-07a) to assess BMDS capabilities and the mission functionality of the GMD Ground Systems version 6B3.2 BMDS capabilities for Future Sensor Utilization and Ground Systems (GS) Technology Refresh</p> <p><b>FY 2017 Plans:</b></p> <p>- Increase from FY 2016 to FY 2017 due to execution of GT-07 Ground Test Campaign</p> <p>-Continue to support planning and integration of BMDS Ground Test-07 test campaign (GTI-07a / GTD-07a / GTX-07b) to assess BMDS capabilities and the mission functionality of the GMD Ground Systems versions 6B3.2 / 7B BMDS capabilities for Future Sensor Utilization and Ground Systems (GS) Technology Refresh</p> <p>-Support execution of GTI-07a and GTD-07a to assess BMDS capabilities and the mission functionality of the GMD GS version 6B3.2 BMDS capabilities for Future Sensor Utilization and GS Technology Refresh</p> <p>-Support planning and integration of GTX-07b to assess BMDS capabilities and the mission functionality of the GMD GS version 7B BMDS capabilities for Robust Homeland Defense performance</p>				
<b>Title:</b> Program Operations		0.000	0.000	13.506
<b>Articles:</b>		-	-	-
<p><b>Description:</b> Program Operations provides for government management of the Ground-based Midcourse Defense (GMD) Test program. Included in this effort is program and business management, program administration, technical and testing oversight, quality / safety / mission assurance, integrated logistics support, and government manpower and infrastructure to test the GMD system and components.</p> <p><b>FY 2015 Accomplishments:</b> N/A</p> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Plans:</b> -Increase from FY 2016 to FY 2017 due to realignment of Government Civilian Salaries and Contract Support Services for testing from the Program Operations accomplishment in PE Ballistic Missile Defense Midcourse Defense Segment (0603882C) MD08 Ground Based Midcourse project to PE 0604887C, Project MT08.</p>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
-Provide technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities to the Program Director with critical program status and decision quality data -Ensure GMD test program compliance with internal and external direction, policies, and regulations to deliver critical capability within a consistent and disciplined process			
<b>Accomplishments/Planned Programs Subtotals</b>	78.463	61.777	53.192

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	863.965	1,269.913	862.080	-	862.080	701.311	585.079	600.710	535.614	Continuing	Continuing
• 0603914C: <i>Ballistic Missile Defense Test</i>	354.414	281.740	293.441	-	293.441	337.537	322.334	346.134	351.933	Continuing	Continuing
• 0603915C: <i>Ballistic Missile Defense Targets</i>	447.424	527.563	563.576	-	563.576	471.059	431.349	454.830	462.429	Continuing	Continuing
• 0604874C: <i>Improved Homeland Defense (HLD) Interceptors</i>	97.739	278.944	274.148	-	274.148	321.441	479.049	508.198	580.239	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The GMD program will continue to follow testing, development, and evolutionary acquisition through incremental development. The Agency acquisition strategy ensures that the GMD components are upgraded to improve both system performance and interceptor reliability in order to retain the proven GMD contribution to the BMDS. This acquisition approach minimizes the risk of parts availability, provides opportunities for incremental capability improvements, and allows decision makers to make informed trades between cost, schedule, and performance while exploring improved operational and technological capabilities.

GMD awarded a competitive Development and Sustainment Contract (DSC) on December 30, 2011. This contract continues development, fielding, test, systems engineering, integration, and configuration management; equipment manufacturing and upgrade; training, operations and sustainment of the GMD system and associated support facilities. The DSC emphasizes the application of performance-based tenets to provide timely high quality support of the core GMD system while reducing life cycle and long-term ownership costs. GMD's acquisition strategy for transition of the legacy content into the DSC provides uninterrupted field operations; development of both Ground Systems and Interceptor (GBI) products, including manufacturing additional interceptors to support both operations and testing; and the requirement to demonstrate war fighting capability through a rigorous ground and flight test program.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>
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<b>Test and Evaluation (\$ in Millions)</b>				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			
Resources - Engineering & Analysis - Industry Support	C/CPAF	Boeing : AL	0.000	2.423		1.851	Nov 2015	0.000		-		0.000	0	4.274	0
Resources - Engineering & Analysis - OGA Support	MIPR	AMRDEC : AL	0.000	2.389		1.709	Oct 2015	0.000		-		0.000	0	4.098	0
Resources - Government Infrastructure Support, Labs, and Communications	MIPR	VAFB : CA/AL/CO	0.000	6.662		6.769	Nov 2015	6.420	Nov 2016	-		6.420	Continuing	Continuing	Continuing
Resources - Prime Infrastructure Support, Labs, and Communications	C/CPAF	Boeing : AL/AK/AZ/CA/CO/OR/TX/VA	0.000	4.713		6.223	Nov 2015	7.776	Nov 2016	-		7.776	Continuing	Continuing	Continuing
Flight Test Execution - Planning and Silo Refurbishment	C/CPAF	Boeing : AL/AK/AZ/CA/CO/OR/TX/VA	0.000	38.264		15.836	Nov 2015	11.649	Nov 2016	-		11.649	Continuing	Continuing	Continuing
Flight Test Execution - Range, Resources, and Engineering	MIPR	VAFB/PMRF : CA/HI	0.000	15.624		23.614	Nov 2015	7.455	Nov 2016	-		7.455	Continuing	Continuing	Continuing
Ground Test Execution - Ground Test-04 Campaign	C/CPAF	Boeing : AL/AK/AZ/CA/CO/TX/VA	0.000	3.355		0.000		0.000		-		0.000	0	3.355	0
Ground Test Execution - Ground Test-06 Campaign	C/CPAF	Boeing : AL/AK/AZ/CA/CO/TX/VA	0.000	5.033		4.981	Nov 2015	0.258	Nov 2016	-		0.258	Continuing	Continuing	Continuing
Ground Test Execution - Ground Test-07 Campaign	C/CPAF	Boeing : AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		0.794	Nov 2015	6.128	Nov 2016	-		6.128	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	78.463		61.777		39.686		-		39.686	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>
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<b>Support (\$ in Millions)</b>				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 Operations - Contract Support Services	C/CPFF	Various AL/AK / CA/CO/VA	0.000	0.000		0.000		7.563	Oct 2016	-		7.563	Continuing	Continuing	Continuing
Program Operations - Government Civilian Salaries	MIPR	MDA AL / VA	0.000	0.000		0.000		5.943	Oct 2016	-		5.943	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		13.506		-		13.506	-	-	-

