Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency											Date: February 2015	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603177C / *Discrimination Sensor Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	-	29.642	36.610	28.200	-	28.200	-	-	-	-	Continuing	Continuing
MD95: *Discrimination Sensor Technology*	-	29.523	34.535	23.304	-	23.304	-	-	-	-	Continuing	Continuing
MT95: *Discrimination Sensor Tech-Flight Test Execution*	-	-	-	3.749	-	3.749	-	-	-	-	-	3.749
MC95: *Cyber Operations*	-	0.119	0.203	-	-	-	-	-	-	-	Continuing	Continuing
MD40: *Program-Wide Support*	-	-	1.872	1.147	-	1.147	-	-	-	-	Continuing	Continuing
Program MDAP/MAIS Code: 362												

Note

In FY 2016, the Discrimination Sensor Technology program element (PE) will complete technology demonstration of real time stereo tracking with Multi-Spectral Targeting System Cs (MTS-Cs) to meet Aegis Launch-on-Remote (LoR) quality of service performance. In FY 2016 $31.078 million transferred to the Technology Maturation Initiatives PE, 0604115C, for follow-on MTS-C advanced sensor development and prototype development and test.

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 both the Ballistic Missile Defense System (BMDS) capability to develop precision tracks and the ability to discriminate lethal objects among the incoming threat cluster.

The Discrimination Sensor Technology (DST) program funds the demonstration of Aegis LoR real time stereo tracking with MTS-Cs integrated into MQ-9 Reapers. Aegis LoR is the capability that allows Aegis Ballistic Missile Defense (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 Fall 2014, the Agency conducted a campaign at the Pacific Missile Range Facility with Multi-Spectral Targeting Systems (MTS) equipped MQ-9 Reapers specifically modified to accomplish missile defense tracking missions. The MDA tested MTS-B variants aboard MQ-9 Reaper Unmanned Aerial Vehicles (UAVs) and MTS-C variants on the ground at Makaha Ridge for Flight Test X (FTX-20) and Flight Test Standard Missile 25 (FTM-25). Both tests were executed using 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 MTS sensors.

The MD95 DST project funds the prime contract integration and system test, checkout flights, and performance analysis. DST incrementally builds on the airborne MTS-B launch-on-remote demonstrations using airborne MTS - C sensors integrated into MQ-9 Reaper UAVs. The DST program will demonstrate the increased Electro Optical/Infrared (EO/IR) capability of MTS-C airborne sensors for precision track launch-on-remote and discrimination over MTS-Bs as a precursor to advanced sensor equipped MTS-C prototype development and test under the Technology Maturation Initiatives PE.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency	Date: February 2015
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603177C *I Discrimination Sensor Technology*

The MT95 DST Flight Test Execution project funds the costs associated with MTS-C/MQ-9 Reaper participation in BMDS testing including prime contract test execution, MQ-9 operations and maintenance, and Enterprise Sensors Laboratory (ESL) and Space & Naval Warfare Systems Center (SPAWAR) interfaces.
The Missile Defense Agency 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 DST. The DST test program include Air Force provided F-16 aircraft for use as surrogate targets and sharing of MTS-C test data between the Missile Defense Agency (MDA) and the Air Force to augment sensor characterization activities.

This technology significantly enhances the following Ballistic Missile Defense System (BMDS) priorities:

- Precision track of multiple objects to enable missile defense components to engage-on-remote
- Discriminating lethal objects from countermeasures
- End-to-end correlation of sensor track and discrimination data

The Discrimination Sensor Technology program element development and test results directly feed sensor prototype demonstrations in the Technology Maturation Initiatives program element (0604115C).