**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
<b>Project Cost Totals</b>	0.000	78.463	61.777	53.192	-	53.192	-	-	-

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2017 Missile Defense Agency</b>		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</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
GTI-06 Part 3 (BMDS Ground Test)				✦																								
GM CTV-02 Plus (GM, Intercept Flight Test)					△																							
GTI-06 Part 2 (BMDS Ground Test)						✦																						
GTD-06 Part 2 (BMDS Ground Test)							✦																					
FTG-15 (GM, Intercept Flight Test)								△																				
GTI-07a (BMDS Ground Test)									✦																			
GTD-07a (BMDS Ground Test)										✦																		
GTX-07b (BMDS Ground Test)											✦																	
FTG-11 (IOT&E) (GM, Intercept Flight Test)												△																
GM CTV-03 (GM, Non-Intercept Flight Test)													△															
GTI-07b (BMDS Ground Test)														✦														
GTD-07b Part 2 (BMDS Ground Test)															✦													
FTG-17 (DT/OT) (GM, Intercept Flight Test)																△												
GTX-08 Part 2 (BMDS Ground Test)																	✦											
FTG-18 (GM, Intercept Flight Test)																		△										
FTX-25 (SN, Target Only Flight Test)																			△									
GTI-08 (BMDS Ground Test)																				✦								
GTD-08 Part 1 (BMDS Ground Test)																					✦							
FTX-26 (SN, Target Only Flight Test)																						✦						
FTO-04 (OTA, Intercept Flight Test)																											△	

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

Event	Start		End	
	Quarter	Year	Quarter	Year
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
GTI-06 Part 2 (BMDS Ground Test)	3	2016	3	2016
GTD-06 Part 2 (BMDS Ground Test)	4	2016	4	2016
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
GTX-07b (BMDS Ground Test)	1	2018	1	2018
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
GM CTV-03 (GM, Non-Intercept Flight Test)	3	2018	3	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
FTG-17 (DT/OT) (GM, Intercept Flight Test)	3	2019	3	2019
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	2020
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020
FTX-25 (SN, Target Only Flight Test)	3	2020	3	2020
GTI-08 (BMDS Ground Test)	3	2020	4	2020
GTD-08 Part 1 (BMDS Ground Test)	4	2020	4	2020
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FTO-04 (OTA, Intercept Flight Test)	3	2021	3	2021

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GTI-06 Part 3 (BMDS Ground Test)	4	2015	4	2015
GM CTV-02 Plus (GM, Intercept Flight Test)	2	2016	2	2016
GTI-06 Part 2 (BMDS Ground Test)	3	2016	3	2016
GTD-06 Part 2 (BMDS Ground Test)	4	2016	4	2016
FTG-15 (GM, Intercept Flight Test)	1	2017	1	2017
GTI-07a (BMDS Ground Test)	3	2017	3	2017
GTD-07a (BMDS Ground Test)	4	2017	4	2017
GTX-07b (BMDS Ground Test)	1	2018	1	2018
FTG-11 (IOT&E) (GM, Intercept Flight Test)	1	2018	1	2018
GM CTV-03 (GM, Non-Intercept Flight Test)	3	2018	3	2018
GTI-07b (BMDS Ground Test)	3	2018	4	2018
GTD-07b Part 2 (BMDS Ground Test)	2	2019	2	2019
FTG-17 (DT/OT) (GM, Intercept Flight Test)	3	2019	3	2019
GTX-08 Part 2 (BMDS Ground Test)	1	2020	1	2020
FTG-18 (GM, Intercept Flight Test)	2	2020	2	2020
FTX-25 (SN, Target Only Flight Test)	3	2020	3	2020
GTI-08 (BMDS Ground Test)	3	2020	4	2020
GTD-08 Part 1 (BMDS Ground Test)	4	2020	4	2020
FTX-26 (SN, Target Only Flight Test)	3	2021	3	2021
FT0-04 (OTA, Intercept Flight Test)	3	2021	3	2021



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MT08 / <i>Midcourse Test</i>

**Note**  
Notes: CTV - Controlled Test Vehicle; GTI - Ground Test Integrated; GTD - Ground Test Distributed; GTX - Ground Test Exercise; GDEx - Global Defender Exercise; FTG - Flight Test Ground-Based Interceptor; FTO - Flight Test Operational; FTX - Flight Test Exercise

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> 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>	-	0.000	2.841	3.289	-	3.289	3.640	3.482	3.841	4.610	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Beginning FY 2016, Program Wide Support (PWS) was proportionately allocated to Ballistic Missile Defense Midcourse Defense Segment Test. In FY 2017, the PWS increase is a result of proportional reallocations based on a pro-rata basis of the adjusted RDT&E profile.

**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
<b>Title:</b> Program Wide Support	0.000	2.841	3.289
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project			
<b>FY 2016 Plans:</b> - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Ballistic Missile Defense Midcourse Defense Segment Test - See paragraph A: Mission Description and Budget Item Justification			
<b>FY 2017 Plans:</b> - See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	2.841	3.289

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
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<b>Support (\$ in Millions)</b>				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 and Support Other Agency Services (MIPRs)	MIPR	Various : Multi: AL, VA	0.000	0.000		0.000		0.416	Aug 2017	-		0.416	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.000	0.000		2.841		2.825	Aug 2017	-		2.825	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, VA	0.000	0.000		0.000		0.048	Jun 2017	-		0.048	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		2.841		3.289		-		3.289	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	2.841	3.289	-	3.289	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> 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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604887C / <i>Ballistic Missile Defense Midcourse Defense Segment Test</i>	<b>Project (Number/Name)</b> 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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</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	-	0.000	0.000	71.513	-	71.513	34.884	84.503	98.065	99.699	0	388.664
MD85: <i>Multi Object Kill Vehicle</i>	-	0.000	0.000	68.201	-	68.201	33.194	80.208	93.029	94.442	0	369.074
MD40: <i>Program-Wide Support</i>	-	0.000	0.000	3.312	-	3.312	1.690	4.295	5.036	5.257	0	19.590

**Program MDAP/MAIS Code:** 362

**Note**

This is a new program element in FY 2017. The funding was transferred from Common Kill Vehicle Technology program element 0603294C to Multi-Object Kill Vehicle (MOKV) program element 0604894C.

**A. Mission Description and Budget Item Justification**

The MOKV program will enhance interceptor performance by improving discrimination and adding the capability to destroy several objects within a threat complex using multiple kill vehicles carried on a single interceptor. MDA is developing the concepts for a MOKV based on a modular, open architecture designed to common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The Agency will focus on competitive development and risk reduction of MOKV concepts with industry in FY 2017.

This capability relies on a BMDS architecture that balances performance across the sensor, Command, Control, Battle Management and Communications and kill vehicle elements. The Agency anticipates deploying this capability across the interceptor fleet in the next decade to address the evolving threat.

As part of MOKV concept development, industry will identify technology risk reduction efforts that support their concept. In FY 2017, MDA will conduct concept risk reduction for selected component technologies that lower development risk. Potential candidate MOKV technology risk reduction efforts include engagement management, kill vehicle-to-kill vehicle communications, advanced sensor, propulsion systems, and inertial measurement units.

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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	71.513	-	71.513
Total Adjustments	0.000	0.000	71.513	-	71.513
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustment	0.000	0.000	71.513	-	71.513

**Change Summary Explanation**

The FY 2017 funding adjustment is a result of creating a new Multi-Object Kill Vehicle program element, 0604894C, and transferring the funding from the Common Kill Vehicle Technology program element, 0603294C.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>				<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD85: <i>Multi Object Kill Vehicle</i>	-	0.000	0.000	68.201	-	68.201	33.194	80.208	93.029	94.442	0	369.074
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This is a new program element in FY 2017. The funding was transferred from Common Kill Vehicle Technology program element 0603294C to Multi-Object Kill Vehicle (MOKV) program element 0604894C.

**A. Mission Description and Budget Item Justification**

The MOKV program will enhance interceptor performance by improving discrimination and adding the capability to destroy several objects within a threat complex using multiple kill vehicles carried on a single interceptor. MDA is developing the concepts for a MOKV based on a modular, open architecture designed to common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The Agency will focus on competitive development and risk reduction of MOKV concepts with industry in FY 2017.

The Government will develop MOKV system engineering guidelines from industry concepts, government analysis, modeling, and simulation. The MOKV concepts and identified technology component risk reduction will formulate the trade space across cost, risk, and kill vehicle performance to establish requirements that are feasible and affordable for the engineering, manufacturing and development of a future MOKV. MDA anticipates deploying this capability across the interceptor fleet in the next decade to address the evolving threat.

This capability relies on a BMDS architecture that balances performance across the sensor, Command, Control, Battle Management and Communications, and kill vehicle elements. Analysis shows that having multiple kill vehicles on each interceptor can dramatically improve the performance of the system, significantly reduce the burden on interceptor inventory, and reduce cost to defend the Homeland.

As part of MOKV concept development, Industry will identify technology risk reduction efforts that support their concept. In FY 2017 the Agency will conduct concept risk reduction for selected component technologies that lower development risk and initiate preparations for a follow-on Proof of Concept phase from FY2018-FY2021. Potential candidate MOKV technology risk reduction efforts include engagement management, kill vehicle-to-kill vehicle communications, advanced sensor, propulsion systems, and inertial measurement units.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Multi-Object Kill Vehicle	0.000	0.000	68.201
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
N/A			
<b>FY 2016 Plans:</b> N/A			
<b>FY 2017 Plans:</b> - This is a new program element in FY 2017. The funding was transferred from Common Kill Vehicle Technology program element 0603294C to Multi-Object Kill Vehicle (MOKV) program element 0604894C - Conduct concept risk reduction for selected component technologies that lower development risk. Potential candidate MOKV technology risk reduction efforts include engagement management, kill vehicle-to-kill vehicle communications, advanced sensor, propulsion systems, and inertial measurement units -Refine and update government MOKV concept for independent performance predictions via government simulations to establish baseline for contractor concept assessments - Continue development of MOKV engagement management algorithms to analyze and characterize government concepts for managing the many-on-many engagement challenges due to complex threats. Complete independent engagement management test framework to test and analyze industry concept performance, identify algorithm risk issues, confirm risk reduction progress, and enable continued Agency MOKV requirements development - Continue to build, assemble and test initial inertial measurement unit prototype to support final design, prototype fabrication, and model validation - Conduct planning for proof of concept demonstration test events focused on critical functions to validate reduction of technical risk - Develop an acquisition strategy for competitive technology development, engineering, test, manufacture, and production for the MOKV - Conduct MOKV and Integrated Boost Vehicle all up round trade studies to determine 2 stage and 3 stage Integrated Boost Vehicle options, to include a liquid third stage with communications and sensor platform capabilities - Initiate Technical Design Agent support to define and develop MOKV interface requirements with BMDS architecture (i.e. ground systems, long range discrimination radar, global communication network) at the all up round and all up system levels			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	68.201