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

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	29.642	45.110	59.278	-	59.278
Current President's Budget	29.642	36.610	28.200	-	28.200
Total Adjustments	-	-8.500	-31.078	-	-31.078
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-8.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-	-	-31.078	-	-31.078

Change Summary Explanation

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

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency	Date: February 2015
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603177C *I Discrimination Sensor Technology*

In FY 2016, the Discrimination Sensor Technology program element (PE) will complete technology demonstration of real time stereo tracking with Multi-Spectral Targeting System Cs (MTS-Cs) to meet Aegis Launch-on-Remote (LoR) quality of service performance. In FY 2016 $31.078 million transferred to the Technology Maturation Initiatives PE, 0604115C, for follow-on MTS-C advanced sensor development and prototype development and test.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603177C / *Discrimination Sensor Technology*	Project (Number/Name) MD95 / *Discrimination Sensor Technology*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD95: *Discrimination Sensor Technology*	-	29.523	34.535	23.304	-	23.304	-	-	-	-	Continuing	Continuing

Note

In FY 2016, the Discrimination Sensor Technology program element (PE) will complete technology demonstration of real time stereo tracking with Multi-Spectral Targeting System Cs (MTS-Cs) to meet Aegis Launch-on-Remote (LoR) quality of service performance. In FY 2016 $31.078 million transferred to the Technology Maturation Initiatives PE, 0604115C, for follow-on MTS-C advanced sensor development and prototype development and test.

A. Mission Description and Budget Item Justification

The Discrimination Sensor Technology (DST) program develops next-generation sensors and detectors and integrates them into Unmanned Aerial Vehicles (UAVs) to demonstrate improvements in discrimination for missile defense. This program evaluates and researches emerging technology that enables game changing discrimination improvements for incorporation into next generation interceptors and air or space systems. The DST program pursues a cost-effective incremental upgrade philosophy that demonstrates airborne precision tracking and improved track performance and discrimination. These advanced sensors improve the probability of engagement success for stressing threats, expand the Ballistic Missile Defense (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 Fall 2014, the Agency conducted a campaign at the Pacific Missile Range Facility with Multi-spectral Targeting Systems (MTS) equipped MQ-9 Reapers specifically modified to accomplish missile defense tracking missions. The MDA tested MTS-B variants aboard MQ-9 Reaper UAVs and MTS-C variants on the ground at Makaha Ridge for Flight Test X (FTX-20) and FTM 25. Both tests were executed using 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 MTS sensors.

In FY 2016, DST incrementally builds on the MTS-B launch-on-remote demonstrations using airborne MTS - C sensors integrated into MQ-9 Reaper UAVs. The DST program will demonstrate the increased Electro Optical/Infrared (EO/IR) capability of MTS-C airborne sensors for launch-on-remote and discrimination over MTS-Bs as a precursor to advanced sensor equipped MTS-C prototype development and test under the Technology Maturation Initiatives program element.

MDA's sensor technology construct incrementally buys down risk by testing an evolving sensor technology from the ground and then from UAVs and uses measurement of repeatable Resident Space Objects (RSOs) and targets of opportunity to characterize performance before participating in BMDS tests to collect performance data under realistic conditions. Discrimination Sensor Technology interfaces with the existing BMDS architecture to develop 3-dimensional (3-D) tracks of the ballistic missile, which are sent via Link-16 to Aegis ships for engagement.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Discrimination Sensor Technology	29.523	34.535	23.304

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MD95 / *Discrimination Sensor Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016

Description: N/A

FY 2014 Accomplishments:

- Developed technology that significantly increased the ability of the current Ballistic Missile Defense System (BMDS) to identify lethal and non-lethal threat objects
-- Flight qualified a Missile Defense Agency configured MQ-9 equipped with a Multi-Spectral Targeting System-B (MTS-B) and a ruggedized airborne processor and chin mount

- Developed emerging technology that enabled game changing discrimination improvements for incorporation into next generation interceptors and space systems
-- Characterized airborne sensors validating system performance in operational environments