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</i>
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**D. Acquisition Strategy**

The acquisition strategy consists of three focus areas. First, through competition with missile integration contractors, develop kill vehicle architectures and interfaces with competitive design of multi-object kill concepts incorporating engagement management concept of operations, lightweight kill vehicles and enhanced discrimination capability. Second, conduct risk reduction activities to identify and mature the technology necessary to increase the reliability and performance of our kill vehicles using the Advanced Technology Innovation Broad Agency Announcement and competitive procurements. Make investments that mitigate the component development gaps for future Multi-Object Kill Vehicles, and enhance the competitive environment. Make the necessary investments to maturing component technology; enhanced inertial navigation and kill vehicle-to-kill vehicle communications. Third, leverage the technical expertise of Federally Funded Research and Development Centers, University Applied Research Centers, and Universities and government laboratories to independently develop reference concept using proven modeling/analysis techniques.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</i>
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<b>Product Development (\$ in Millions)</b>				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			
Multi-Object Kill Vehicle - Inertial Measurement Unit Development	C/CPFF	Kearfott : NJ	0.000	0.000		0.000		3.700	Nov 2016	-		3.700	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV Technology Risk Reduction	C/CPFF	TBD : TBD	0.000	0.000		0.000		44.463	Nov 2016	-		44.463	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		48.163		-		48.163	-	-	-

**Remarks**  
N/A

<b>Support (\$ in Millions)</b>				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			
Multi-Object Kill Vehicle - Contract Support Services	C/CPFF	Various : AL	0.000	0.000		0.000		0.860	Nov 2016	-		0.860	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - GMD Contract Support Services	C/CPFF	Various : AL/VA	0.000	0.000		0.000		0.909	Oct 2016	-		0.909	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - GMD Government Civilian Salaries	Allot	MDA : AL/VA	0.000	0.000		0.000		1.364	Oct 2016	-		1.364	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - GMD MOKV Technical Direction Agent	MIPR	Various : AL/CA/GA/MA/MD/NM/UT/VA	0.000	0.000		0.000		2.691	Oct 2016	-		2.691	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - Government Civilian Salaries and Travel	Allot	MDA : AL	0.000	0.000		0.000		4.866	Oct 2016	-		4.866	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - Inertial Measurement Unit Radiation Support	MIPR	TBD : TBD	0.000	0.000		0.000		0.300	Nov 2016	-		0.300	Continuing	Continuing	Continuing

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / Multi Object Kill Vehicle	<b>Project (Number/Name)</b> MD85 / Multi Object Kill Vehicle
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<b>Support (\$ in Millions)</b>				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			
Multi-Object Kill Vehicle - Inertial Measurement Unit Support	MIPR	Army Aviation and Missile Research Development and Engineering Center : AL	0.000	0.000		0.000		0.150	Nov 2016	-		0.150	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV Engagement Management Algorithms	MIPR	MIT/LL : MA	0.000	0.000		0.000		0.400	Oct 2016	-		0.400	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV Engineering Support	C/CPFF	Johns Hopkins University /Applied Research Lab : MD	0.000	0.000		0.000		3.476	Nov 2016	-		3.476	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV Engineering/ Engagement Management Support	MIPR	Army Aviation and Missile Research Development and Engineering Center : AL	0.000	0.000		0.000		2.920	Nov 2016	-		2.920	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV OGA Support	MIPR	NSWC Carderock : MD	0.000	0.000		0.000		0.194	Nov 2016	-		0.194	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - MOKV Seeker Engineering Support	C/CPFF	Utah State University/Space Dynamics Lab : UT	0.000	0.000		0.000		0.390	Nov 2016	-		0.390	Continuing	Continuing	Continuing
Multi-Object Kill Vehicle - Various	TBD	Various : Various	0.000	0.000		0.000		1.518		-		1.518	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		20.038		-		20.038	-	-	-

**Remarks**  
N/A

<b>Test and Evaluation (\$ in Millions)</b>				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			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</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			

**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
<b>Project Cost Totals</b>	0.000	0.000	0.000	68.201	-	68.201	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</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
Concept Risk Reduction					☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Concept Risk Reduction Performance Models												△																
Concept Risk Reduction Performance Test													◇															
MOKV Proof of Concept Demo													☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
MOKV Proof of Concept Demo Contract Award													△															
MOKV Proof of Concept Demo Test Event																								◇				
MOKV Proof of Concept Demo Capstone Test																												◇

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD85 / <i>Multi Object Kill Vehicle</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Risk Reduction	1	2016	4	2019
Concept Risk Reduction Performance Models	3	2017	3	2017
Concept Risk Reduction Performance Test	1	2018	1	2018
MOKV Proof of Concept Demo	1	2018	4	2021
MOKV Proof of Concept Demo Contract Award	1	2018	1	2018
MOKV Proof of Concept Demo Test Event	4	2020	4	2020
MOKV Proof of Concept Demo Capstone Test	4	2021	4	2021



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>				<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD40: <i>Program-Wide Support</i>	-	0.000	0.000	3.312	-	3.312	1.690	4.295	5.036	5.257	0	19.590
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**  
Beginning FY 2017, Program Wide Support was proportionately allocated to Multi Object Kill Vehicle.

**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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Program Wide Support	0.000	0.000	3.312
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> N/A			
<b>FY 2016 Plans:</b> N/A			
<b>FY 2017 Plans:</b> - This is a new Program Element beginning FY 2017. 0604894C Multi-Object Kill Vehicle was created in FY 2017 transitioning from 0603294C Common Kill Vehicle. Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Multi-Object Kill Vehicle - See paragraph A: Mission Description and Budget Item Justification			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	3.312

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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<b>Support (\$ in Millions)</b>				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	0.000	0.000		0.000		0.066	Jul 2017	-		0.066	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (FFP)	C/FFP	Various : Multi: AK, AL, CA, CO, HI, VA	0.000	0.000		0.000		2.327	Aug 2017	-		2.327	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services (Reqn)	Reqn	Various : Multi: AK, AL, CA, CO, VA	0.000	0.000		0.000		0.919	Jul 2017	-		0.919	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.000	0.000		0.000		3.312		-		3.312	-	-	-

**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
<b>Project Cost Totals</b>	0.000	0.000	0.000	3.312	-	3.312	-	-	-

**Remarks**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> 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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604894C / <i>Multi Object Kill Vehicle</i>	<b>Project (Number/Name)</b> MD40 / <i>Program-Wide Support</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2017	4	2021

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

<b>Appropriation/Budget Activity</b> 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / Cyber Security Initiative
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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	0.912	0.944	0.963	0.969	-	0.969	0.986	0.997	1.031	1.051	Continuing	Continuing
MDCS: Cyber Security Initiative	0.912	0.944	0.963	0.969	-	0.969	0.986	0.997	1.031	1.051	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The MDA Counterintelligence (CI) Division conducts CI in Cyberspace activities pursuant to DoD Directive O-5240.02 (Counterintelligence) and DoD Instruction S-5240.23 (CI Activities in Cyberspace) to identify, disrupt, neutralize, penetrate, and exploit foreign intelligence services and international terrorist organizations, hereafter referred to as foreign entities, to act in observable or exploitable ways. To this end, the MDA CI Division conducts activities to detect and neutralize foreign entity-directed malicious and insider threat activities targeting MDA administrative and Ballistic Missile Defense fire control networks and mobile devices.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.961	0.963	0.976	-	0.976
Current President's Budget	0.944	0.963	0.969	-	0.969
Total Adjustments	-0.017	0.000	-0.007	-	-0.007
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.017	0.000			
• Other Adjustment	0.000	0.000	-0.007	-	-0.007

**Change Summary Explanation**

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>				<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MDCS: <i>Cyber Security Initiative</i>	0.912	0.944	0.963	0.969	-	0.969	0.986	0.997	1.031	1.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The DoD Counterintelligence in Cyberspace (CIC) mission initiative is externally funded and falls under the functional and fiscal management of the Director, Defense Intelligence Agency. The MDA Counterintelligence (CI) Division conducts defensive CIC activities pursuant to DoD Directive O-5240.02 (Counterintelligence), DoD Instruction S-5240.23 (CI Activities in Cyberspace) and DoD Instruction 5240.26 (Countering Espionage, International Terrorism, and the CI Insider Threat), and an MDA Annex within an annual DIA-approved Implementation Plan. In accordance with the aforementioned CI policy references, the MDA CI Division responsibilities include:

- Collaborate with the MDA Computer Emergency Response Team (CERT) to detect and neutralize potential foreign entity directed malicious and insider threat activities targeting MDA administrative and fire control networks, and mobility devices.
- Conduct CI Preliminary Inquiries into potential foreign entity directed malicious or insider threat activities and refers suspected incidents or events to the FBI or military department CI organizations for further investigation pursuant to DoD Instruction 5240.21 (CI Inquiries).
- Conduct CI forensics analysis of MDA computer network activity logs to identify potential indicators of foreign entity directed malicious, insider threat or computer network attack/exploitation activities targeting MDA information.
- Coordinate with national and DoD level intelligence, CI and law enforcement agencies to identify foreign entity cyber actor intrusion sets and the tactics, techniques and procedures used to target MDA and its Cleared Defense Contractor computer networks.
- Provide initial and periodic training pursuant to DoD Directive 5240.06 (CI Awareness and Reporting), and DoD Instruction 5240.26 to ensure the MDA workforce is kept apprised of foreign entity threats to DoD personnel, facilities, information, activities, and information technology systems.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> DoD CI in Cyberspace Initiative	0.944	0.963	0.969
<b>Articles:</b>	-	-	-
<b>Description:</b> This activity detects, identifies and neutralizes activities directed by foreign entities that target MDA administrative and fire control networks and mobility devices to disrupt or deny services, or collect controlled unclassified information.			
<b>FY 2015 Accomplishments:</b>			
- Collaborated with MDA Computer Emergency Response Team (CERT) to keep the CERT fully-informed of current foreign entity intrusion sets and associated tactics, techniques and procedures used to conduct computer network attacks/exploitation activities against MDA networks and mobility devices.			