- Assessed and characterized sensor components and sensor systems capable of precision tracking and advanced discrimination through laboratory, ground, and flight tests
-- Successfully tested the MTS - B & C sensors achieving several important milestones, including acquiring and tracking targets from the ground during Flight Test Standard Missile 22 (FTM-22) and in conjunction with an Air Force ATLAS-5 launch
-- Performed end-to-end hardware-in-the-loop tests with the Enterprise Systems Laboratory to demonstrate Aegis Launch-on-Remote Unmanned Aerial Vehicle-borne sensor
-- Performed analysis that verified airborne precision track engage on remote performance

- Incorporated FTM-21 and FTM-22 discrimination sensor field test measurements into models and simulations to anchor capability improvements

- Demonstrated real time stereo tracking launch on remote capability in conjunction with Flight Test X (FTX)-21 using a MTS-B installed on a MQ-9 and a MTS-C sensor on the ground

FY 2015 Plans:

- Flight test 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
-- Demonstrated that Airborne Electro-Optical (EO) / Infrared (IR) precision tracking exceeds Aegis Launch-on/Engage-on Remote track requirements

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MD95 / *Discrimination Sensor Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Ground test an advanced EO / IR sensor integrated into MTS-Cs against resident space objects and BMDS targets of opportunity - Modify the Reaper, processor and ground control station with MTS-C and demonstrate 30% improved track performance and discrimination capability - Initiate development of next-generation EO / IR sensor upgrades that increase precision and range by 150% ***FY 2016 Plans:*** In FY 2016 $31.078 million transferred to the Technology Maturation Initiatives PE, 0604115C, for follow-on MTS-C advanced sensor development and prototype development and test - Complete Multi-Spectral Targeting System - C (MTS-C) Sensor tests to demonstrate Aegis Launch-on-Remote quality of track performance: -- 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 1Q FY 2016 Control Test Vehicle (CTV) - 02+ BMDS test -- Conduct MTS-C CTV-02+ pre and post-test performance analysis -- Analyze BMDS test data to verify demonstration of quality of service to meet Aegis Launch on Remote requirements -- Analyze airborne sensor BMDS test data to demonstrate MTS-C discrimination performance - 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 - Partner with the Air Force to characterize MTS performance for Air Dominance			
Accomplishments/Planned Programs Subtotals	29.523	34.535	23.304

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603176C: *Advanced Concepts and Performance Assessment*	6.919	8.470	12.139	-	12.139	13.227	12.932	13.249	13.219	Continuing	Continuing
• 0603178C: *Weapons Technology*	45.268	54.068	45.389	-	45.389	48.912	70.115	54.595	66.797	Continuing	Continuing
• 0603179C: *Advanced C4ISR*	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304
• 0603180C: *Advanced Research*	23.025	16.584	17.364	-	17.364	18.919	20.380	21.069	21.457	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MD95 / *Discrimination Sensor Technology*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603294C: *Common Kill Vehicle Technology*	67.796	25.639	46.753	-	46.753	75.262	71.476	86.814	99.701	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	340.391	270.901	233.588	-	233.588	228.437	142.363	140.740	141.733	Continuing	Continuing
• 0603890C: *BMD Enabling Programs*	368.965	401.971	409.088	-	409.088	423.092	417.831	420.104	433.604	Continuing	Continuing
• 0603892C: *AEGIS BMD*	885.704	764.224	843.355	-	843.355	762.740	748.354	564.827	579.585	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing
• 0604115C: *Technology Maturation Initiatives*	-	-	96.300	-	96.300	109.674	117.106	208.531	198.363	Continuing	Continuing

Remarks

D. Acquisition Strategy

The acquisition strategy for Discrimination Sensor Technology consists of consists of a contract(s) to industry via the Advanced Technology Innovation Broad Agency Announcement and competitive procurement(s) and agreements with 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. The Missile Defense Agency 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. Discrimination Sensor Technology shapes future Ballistic Missile Defense System (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 Ballistic Missile Defense System architecture.