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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<ul style="list-style-type: none"> <li>- Conducted cyber analysis of MDA computer network activity logs to produce actionable investigative leads indicative of potential foreign entity directed malicious and insider threat activities.</li> <li>-- Conducted CI forensic examinations of MDA computer hardware and mobility devices involved in security or CI incidents to determine potential foreign entity nexus for follow-on investigation by FBI or military department CI organizations.</li> <li>- Integrated CI in cyberspace support to MDA ground and flight test events to detect and neutralize potential foreign entity directed activities targeting MDA personnel, facilities, information and activities.</li> <li>- Supported initiation of the MDA Insider Threat program.</li> </ul> <p><b><i>FY 2016 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue collaboration with MDA CERT by fully alerting CIO analysts to current foreign entity intrusion sets and associated tactics, techniques and procedures used to conduct computer network attacks/exploitation activities.</li> <li>- Conduct Cyber Analysis of MDA system and network events to produce actionable investigative leads indicative of potential foreign entity directed malicious and insider threat activities.</li> <li>- Conduct CI forensic examinations of MDA computer systems, networks and personal electronic devices involved in administrative, security or CI inquiries.</li> <li>- Integrate the Trusted Cyber Sensor into MDA administrative and general service networks to allow more robust detection of foreign entity directed activities targeting MDA personnel, facilities, information and programs.</li> <li>- Coordinate with MDA cleared defense contractors that have been compromised by foreign intelligence entities to capture and triage exfiltrated MDA related data allowing BMDS engineering teams to perform proper damage assessments.</li> <li>- Research and integrate a cellular/wireless device detection system within MDA SCIF/SAP areas.</li> <li>- Support deployment of the MDA Insider Threat program.</li> </ul> <p><b><i>FY 2017 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Continue collaboration with MDA CERT by fully alerting CIO analysts to current foreign entity intrusion sets and associated tactics, techniques and procedures used to conduct computer network attacks/exploitation activities.</li> <li>- Conduct Cyber Analysis of MDA system and network events to produce actionable investigative leads indicative of potential foreign entity directed malicious and insider threat activities.</li> <li>- Conduct CI forensic examinations of MDA computer systems, networks and personal electronic devices involved in administrative, security or CI inquiries.</li> <li>- Integrate the Trusted Cyber Sensor into MDA administrative and general service networks to allow more robust detection of foreign entity directed activities targeting MDA personnel, facilities, information and programs.</li> <li>- Coordinate with MDA cleared defense contractors that have been compromised by foreign intelligence entities to capture and triage exfiltrated MDA related data allowing BMDS engineering teams to perform proper damage assessments.</li> <li>- Research and integrate a cellular/wireless device detection system within MDA SCIF/SAP areas.</li> </ul>			
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**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Missile Defense Agency **Date:** February 2016

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
- Provide support for the MDA Insider Threat program.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.944	0.963	0.969

**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**

This project leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the Military Services, FFRDCs, UARCs, and industry.

**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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</i>
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<b>Support (\$ in Millions)</b>				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			
DoD CI in Cyberspace Initiative - CI in Cyberspace	Allot	MDA : VA	0.000	0.166		0.000		0.164	Oct 2016	-		0.164	Continuing	Continuing	Continuing
DoD CI in Cyberspace Initiative - Counterintelligence	C/CPFF	ManTech : VA, AL	0.912	0.559		0.459	Nov 2015	0.307	Nov 2016	-		0.307	Continuing	Continuing	Continuing
DoD CI in Cyberspace Initiative - Technical Surveillance & Countermeasures	MIPR	USA-TAO : Ft. Detrick, MD	0.000	0.219		0.504	Nov 2015	0.498	Nov 2016	-		0.498	Continuing	Continuing	Continuing
<b>Subtotal</b>			0.912	0.944		0.963		0.969		-		0.969	-	-	-

**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
<b>Project Cost Totals</b>	0.912	0.944	0.963	0.969	-	0.969	-	-	-

**Remarks**

N/A

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</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
MDCS Cyber Security Initiative	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦

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

<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0305103C / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> MDCS / <i>Cyber Security Initiative</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MDCS Cyber Security Initiative	1	2015	4	2021

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605502C I <i>Small Business Innovation Research - MDA</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	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507
MD45: <i>Small Business Innovation Research</i>	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507

**Program MDAP/MAIS Code:** 362

**Note**

Funds are transferred into this PE in the execution year.

**A. Mission Description and Budget Item Justification**

MD45 This project explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Ballistic Missile Defense Systems (BMDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new BMDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.

The MDA's SBIR/STTR investments are divided into 16 Research Areas for the following key components:

- Aegis Ballistic Missile Defense (BMD): Develops Naval BMD Capability
- Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR): Defines, develops and deploys an integrated Sensor and Command and Control (C2) capability for the Ballistic Missile Defense System
- Program and Integration: Supervises the non-Aegis portfolio including Targets, Terminal High Altitude Area Defense (THAAD), Ground-based Midcourse Defense, and the Israeli programs
- Test: Characterizes ballistic missile defense capability and supports fielding of an integrated and effective capability to the Warfighter
- Advanced Technology: Develops technology to counter future threats

SBIR and STTR topic areas for FY 2015 included:

- Advanced Cognition Processing and Algorithms for Improved Identification
- Kinematic Reach/Containment
- System Communications
- Lethality Enhancement
- Gaming Trainer
- Command and Control Human-to-Machine Interface
- Improved Track Accuracy for Missile Engagements

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6:</i> <i>RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605502C / <i>Small Business Innovation Research - MDA</i>
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- Innovative Methodologies for Modeling Fracture Under High Strain-rate Loading
- Thermally Efficient Emitter Technology for Advanced Scene/Simulation Capability in Hardware in the Loop Testing
- Innovative Antenna Arrays Enabling Continuous Interceptor Communications
- Multi-Object Payload Deployment
- Interceptor Thermal Protection Systems
- Low Light Short Wave Infrared Focal Plane Arrays
- Solid State High Power Amplifier for Communications
- Non-Destructive Testing Methods for Detecting Red Plague Within an Insulated Silver Plated Copper Conductor
- Passive Inter-Modulation RF Emissions Utilized for Identifying Galvanic Corrosion in Metal Structures
- Contextual Reasoning for Object Identification
- System of Systems Control Interactions
- Aerospace Vehicle Signature Modeling Technologies
- Spectral Crosstalk Reduction for Dual-band Long Wave Infrared Detectors
- Gold Contaminated Solder Joint Characterization for Quantifying Risks Associated with Gold Embrittlement
- Open Framework Planner with Embedded Training
- Irrefutable Tamper Evidence
- Self-Building/Establishing Networks
- Inline Threat Generation for Modeling and Simulation
- Innovative Ways to Shorten System Level Simulation Integration Time
- High Power Fiber Laser Tap Couplers for Phase and Polarization Control
- General Wave-Optics Based Scaling Laws for Multiple/Obscured Apertures
- Smart Readout Integrated Circuit for Dual Band Infrared Focal Plane Arrays
- Advanced Reserve Battery Technologies
- MEMS IMU Solutions for Missile Defense Applications
- Lithium Oxyhalide Battery Separator Material



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605502C / <i>Small Business Innovation Research - MDA</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	89.507	0.000	0.000	-	0.000
Total Adjustments	89.507	0.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	89.507	0.000			
• Other Adjustment	0.000	0.000	0.000	-	0.000

**Change Summary Explanation**

FY 2015 funds were transferred to Small Business Innovation Research/Small Business Technology Transfer from other Program Elements in accordance with the SBIR/STTR Reauthorization Act of 2011

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 6					<b>R-1 Program Element (Number/Name)</b> PE 0605502C / <i>Small Business Innovation Research - MDA</i>				<b>Project (Number/Name)</b> MD45 / <i>Small Business Innovation Research</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD45: <i>Small Business Innovation Research</i>	-	89.507	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	89.507
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

This project explores innovative concepts pursuant to Public Law 106-554 (Small Business Reauthorization Act of 2000) and Public Law 107-50 (Small Business Technology Transfer Program Reauthorization Act of 2001), which mandates a two-phase competition for small businesses with innovative technology that can be commercialized. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will develop new dual-use technology for future Missile Defense Agency (MDA) Ballistic Missile Defense Systems (BMDS) needs. Dual-use means that the technology will be judged on the potential for future private sector investment both as a vehicle for reducing development time and cost, unit costs of new BMDS technology, and as a route to national economic growth through new commercial products. MDA will conduct the competition, award, and manage the contracts.

The MDA's SBIR/STTR investments are divided into 16 Research Areas for the following key components:

- Aegis Ballistic Missile Defense (BMD): Develops Naval BMD Capability
- Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR): Defines, develops and deploys an integrated Sensor and Command and Control (C2) capability for the Ballistic Missile Defense System
- Program and Integration: Supervises the non-Aegis portfolio including Targets, Terminal High Altitude Area Defense (THAAD), Ground-based Midcourse Defense, and the Israeli programs
- Test: Characterizes ballistic missile defense capability and supports fielding of an integrated and effective capability to the Warfighter
- Advanced Technology: Develops technology to counter future threats

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Small Business Innovative Research	89.507	0.000	0.000
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b>			
FY 2015 Accomplishments:			
Awarded 92 Phase I contracts (\$122K average) in the following research areas:			
-Advanced Technology			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605502C / <i>Small Business Innovation Research - MDA</i>	<b>Project (Number/Name)</b> MD45 / <i>Small Business Innovation Research</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> <li>-Aegis BMD</li> <li>-Anti-Tamper</li> <li>-Battle Management and Communications</li> <li>-Directed Energy</li> <li>-Future Capability</li> <li>-Ground-Based Midcourse Defense</li> <li>-Modeling and Simulation</li> <li>-Quality, Safety &amp; Mission Assurance</li> <li>-Sensors</li> </ul> <p>Awarded 68 Phase II contracts (\$884k average) in the following research areas:</p> <ul style="list-style-type: none"> <li>-Advanced Technology</li> <li>-Aegis BMD</li> <li>-Anti-Tamper</li> <li>-Battle Management and Communications</li> <li>-Directed Energy</li> <li>-Future Capability</li> <li>-Ground-Based Midcourse Defense</li> <li>-Modeling Simulation</li> <li>-Quality, Safety &amp; Mission Assurance</li> <li>-Sensors</li> <li>-Space Systems</li> <li>-Targets &amp; Countermeasures</li> <li>-Test Instrumentation</li> <li>-THAAD</li> </ul> <p><b>FY 2016 Plans:</b> N/A</p> <p><b>FY 2017 Plans:</b> N/A</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	89.507	0.000	0.000

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 0400 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605502C / <i>Small Business Innovation Research - MDA</i>	<b>Project (Number/Name)</b> MD45 / <i>Small Business Innovation Research</i>

**C. Other Program Funding Summary (\$ in Millions)**

**Remarks**

**D. Acquisition Strategy**  
N/A

**E. Performance Metrics**  
N/A

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

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide / BA 6:</i> <i>RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901598C / <i>Management HQ - MDA</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	95.210	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing
MD38: <i>Management Headquarters</i>	95.210	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

Beginning FY 2017, the Management Headquarters Activity (MHA) Program Element (PE) 0901598C decreases due to Department of Defense (DoD) reform efforts to maintain major headquarter activities' civilian staffing at reduced levels. DoD efforts to establish a common MHA framework resulted in a net funding decrease due to the transfer of civilian manpower performing functions MDA considered MHA in prior years. Funding and civilian manpower performing these non-MHA functions were appropriately transferred to Program Wide Support. Implementation of prior year efficiencies also continues in FY 2017.

**A. Mission Description and Budget Item Justification**

As prescribed by DoD Directive 5100.73 Major Headquarters Activities, MDA's Management Headquarter supports the operation of MDA's management headquarters activities. This program element funds government civilian salaries and benefit, travel, contract support services, facility and logistics support functions, transportation subsidies, security and emergency management, and operations of non-fielded activities.