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603177C / *Discrimination Sensor Technology*	Project (Number/Name) MT95 / *Discrimination Sensor Tech-Flight Test Execution*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MT95: *Discrimination Sensor Tech-Flight Test Execution*	-	-	-	3.749	-	3.749	-	-	-	-	-	3.749

Note

The MT95 budget project is new in FY 2016 and was created to transfer funds from the MD95 budget project to consolidate Ballistic Missile Defense System (BMDS) test costs associated with this program element. The Discrimination Sensor Technology (DST) Flight Test Execution project will complete technology demonstration of real time stereo tracking with Multi-Spectral Targeting System Cs (MTS-Cs).

A. Mission Description and Budget Item Justification

The DST Flight Test program funds the management and execution of DST testing through technology demonstration of Aegis Launch-on-Remote (LoR) real time stereo tracking with Multi-Spectral Targeting System - Cs (MTS-Cs). Aegis LoR is the capability that allows Aegis Ballistic Missile Defense (BMD) to launch an interceptor before its own radar acquires the threat. Aegis BMD LoR involves Command, Control, Battle Management, and Communications (C2BMC) providing information about the paths (called tracks) of ballistic missile threats, to Aegis BMD from forward based radars. It expands the space where system can intercept the threat and the defended area. The DST flight test program leverages other BMDS tests as an associated operation to gather sensor data.

In FY2015, the Missile Defense Agency successfully tested two MTS-B sensors integrated into MQ-9 Reapers. The DST tests were executed using 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 MTS sensors.

In FY 2016, the DST Flight Test program tests two MTS-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 Missile Defense Agency (MDA) is partnering with the Air Force to characterize MTS performance. The tests demonstrate readiness for BMDS testing and provide data that feeds Air Force Air Dominance development planning.

The DST Flight Test Program funds flight, operations and maintenance costs, as applicable, for Unmanned Aerial Vehicles (UAVs), 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 (C2BMC) test support specific to DST.

The results from this airborne MTS-C LoR test sequence mature the critical technologies necessary for prototype development under the Technology Maturation Initiatives program element (0604115C). LoR is the precursor to Engage-on-Remote (EoR), which significantly expands BMD reach and the defended area. Under the Technology Maturation Initiatives program, advanced sensor equipped MTS-Cs will demonstrate the performance improvements EoR from Airborne sensors provides the BMDS.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MT95 / *Discrimination Sensor Tech-Flight Test Execution*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Discrimination Sensor Technology Flight Test Execution	-	-	3.749
Description: N/A ***FY 2014 Accomplishments:*** N/A ***FY 2015 Plans:*** N/A ***FY 2016 Plans:*** The MT95 budget project is new in FY 2016 and was created to transfer funds from the MD95 budget project to consolidate Ballistic Missile Defense System (BMDS) test costs associated with this program element. - 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 Controlled Test Vehicle (CTV)-02 test - Ship two MQ-9 Reapers, Multi-Spectral Targeting System - Cs (MTS-Cs) and ground support equipment to the Pacific Missile Range Facility - Conduct CTV-02 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 CTV-02 test			
Accomplishments/Planned Programs Subtotals	-	-	3.749

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603176C: *Advanced Concepts and Performance Assessment*	6.919	8.470	12.139	-	12.139	13.227	12.932	13.249	13.219	Continuing	Continuing
• 0603178C: *Weapons Technology*	45.268	54.068	45.389	-	45.389	48.912	70.115	54.595	66.797	Continuing	Continuing
• 0603179C: *Advanced C4ISR*	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304
• 0603180C: *Advanced Research*	23.025	16.584	17.364	-	17.364	18.919	20.380	21.069	21.457	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MT95 / *Discrimination Sensor Tech-Flight Test Execution*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603294C: *Common Kill Vehicle Technology*	67.796	25.639	46.753	-	46.753	75.262	71.476	86.814	99.701	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	340.391	270.901	233.588	-	233.588	228.437	142.363	140.740	141.733	Continuing	Continuing
• 0603890C: *BMD Enabling Programs*	368.965	401.971	409.088	-	409.088	423.092	417.831	420.104	433.604	Continuing	Continuing
• 0603892C: *AEGIS BMD*	885.704	764.224	843.355	-	843.355	762.740	748.354	564.827	579.585	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	342.695	366.302	274.323	-	274.323	298.390	345.333	330.404	350.747	Continuing	Continuing
• 0603915C: *Ballistic Missile Defense Targets*	501.170	455.068	513.256	-	513.256	585.727	484.242	442.202	460.945	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Missile Defense Agency (MDA) Integrated Master Test Plan (IMTP) establishes and documents the test requirements for the Ballistic Missile Defense System (BMDS) with the specific focus on collecting the data needed for the Verification, Validation, and Accreditation (VV&A) of the BMDS Models and Simulations (M&S). 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, the 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

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603177C / *Discrimination Sensor Technology*	Project (Number/Name) MC95 / *Cyber Operations*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MC95: *Cyber Operations*	-	0.119	0.203	-	-	-	-	-	-	-	Continuing	Continuing

Note

The increase in FY 2015 reflects the need for Information Assurance Controls Validation Testing (CVT) recertification every three years. Beginning in FY 2016, the Cyber Operations project transfers to the Technology Maturation Initiatives Program Element 0604115C.

A. Mission Description and Budget Item Justification

The funding in this project sustains the Missile Defense Agency (MDA) Department of Defense (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 the MDA Discrimination Sensor Technology 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 monitors and tracks 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)	FY 2014	FY 2015	FY 2016
Title: Network / System Certification and Accreditation (C&A)	0.119	0.203	-
Description: N/A			
FY 2014 Accomplishments: - 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 Department of Defense Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MC95 / *Cyber Operations*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- 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 ***FY 2015 Plans:*** - Conduct cyber security / information assurance engineering and architecture planning for Discrimination Sensor Technology information technology systems - Plan and test the information assurance controls for Ballistic Missile Defense System (BMDS) Discrimination Sensor Technology systems - Develop Discrimination Sensor Technology DoD Information Assurance Certification and Accreditation Program (DIACAP) certification and accreditation packages - Conduct Controls Validation Testing (CVT) for Discrimination Sensor Technology mission systems and provide Plan of Action and Milestones to mitigate information assurance deficiencies - Conduct annual information assurance reviews on the Discrimination Sensor Technology enclaves to assess compliance in implementing and maintaining IA controls ***FY 2016 Plans:*** - Beginning in FY 2016, transfers to the Technology Maturation Initiatives Program Element 0604115C.			
Accomplishments/Planned Programs Subtotals	0.119	0.203	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603176C: *Advanced Concepts and Performance Assessment*	6.919	8.470	12.139	-	12.139	13.227	12.932	13.249	13.219	Continuing	Continuing
• 0603178C: *Weapons Technology*	45.268	54.068	45.389	-	45.389	48.912	70.115	54.595	66.797	Continuing	Continuing
• 0603179C: *Advanced C4ISR*	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304
• 0603180C: *Advanced Research*	23.025	16.584	17.364	-	17.364	18.919	20.380	21.069	21.457	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603177C / *Discrimination Sensor Technology*	**Project (Number/Name)** MC95 / *Cyber Operations*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603904C: *Missile Defense Integration and Operations Center (MDIOC)*	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing
• 0604115C: *Technology Maturation Initiatives*	-	-	96.300	-	96.300	109.674	117.106	208.531	198.363	Continuing	Continuing

Remarks

D. Acquisition Strategy

The acquisition strategy for Cyber operations consists of using the Missile Defense Agency (MDA) civilian employees and the existing competitively awarded Missile Defense Agency Engineering and Support Services (MiDAESS) contract.

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603177C / *Discrimination Sensor Technology*	Project (Number/Name) MD40 / *Program-Wide Support*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	-	-	1.872	1.147	-	1.147	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

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