Management Headquarter Activities provide executive leadership planning, develop centralized agency policy, prepare and defend annual budget submissions, respond to external inquiries, and implement SECDEF and Presidential priorities. As a DoD research, development and acquisition agency, the Headquarter Activities provide cost efficient oversight; direction; and control of initiatives and processes that assure best value, high quality, on-time and successful performance of MDA acquisition programs. This is accomplished by ensuring acquisition and procurement program management emphasizes systems engineering; incorporates life cycle management objectives; implements risk management; and assesses cost, schedule or performance trade-offs.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6:</i> <i>RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901598C / <i>Management HQ - MDA</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	35.598	35.871	35.187	-	35.187
Current President's Budget	35.598	35.871	31.160	-	31.160
Total Adjustments	0.000	0.000	-4.027	-	-4.027
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustment	0.000	0.000	-4.027	-	-4.027

**Change Summary Explanation**

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 6					<b>R-1 Program Element (Number/Name)</b> PE 0901598C / Management HQ - MDA				<b>Project (Number/Name)</b> MD38 / Management Headquarters			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MD38: Management Headquarters	95.210	35.598	35.871	31.160	-	31.160	29.814	27.889	27.131	27.737	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

**A. Mission Description and Budget Item Justification**

The MDA Headquarters provides oversight, direction and control over MDA's acquisition programs and fielded systems. The MDA Headquarters staff functions (government salaries, government travel, and contract support services) support the mission and operations of the world-wide MDA mission.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> HQ Civilian Salaries	23.190	22.914	18.626
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> Provided mission support, oversight, and management of: - Acquisition, implementation of international initiatives to increase missile defense coverage to deployed forces and allies, efficiency-oriented administrative services, business operations, financial resources, human capital, real property, environmental compliance, general counsel, internal review, public affairs, and media release			
<b>FY 2016 Plans:</b> Provide mission support, oversight, and management of: - Acquisition, implementation of international initiatives to increase missile defense coverage to deployed forces and allies, efficiency-oriented administrative services, business operations, financial resources, human capital, real property, environmental compliance, general counsel, internal review, public affairs, and media release			
<b>FY 2017 Plans:</b> Beginning in FY 2017, civilian salaries reflect a decrease due to the transfer of non-headquarter functions from MHA to Program Wide Support. This transfer was the direct result of DoD efforts to establish a common MHA framework as a result of Department of Defense (DoD) reform efforts to maintain major headquarter activities' civilian staffing at reduced levels.			
Provide mission support, oversight and management of:			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0901598C / Management HQ - MDA	<b>Project (Number/Name)</b> MD38 / Management Headquarters
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
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- Acquisition, implementation of International initiatives to increase Missile Defense coverage to deployed forces and allies, efficiency-oriented administrative services, business operations, financial resources, human capital, real property, environmental compliance, general counsel, internal review, public affairs and media release			
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<b>Title:</b> HQ Travel	0.983	0.999	0.991
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> Provide mission essential government travel			
<b>FY 2016 Plans:</b> Provide mission essential government travel			
<b>FY 2017 Plans:</b> Provide mission essential government travel			

<b>Title:</b> HQ Utilities, Facilities, Operations, Subsidy, Transportation and Logistics	2.280	2.410	2.131
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2015 Accomplishments:</b> - Funded utilities under host-tenant agreement at MDA, Fort Belvoir - Provided base operations at MDA, Fort Belvoir - Provided transportation subsidy to National Capitol Region employees - Provided ground transportation, shuttle, and motorpool services			
<b>FY 2016 Plans:</b> - Fund utilities under host-tenant agreement at MDA, Fort Belvoir - Provide base operations at MDA, Fort Belvoir - Provide transportation subsidy to National Capitol Region employees - Provide ground transportation, shuttle, and motorpool services			
<b>FY 2017 Plans:</b> - Fund utilities and base operations under host-tenant agreement at MDA, Fort Belvoir - Provide transportation subsidy to National Capitol Region employees			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 0400 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0901598C / Management HQ - MDA	<b>Project (Number/Name)</b> MD38 / Management Headquarters		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
- Provide ground transportation, shuttle, and motorpool services				
<b>Title:</b> Security and Emergency Management		3.253	3.318	3.384
<b>Description:</b> N/A		<b>Articles:</b> -	-	-
<b>FY 2015 Accomplishments:</b> - Provided access control and circulation enforcement for all visitors, security clearance verification, physical security checks, and information security inspections - Maintained global security situational awareness from the Global Security Operations Center (GSOC) and provide security planning and support for conferences and special events - Provided first response and emergency assessment to emergency situations and responded to alarms to include Sensitive Compartmental Information (SCI) and Special Access Program (SAP) facilities				
<b>FY 2016 Plans:</b> - Provide access control and circulation enforcement for all visitors, security clearance verification, physical security checks, and information security inspections - Maintain global security situational awareness from the Global Security Operations Center (GSOC) and provide security planning and support for conferences and special events - Provide first response and emergency assessment to emergency situations and respond to alarms to include Sensitive Compartmental Information (SCI) and Special Access Program (SAP) facilities				
<b>FY 2017 Plans:</b> - Provide access control and circulation enforcement for all visitors, security clearance verification, physical security checks, and information security inspections - Maintain global security situational awareness from the Global Security Operations Center (GSOC) and provide security planning and support for conferences and special events - Provide first response and emergency assessment to emergency situations and respond to alarms to include Sensitive Compartmental Information (SCI) and Special Access Program (SAP) facilities				
<b>Title:</b> HQ Contract Services		5.892	6.230	6.028
<b>Description:</b> N/A		<b>Articles:</b> -	-	-
<b>FY 2015 Accomplishments:</b> - Provided contract support services to support mission activities for acquisition, business operations, internal review, general counsel, administrative support, public affairs, and international affairs.				

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Missile Defense Agency	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 0400 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0901598C / Management HQ - MDA	<b>Project (Number/Name)</b> MD38 / Management Headquarters
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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	FY 2015	FY 2016	FY 2017
-FY 2015 decrease reflects realignment of funding to Department of Defense priorities.			
<b>FY 2016 Plans:</b> - Provide contract support services to support mission activities for acquisition, business operations, internal review, general counsel, administrative support, public affairs, and international affairs.			
<b>FY 2017 Plans:</b> - Provide contract support services to mission activities for acquisition, business operations, internal review, general counsel, administrative support, public affairs, and international affairs			
<b>Accomplishments/Planned Programs Subtotals</b>	35.598	35.871	31.160

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A